

NIGERIA – ICAT PROJECT

OVERARCHING INSTITUTIONAL ARRANGEMENTS REPORT



Initiative for Climate Action Transparency (ICAT) – Consultancy Project(s) Capacity Building on Application of Measure, Report and Verify (MRV) Greenhouse Gas (GHG) Emissions for Mitigating the Impact of Climate Change in Nigeria

MARCH 2022

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Abbreviations

AD	Activity Data
AFOLU	Agriculture, Forestry and Other Land Use
ARCN	Agricultural Research Council of Nigeria
BOA	Bank of Agriculture
BUR	Biennial Update Report
CBN	Central Bank of Nigeria
CBO	Community Based Organization
CIF	Climate Investment Fund
CITEPA	International Technical Centre on Air Pollution and Climate Change
CLN	Carbon Limits Nigeria
CO ₂	Carbon (IV) Oxide
COP	Conference of Parties
CSO	Civil Society Organization
DALCCMS	Department of Agricultural Land and Climate Change Management Services
DCC	Department of Climate Change
DisCo	Distribution Company
DPR	Department of Petroleum Resources
DRTS	Directorate of Road Traffic Service
DSA	Data Sharing Agreement
ECN	Energy Commission of Nigeria
EF	Emission Factor
ETF	Enhanced Transparency Framework
EU	European Union
FAAN	Federal Airports Authority of Nigeria
FAO	Food and Agriculture Organization
FAOSTAT	Food and Agriculture Organization Corporate Statistical Database
FEDAN	Female Drivers Association of Nigeria
FERMA	Federal Roads Maintenance Agency
FMARD	Federal Ministry of Agriculture and Rural Development
FMB&NP	Federal Ministry of Budget and National Planning
FME _{env}	Federal Ministry of Environment
FMoA	Federal Ministry of Aviation
FMoT	Federal Ministry of Transport
FMoW&H	Federal Ministry of Works & Housing
FRIN	Forestry Research Institute
FRSC	Federal Road Safety Commission
GHGE	Greenhouse Gas Emissions
GHGI	Greenhouse Gas Inventory
GHGMI	Greenhouse Gas Management Institute
GHGs	Greenhouse Gases
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
HSE	Health, Safety and Environment
IA	Institutional Arrangement
IAR	Institute of Agricultural Research
ICAT	Initiative for Climate Action Transparency
ICCC	Interim Climate Change Committee
ICRC	Infrastructure Concession Regulatory Commission
IFP	International Focal Point
IITA	International Institute of Tropical Agriculture

IMCCC	Inter-Ministerial Committee on Climate Change
IMS	Inventory Management System
IOC	International Oil Companies
IOM	International Organization for Migration
IPCC	Intergovernmental Panel on Climate Change
IPPU	Industrial Processes and Product Use
JICA	Japan International Co-operation Agency
KRPC	Kaduna Refinery and Petrochemical Company
KUDA	Kebbi Urban Development Authority
LAWMA	Lagos State Waste Management Authority
LFA	Logical Framework Approach
LGA	Local Government Area
LULUCF	Land Use, Land-Use Change, And Forestry
MAN	Maritime Academy of Nigeria
MDAs	Ministries, Department and Agencies
MFP	Modal Focal Point
MoU	Memorandum of Understanding
MPGs	Modalities, Procedures and Guidelines
MPR	Ministry of Petroleum Resources
MRV	Measure, Report and Verify
MSAN	Merchant Seafarers Association of Nigeria
NADDC	National Automotive Design and Development Council
NAIC	Nigerian Agricultural Insurance Corporation
NALDA	National Agricultural Land Development Authority
NAMA	Nigerian Airspace Management Authority of Nigeria
NAMAs	Nationally Appropriate Mitigation Actions
NAPRI	National Animal Production Research Institute
NARTO	Nigerian Association of Road Transport Owners
NASRDA	National Space Research and Development Agency
NASS	National Assembly
NBS	Nigerian Bureau of Statistics
NCAA	Nigerian Civil Aviation Authority
NCAT	Nigerian College of Aviation Technology
NCCC	National Climate Change Council
NCCF	Nigeria Climate Change Fund
NCs	National Communications
NCS	Nigeria Customs Service
NDC	Nationally Determined Contributions
NDR	National Data Repository
NERC	Nigeria Electricity Regulatory Commission
NESREA	National Environmental Standards and Regulations Enforcement Agency
NFP	National Focal Points
NGC	Nigeria Gas Company
NGOs	Non-Governmental Organizations
NIAS	National Institution of Advanced Studies
NIIMP	Nigeria Integrated Infrastructure Master Plan
NIMASA	Nigerian Maritime Administration & Safety Agency
NIMET	Nigerian Meteorological Agency
NISEPA	Niger State Environmental Protection Agency
NITT	Nigerian Institution of Transport Technology
NIWA	Nigerian Inland Waterways Authority

NMDPRA	Nigerian Midstream and Downstream Petroleum Regulatory Authority
NNPC	Nigeria National Petroleum Corporation
NOCs	National Oil Companies
NOSREA	National Oil Spill Detection and Response Agency
NPA	Nigerian Ports Authority
NPC	National Population Commission
NPCC	Nigerian Ports Consultative Council
NPDC	Nigerian Petroleum Development Company
NPF	Nigeria Police Force
NRC	Nigerian Railway Corporation
NRS	National Reporting System
NSC	Nigerian Shippers Council
NUPRC	Nigerian Upstream Petroleum Regulatory Commission
NURTW	National Union of Road Transport Workers
O&G	Oil and Gas
OTS	Other Transport Sector
PA	Paris Agreement
PCU	Pollution Control Unit
PEF	Petroleum Equalization Fund
PHRC	Port-Harcourt Refining Company
PPMC	Pipeline and Petroleum Marketing Company
PSC	Profit-Sharing Contract
QA	Quality Assurance
QC	Quality Control
REA	Rural Electrification Agency
RED	Renewable Energy Division
REDD+	Reducing Emissions from Deforestation and forest Degradation
RTEAN	Road Transport Employers Association
RTS	Road Transport sector
SEP	Stakeholder Engagement Plan
SFP	Sectoral Focal Points
SMEDAN	Small and Medium Enterprises Development Agency of Nigeria
SNE	Single National Entity
SO	System Operators
TACCC	Transparency, Accuracy, Completeness, Comparability, and Consistency
TCN	Transmission Company of Nigeria
TNC	Third National Communication
TWG	Technical Working Group
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNICEF	United Nations Children Fund
VIO	Vehicle Inspection Officer
WRPC	Warri Refining and Petrochemical Company

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Executive Summary

The proposed overarching institutional framework is designed to offer the necessary organizational structure and to clearly define the roles of identified key stakeholders participating in the country's inventory and mitigation action development, as well as to chart a route for improved data flows (aggregation, processing, and archiving).

This project looked at the reoccurring flaws across sectors, current and future needs, and gaps in three major sectors: oil and gas (O&G), road transportation and other modes of transportation, agriculture, forestry, and other land uses (AFOLU). Some of the outcomes include:

- Lack of complete activity data published in the annual reports,
- Lack of adequate understanding of methodologies for emission quantification especially for estimating methane emissions,
- No clear roles and responsibilities of relevant Ministries, Department and Agencies (MDAs) in activity data collection, archiving and processing for developing a robust sustainable measurement, Reporting and Verification (MRV) system in the sector,
- No clear definition of institutional arrangements, data collection methodology and reporting structure, data transfer and sharing,
- Small teams with limited resources and multiple responsibilities,
- Difficulty in retaining expertise (transfers within the civil service system),
- Incomplete or non-existent activity data, and lack of experimental data for developing country-specific emission factors,
- Insufficient documentation and absence of an archiving system from previous inventories,
- No quality assurance and quality control (QA/QC) plan within the relevant MDAs identified as key stakeholders; and no defined path/working document to improve future national GHG inventory in the sectors,
- Lack of support, capacity building and technology transfer to facilitate data collection, reporting, archiving and transfer.

To plug the gaps identified during stakeholder engagements, the following needs were proposed to be met if a functional MRV system will emerge from the sectors and they include the following:

- Institutional leadership and staffing, coordination, and integration of efforts among different ministries at the federal level, harmonization of institutional competences among federal and state entities, and the need for personnel dedicated to MRV activities. There is also high turnover of staff, particularly for the national inventory, since ministries often have no permanent teams, improved technical capacity and staffing for inventory reporting as inventory compilation teams at various MDAs could benefit from additional training and support.
- Country-specific emission factors, localized emission factors database, developing a national emission factors database that could be applicable to several sectors and regions within the country.

- A need for improved sector-specific methodologies for accounting for emissions from priority sectors.
- The need for an integrated information system and registry for reporting and collating greenhouse gas data.
- The need for a technical platform also extends to general data sharing online, where a platform could facilitate the exchange of information, knowledge, and technical and historical data. A central data base with accurate emission and mitigation information from all priority sectors.
- Financial resources are needed to enable relevant public entities to hire a permanent staff or consultants of qualified professionals dedicated exclusively to undertaking MRV-related tasks, especially connected to mitigation.

Following input from multiple stakeholder consultation, sector experts proposed revised institutional arrangements that clearly highlight the responsibilities of all identified stakeholders while also reflecting the cross-cutting nature of managing data gathering processes, analysis, compilation, quality control and assurance, reporting, and data flow and management in the sector.

The Department of Petroleum Resources (DPR) now replaced under the PIA, 2021¹ with Nigerian Upstream Petroleum Regulatory Commission (NUPRC) and Nigerian Midstream and Downstream Petroleum Regulatory Authority (NMDPRA) are responsible for regulating and managing data in the oil and gas sector under the current institutional framework. However, it is recommended under the proposed institutional arrangement that data verification be performed by an independent third-party body with sole responsibility for performing the task of Quality Assurance going forward (QA). The proposed Institutional Arrangement includes a national focal point, which will be led by the Department of Climate Change (DCC) having direct contact with the National Steering Committee and the National Consultants, who serve as inter-ministerial committees and third-party auditors/climate specialists. Individually, the sectoral steering committee, external auditors (QA), internal auditors (QC), data providers, and activity data experts interact with NUPRC and NMDPRA, which serves as GHG Inventory and Project/Mitigation compilers as well as Monitoring, Data Management, and Coordination before the data is sent to the DCC.

The existing institutional arrangement (IA) for Road Transport Sector (RTS) and Other Transport Sector (OTS) is fragmented and unclear. The proposed IA is intended to express the underlying climate goals, targets, and transparency outputs required to track them. It's meant to establish the groundwork for a comprehensive MRV framework for the RTS and OTS by laying out all the roles and responsibilities of the various parties and organizations involved.

¹ <http://www.petroleumindustrybill.com/wp-content/uploads/2021/09/Official-Gazette-of-the-Petroleum-Industry-Act-2021.pdf>. (See Part III and IV of the Petroleum Industry Act, 2021)

The existing institutional arrangement for GHG Inventory (GHGI) preparation in the Crop and Livestock Sector was solely DCC's responsibility to organize, supervise, and report on the inventory process, with data provided as needed by the Federal Ministry of Agriculture and Rural Development. This approach was reported to be weak in quality data aggregation, QC/QA, data processing, and archiving.

The proposed IA for the Crop and Livestock sector proposes a hybrid approach, with DCC serving as the national focal point of the process and playing the coordinating function required to support and manage the inventory cycle. Under the Federal Ministry of Agriculture, the Department of Agricultural Land and Climate Change Management Services (DALCCMS) was identified in line with their existing mandate and available expertise to play the role of sector inventory complier. This puts them in a good position to coordinate the GHGI process on a sectoral level. At various QA/QC phases of data collection and processing, more inter-agency engagement with the National Bureau of Statistics (NBS) and other third-party auditors will be required. During the GHGI preparation, the data providers at the base will collaborate to generate, collect, harmonize, and report activity data utilizing the Technical Working Group (TWG) platform created for the sector.

The LULUCF IA was developed after extensive stakeholder consultation and evaluation of several institutions with similar mandates, duties, and responsibilities. This allowed the team to assess different institutional models based on existing national circumstances, review basic requirements and/or pathways for natural data flow, and consider appropriate institutional arrangements that fit the emerging enhanced transparency framework and biennial transparency reporting obligations under the Paris Agreement (PA). The proposed institutional framework for this sector is modeled after an "inverted T" or "Reverse Waterfall," which is strategic from a project management standpoint since it allows for the most efficient and effective use of resources and time. The slim, straightforward structural architecture can be viewed as a "Reverse Waterfall," with a capillary force pulling raw data up from the pool (data collectors) at the bottom to the DCC at the top. Between the data collectors at the bottom and the DCC at the top, a vertical column of carefully selected entities has been calibrated, with each step of responsibility and duty reinforcing the previous, with the goal of holistically and sustainably addressing pre-existing structural challenges and gaps in MRV governance.

In summary, compilation of the GHG inventory for all sectors is coordinated by the DCC inventory division with support from sector experts (consultants). This is not unusual, as the compilation of national inventories is complex and requires a range of sector-specific data and expertise. The overarching IA was harmonized to include the NDC priority sectors and will allow for effective monitoring and coordination of the country's climate ambitions while actively engaging identified sector stakeholders. The hybrid model proposed by the sector experts was mainstreamed into the overarching IA design in which the management and co-ordination of the inventory preparation and compilation are carried out in a centralized manner by the DCC, while sector-specific mandates on data for both inventory and mitigation are designated to specific MDAs within the relevant sector to coordinate the sectoral inventory activity.

To ensure sustainability of the inventory process it was recommended that appropriate legal and institutional frameworks are put in place to achieve a functional IA at the sectoral level. An overarching climate change law was also proposed to create a legally binding mandate and give legislative power to the institutional arrangements that are being proposed to ensure transparency. Other applicable policies, and frameworks will also be developed to meet the emerging needs of the sectors. Most of the existing organizational mandates will need to be expanded as the proposed IA shall include new responsibilities. Framework contracts/MOUs and Data sharing Agreements (DSA) should be developed to make available the needed resources for efficient GHG inventory operation.

The development of human capacities in the technical areas of GHG emission estimations and calculations, methodologies, and approaches, data collection, analysis, documentation, and archiving to meet sectoral needs.

Such activities create awareness, build the efficiency of the workforce, and ensure community and continuity within the system. Targeted training dedicated to data aggregation, QA/QC protocols, timeseries analysis, database management, etc., can be designed to meet core expert skills needed at different phases of the inventory cycle.

Chapter One - Introduction

1.0 Overview

Developing a robust institutional framework that encompasses all the relevant institutional entities as well as the necessary staff, systems, and processes is essential for an effective MRV system. This institutional arrangement for the MRV system is critical in ensuring that Nigeria meets her reporting requirements under the Paris Agreement in accordance with the *Decision 18 / CMA.1 - common Modalities, Procedures and Guidelines (MPGs) for the transparency framework for action and support referred to in Article 13 of the Paris Agreement* adopted by the Conference of Parties (COP).

“Each Party should implement and maintain national inventory arrangements, including institutional, legal and procedural arrangements for the continued estimation, compilation and timely reporting of national inventory reports in accordance with these MPGs”.

Decision 18 / CMA.1 MPGs, para. 18

Beyond helping Nigeria to meet her reporting requirements, it will also: facilitate the review of the information submitted under the Convention and the PA; ensure that nationally appropriate procedures for the collation, processing, reporting, and archiving of mitigation data and inventory information are in place; guarantee coordination between all stakeholders involved: ministries, national agencies, academia, research community, technical experts, consultants, etc.; establish the sustainability of the inventory process and quality of inventory and mitigation data collected while also informing the development of national policies that will support the MRV framework.

The proposed overarching institutional framework will provide the needed organizational structure and will clearly lay out the roles of the various stakeholders involved in the development of inventory and mitigation action in the country. It will also enhance current and future data flows and clearly define the bank where data is to be stored and archived for the country.

It should be mentioned that to achieve a functional institutional arrangement framework, the need for an appropriate legal institutional framework is of paramount importance, as this will ensure both intra and inter-communication between stakeholders and the relevant MDAs. The legal institutional framework will be essential as it will provide the needed mandate necessary to establish and provide defined roles and responsibilities for all stakeholders involved in the MRV processes, especially as it relates to data provision, data gathering, monitoring compliance with regulations and policies, and data QA/QC.

Currently, the DCC under the Federal Ministry of Environment (FMEnv) is responsible for collecting data and compiling the national inventory. The compilation of the national GHG inventory is coordinated by the DCC inventory division with support from sector experts (consultants). This is not unusual, as the compilation of national inventories is complex and requires a range of sector-specific data and expertise.

Based on the findings from the reviewed MRV framework reports by the various sector experts, these reports indicated the need to have a hybrid approach which is centralized and distributed across sectors.

In this scenario, the management and co-ordination of the inventory preparation and compilation are carried out in a centralized manner by the DCC, but sector-specific mandates on data for both inventory and mitigation are designated to specific MDAs within the relevant sector to coordinate the sectoral inventory activity. Should this approach be adopted, it will enhance the practicality of issues the new overarching IA seeks to address.

The adoption of sectoral coordinating institutions and/or working groups will help the country leverage cross agency expertise and further build capacity and communication among the various MDAs. By identifying in-country experts/existing staff within the MDAs and assigning coordination responsibilities, there is an increased likelihood that technical knowledge will be retained, and the stakeholders will have ownership of the final MRV outcome.

This report therefore presents the national overarching institutional arrangement with recommendations for a national reporting system and design; as well as the legal frameworks that will establish the responsibilities of all involved stakeholders in the MRV process.

The scope and structure of the report are discussed in the sections 1.1 and 1.2 respectively.

1.1 Scope and Objective

Primarily, the scope and objective of this report is to develop an overarching Institutional Arrangement (IA) that cuts across all the IPCC sectors with recommendations for national reporting systems and design. This overarching Institutional Arrangement is expected to further improve stakeholders' engagements within/across all the sectors and overall, improve the country's ambition towards ensuring transparency and effective reporting regarding National GHG Inventory and mitigation actions.

1.2 Structure of the Report

This report is divided into seven sections; the General Introduction, Identified Needs and Gaps, Sectoral Institutional Arrangements, Coordination and Responsibilities, Overarching Institutional Arrangements, Recommendations for the National Reporting System and Design, and Conclusion.

The five major sections of this report are further highlighted below:

Section 2 gives a snapshot of the identified needs and gaps within the relevant sectors. As identified in the already submitted reports on MRV sectoral review.

Section 3 focuses on the Sectoral Institutional Arrangements. This section highlights the existing and proposed institutional arrangements in the relevant sectors.

Section 4: Provides insight on the sector's coordination and the responsibilities of all the stakeholders across the various levels within the sector.

Section 5: Presents the Overarching Institutional Arrangement. This section harmonizes the institutional arrangements from the various sectors, showing the crosscutting and interactions among the institutions' MRV systems, organizational structure, and the responsibilities of the stakeholders.

Section 6: Provides recommendations from/for the various sectors to improve the National Reporting System and Design.

Chapter Two – Overview of Needs and Gaps Analysis

2.0 Overview

This section is an overview of the needs and gaps analysis as it relates to the existing MRV structure across the focused sectors. The needs and gaps analysis were developed as part of the MRV sectoral review report. Highlighted below in each subsector are the identified gaps, needs, and recommendations based on the MRV sectoral review report, which took cognizance of input from stakeholders in the various sector.

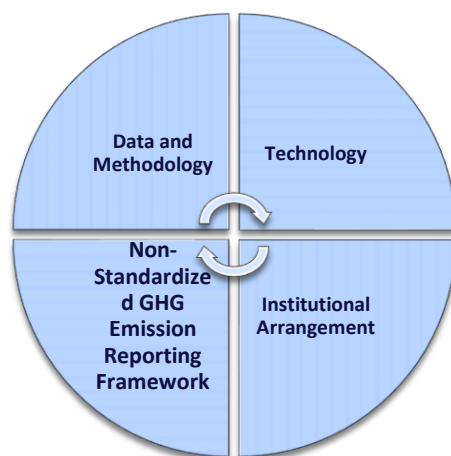
2.1 Oil and Gas Sector

The O&G sector is a major contributor to GHG emissions in the country. Therefore, the ability to effectively assess emissions from this sector, through conducting regular GHG inventories and monitoring mitigation actions in the sector will require the setting-up of an operational MRV system. However, the sector is faced with several identified challenges that, if not addressed appropriately, could hinder the development of a robust MRV system. These challenges include, but are not limited to, the existing methodological tools used for GHG inventory, the use of default emission factors (Tier 1 approach),² gaps in institutional arrangements, and the inability to effectively monitor mitigation outcomes.

There is a need to improve data collection, validation, and verification processes and to ensure that institutional arrangements and responsibilities of all stakeholders are clearly defined. Table 1 below provides a summary of the identified needs and gaps in the sector, which is based on the existing situation. These needs and gaps have been broken down into four separate parts, including data and methodology, technology, institutional arrangements, and the lack of standardization of reporting frameworks (See Figure 1).

² The usage of default emission factors has restricted the sector to the estimation of GHG emissions. This approach is considered insufficient as it does not allow for accurate estimation of emissions from the sector as emissions may be either under- or over-estimated. *The use of Tier 2 approach which allows the use of country specific data is therefore recommended.*

Figure 1: Categorization of the Needs and Gaps



The Table 1 below presents the gaps in the components shown in the above figure while also highlighting the respective actions that are required to be employed to improve the existing situation going forward.

Table 1: Gaps, Needs and Action for O&G sector

Components	Gaps	Needs and Action
1.Data and Methodology	<ul style="list-style-type: none"> • Lack of complete and comprehensive activity data (AD) published by NUPRC, NMDPRA and NNPC. • Challenges in understanding the Methodological Tools used for GHG inventory and emission estimates. • Usage of default emission factors (Tier 1 approach) prevents better estimates for emissions in the oil & gas sector, especially the non-CO₂ GHGs. • Difficulty in the estimation of vented and fugitive emissions, thus creating uncertainty in the quantification of their contribution to global upstream emissions. 	<ul style="list-style-type: none"> • Capacity Development <ul style="list-style-type: none"> ○ It is necessary to ensure all stakeholders understand the sector’s activity data, identify emission sources, assessing climate activities and technology development is urgently needed.
2. Technology	<ul style="list-style-type: none"> • The lack of adequate technology in-country especially for Leak Detection and Repair (LDAR) has prevented the use of the Tier 2 or 3 	<ul style="list-style-type: none"> • More attention needs to be given to the vented emission and fugitive emission

Components	Gaps	Needs and Action
	<p>which would provide a more accurate result than the Tier 1 approach.</p> <ul style="list-style-type: none"> Inadequate Technical expertise: Lack of adequate understanding of methodologies for emission quantification especially for estimating methane emissions. 	<p>considering their contribution towards emission reduction.</p> <ul style="list-style-type: none"> Implementation of the LDAR across the O&G operation in Nigeria. Adequate training on the methodologies and estimation of emissions for capacity building
3. Institutional Arrangement	<ul style="list-style-type: none"> No external entity for QA/QC: the existing MRV system shows that collection and verification of data is all carried out by the NUPRC and NMDPRA. Lack of clarity on type of activity data to be sent to the DCC, the focal point of the Federal Government. Weak or non-existent legal binding framework and poor mandate for adequate resources, particularly the existing mandate of the NUPRC and NMDPRA. 	<ul style="list-style-type: none"> There is need to have an entity (third party verifier) who will be charged with the responsibility of QA An internal team, part of the compilers of the inventory also needs to be charged with QC responsibility for all the data sets that have been submitted to the NUPRC and NMDPRA. A binding document is required like the current memorandum of understanding (MoU) which was the outcome of the ICCC. A legal binding document is required to support the mandate of the NUPRC and NMDPRA as the custodian of data.
4. Non-Standardized GHG Emission Reporting Framework	<ul style="list-style-type: none"> This is due to non-compliance with the directives of NUPRC and NMDPRA that all industry players in the sector must report the following details as a means of demonstrating transparency in reporting. Absence of a country Specific emission factors for estimating GHG emissions in the sector; hence the sector relies on default estimated EF as provided by the IPCC. 	<ul style="list-style-type: none"> Installation of calibrated meters within facilities. Need to build capacity of key indigenous operators on relevance of accurate AD documentation and EF standardization protocol. Knowledgeable consultants should carry out QA/QC for adequate verification. Legal binding framework and mandate is required to enhance

Components	Gaps	Needs and Action
	<ul style="list-style-type: none"> • No third-party verifier for QA/QC • Lack of a Legal Binding Framework for emission data: This is a relevant policy however a missing link between the NUPRC and NMDPRA and relevant stakeholders. • Inconsistencies in the NNPC and NUPRC and NMDPRA Annual Statistical Bulletins, the primary sources of activity data. • Unwillingness of stakeholders to share information or data as such preventing transparency. 	<p>the submission of emission data.</p> <ul style="list-style-type: none"> • Get stakeholders to harmonize data through joint committee to review data. • More awareness on importance of data sharing.

Addressing all identified needs and gaps is critical for the sector and should be considered urgently. This can be achieved through adequate stakeholder engagement and capacity building; and this should cut across all levels of the identified sectoral institutional arrangements. These needs and gaps analysis provided the bridge by which a proposed institutional arrangement for the sector that addresses this gap was developed.

2.2 Road Transport

The Road Transport Sector (RTS) in Nigeria is by far the biggest emitter of GHG emissions in the Transport Sector; accounting for more than 70% of all GHG emissions from the Transport Sector. The high emission rate in the sector has been largely attributed to the movement of people and goods all over the country, predominantly by road. The predominant use of road transportation over all other modes has resulted in environmental problems and a high frequency of road traffic accidents.

The RTS has till date suffered major challenges ranging from the lack of stringent policies and, in cases where the policies exist, poor implementation/monitoring compliance; poor road infrastructure; and the fragmentary state of data due to the absence of federal parastatals fully in control and/or coordinating road transport data activities as it is for the other transport sub-sectors (Nigerian Railway Corporation, Nigerian Ports Authority, or Federal Airports Authority of Nigeria).

Other major challenges that face the RTS include but are not limited to:

- **Institutional Arrangement:** Existing institutional arrangements in the RTS sector are relatively fragmented and not clearly defined. This has, in no small measure, impacted the implementation of mitigation actions.
- **Operations:** Deficiencies and misuse, e.g., disregard for axle load ratings.

- **Finance:** Inadequate funding of new roads, improvements, and maintenance, as well as MRV system requirements. Also, the government is yet to fully unlock private sector potential and participation in the form of well-structured and depoliticized Public Private Partnerships arrangements.
- **MRV Tools:** This is considered a core challenge. Existing tools are yet to be widely deployed and properly understood within the RTS, hence the resultant gap of “no” MRV systems in most, if any, of the road transport sector entities.

The Table 2 below presents a summary of identified gaps and needs within the RTS.

Table 2: Components, Gaps, Needs and Action Required for the RTS

Components	Gaps	Needs and Action Required
1. Institutional Arrangements	<ul style="list-style-type: none"> • Institutional Arrangements for MRV Systems on GHG Inventory, Mitigation Actions and Support for Road Transport Sector is currently non-existent or at best loose and unstructured, both at sectoral and national levels. • Linkages between Road Transport sector stakeholders and the DCC of FMEEnv is yet to be fully consolidated hence even where there are attempts to engage, the outputs are too watery to meet international Reporting standards. 	<p>Institutional Governance</p> <ul style="list-style-type: none"> • Set up cohesive Institutional Governance Structures, supported by appropriate legal and regulatory mechanisms, that will enable them to function well. • Create high volume awareness amongst managerial and workforce of every transport mode, of the importance, relevance, and benefits of MRV System at sectoral, MDAs and National levels as well as private and non-governmental sectors. • Put in place a process to continually document and share lessons of experience on best practices, amongst transport agencies, through exchange of knowledge products and outputs.
2. Data environment	<ul style="list-style-type: none"> • Data Collection, analysis, and archiving, particularly GHG Emissions-related in road transport sector organizations, are extremely poor and data automation level is abysmally low. • Lack of disaggregated data on GHG Emissions directly from Road Transport modes (as transport is already subsumed in energy sector, as a unit or sub-sector), is apparent and this has contributed to loss of direct historical data on GHG Emissions and Inventories in Road transport sector. • Data gathering is extremely limited in scope and context, as GHG Emission-related data are not directly captured as expected. • Absence of comprehensive GHG Emissions-related data, makes it 	<p>Data systems</p> <ul style="list-style-type: none"> • Provide support for setting up data collection and archiving mechanisms (procedures, processes, timelines) for MRV System in Units/Divisions/Departments for Road Transport modes, for sake of credibility, transparency, efficiency, completeness, and effectiveness.

Components	Gaps	Needs and Action Required
	difficult, for emissions reductions quantification.	
3. Technical Expertise	<ul style="list-style-type: none"> Absence of technically – sound and professionally – competent experts on climate change and its related issues (i.e., GHG Emissions estimations/calculations, inventory management, Mitigation Actions, QA/QC etc.) is real in these transport agencies. Non-availability of specifically – tailored, web-based training materials on mitigation of climate change, GHG Emission’ estimations, GHG Inventory and support being sought. 	<p>Capacity Building</p> <ul style="list-style-type: none"> Capacity-Building Efforts (i.e., development of human capacities in technical areas of GHG Emissions’ Data Collection, Analysis, documentation, and archiving, GHG Emission’ estimation/calculations, calculation of Road Transport’s sectoral or modal emission factor; Data Reporting; Use of IPCC 1996, 2006, 2019 Guidelines etc., methodologies and approaches etc., to help in the preparation of GHG Inventories Report, NIIMP, NCs, BURs, etc. correctly, timely and transparently. Specific Training to acquire skills on how to estimate fugitive emissions from transport sector especially from road related fuels combusted in coastal, inland, and deep-sea fishing activities (within national frontiers). Deliberateness in terms of context-sensitive design of MRV System trainings to cater for all levels of involvement and responsibility.
4. Finance	<ul style="list-style-type: none"> Limited financial support to develop and operationalize a Domestic MRV System (Sectoral and National) on a continuous basis; is obvious. 	<p>Climate Finance/Support</p> <ul style="list-style-type: none"> Emplace appropriate mechanism to secure and implement climate finance/support from donors or international climate change bodies.
5. Sectoral Baselines	<ul style="list-style-type: none"> Absence of sectoral baselines for the transport modes, especially rail, navigation/water, and Air is real. 	<p>Baseline Development</p> <ul style="list-style-type: none"> Assist Road Transport modes/Agencies/stakeholders, to set up their respective baselines and appropriate methodologies to serve as lead towards identifying the key categories that are equally influencing the country’s total GHG Emissions in Road Transport Sector (RTS) that are notably recognized by IPCC 2006, 2003, 2000 Good Practices Guidance.
6. Set Target	<ul style="list-style-type: none"> Nigeria has balanced ambitious mitigations economy-wide target, but there is no ambitious mitigation targets-set in Road Transport Sector. 	<p>Define Targets</p> <ul style="list-style-type: none"> Define SMART mitigation targets in Road Transport Sector.
7. Sectoral Emissions Factor	<ul style="list-style-type: none"> Non-existing Nationally Approved, Sectoral Emission factor for Road Transport sector. 	<p>Sectoral Emissions Factor</p> <ul style="list-style-type: none"> Define and publish nationally approved, Road Transport Sector Emission factor.
8. Regulatory Framework and Policies	<ul style="list-style-type: none"> Legal and Regulatory mechanisms, where available, are not cohesive and strong enough for Road Transport institutions, to perform their roles and carry out their responsibilities. 	<p>Regulatory Framework and Policies</p> <ul style="list-style-type: none"> All hands must be on deck to ensure the prompt passage of the Climate Change Bill to establish and strengthen institutional arrangements/governance structure and mainstream climate change into national

Components	Gaps	Needs and Action Required
	<ul style="list-style-type: none"> • Difficulty in monitoring and correlating Government Policies due to improper co-ordination and poor perception or awareness of climate change issues amongst Government officials, in transport agencies; is pervasive. Many policies on GHG emissions are broad in scope and not structured to address direct concerns on Climate Change in Road Transport Sector. 	<p>vision, planning, budgeting, and implementation at sectoral and national levels with a view to:</p> <ul style="list-style-type: none"> ○ Implement climate change plans, strategies, policies, within Enhanced Transparency Framework (ETF). ○ Establish legal mechanism, which will help to operationalize the NDCs' sectoral and national responses to climate change and providing a Tilt or Push towards low-carbon emissions development. ○ Facilitate the establishment and operationalization of MRV Units/Divisions/Departments within RTS operating entities and at the Federal Ministry of Transport (FMoT). ○ Mandate the Federal Ministry of Environment (FMEnv), through the DCC to coordinate all climate change activities at Sectoral, State and National levels and ensuring that a National Registry, where all NAMAs, by both private NGOs and public bodies, are deposited or submitted for further actions. ○ Facilitating the establishment of National Climate Change Council (NCCC) and Nigeria Climate Change Fund (NCCF), both as Enablers to GHG Emissions Reductions and other climate change issues. ○ Giving both general and specific guidelines on setting-up of an entity that will articulate and co-ordinate activities on data-gathering and data-sharing as well as reporting, as and when due.

Considering Table 2 above, it has become imperative that urgent steps be taken to address the challenges of the Nigeria RTS. There is therefore a call for a robust engagement among all the identified sector stakeholders to set up strategies to tackle the challenges facing the sector. To this effect, during this engagement, there is a proposed institutional arrangement that should greatly improve the engagements of stakeholders within the sector.

2.3 Other Transport Sector

The MRV System is about to be set up in Nigeria's OTS Modal Agencies. It will not be out of tune to state that there is no existing formal reporting system or formalized institutional arrangements that really meet the United Nations Framework Convention on Climate Change (UNFCCC) set standards. At best, loose, non-transparent reporting as well as poorly defined IA are the order of the day in OTS Modal Agencies but with the help of literature and responses to questionnaire served, some likely gaps and needs, were identified in both the National Reporting System (NRS) and Overarching Institutional Arrangements, as shown in Table 3 and Table 4 below:

Table 3: Identified Gaps and Needs in OTS National Reporting System

Gaps	Needs
<ul style="list-style-type: none"> Lack of uniform mandatory directive that Reporting under MRV/Transparency arrangement, should cover all information so needed, to understand Nigeria's commitments and track progress towards post-2020 targets (updated NDC). 	<ul style="list-style-type: none"> Emplacement of a permanent, solid Reporting Arrangement with a formal legal contract or MOU to support. Giving Mandates to OTS Modal Agencies to report, periodically on their GHG emissions, mitigation actions and support. Identification and/or Assignment of focal points in each of the OTS Modal Agencies. Specifying roles and responsibilities in each of the OTS Modal agencies and for relevant institutional stakeholders. Continuous Improvements in Capacity Building efforts. (i.e., training, funding, provision of hardware, software etc.) for data gathering, GHG emissions' estimation, etc.).
<ul style="list-style-type: none"> Changes in type and coverage of Targets under UNFCCC -Specified MRV/Transparent Arrangement, necessitate the call for a new Reporting Order under Enhanced Transparency Framework ETF as prescribed by Paris Agreement and Kyoto Protocol, in the post-2020 era. (i.e., NDCs for pre-2020 era) are different from NDCs of post-2020 era; because the latter is more comprehensive in scope, content, coverage, and form. 	<ul style="list-style-type: none"> Allowing changes in reporting requirements for post-2020 era. e.g., modifications to the provisions and guidelines established for current review and assessment processes.
<ul style="list-style-type: none"> Lack of uniformity in accounting approaches/ methodologies used e.g., whilst Annex 1 Parties use 2006 IPCC Guidelines for GHG Inventory compilation; non-Annex 1 Parties use the Revised 1996 IPCC Guidelines. 	<ul style="list-style-type: none"> Provision of technical and financial assistance from international donors, as may be facilitated by UNFCCC Secretariat. Significant investments (in terms of time and other resources).

Table 4: Identified Gaps and Needs in OTS' Institutional Arrangements

Gaps	Needs
<ul style="list-style-type: none"> Absence of necessary legal instruments leads to inadequate Overarching IA. 	<ul style="list-style-type: none"> Emplacement of legal instruments (e.g. MOU, Climate Change Act) and Directives (Presidential or Ministerial) to entrench it; Emplacement of a functional co-ordination framework (revolving around a Single National Entity (SNE) that promotes efficiency in data gathering and information dissemination between and amongst OTS modal agencies and stakeholders.
<ul style="list-style-type: none"> Low level of awareness of roles and responsibilities of data custodians and major stakeholders. 	<ul style="list-style-type: none"> Raise level of awareness and understanding about the roles and responsibilities of stakeholders towards facilitation of National/ Sectoral Reporting.
<ul style="list-style-type: none"> Difficulty in retaining capacity and experts in OTS Modal Agencies (due to transfer, resignations); Lack of Institutional memory due to poor documenting and archiving processes. Slow Pace in understanding the key roles, Overarching Institutional Arrangements must play in meeting UNFCCC Reporting Requirements 	<ul style="list-style-type: none"> Continuous Improvements in Institutional Memory through staff training, retention of trained technical staff and experts, good documenting and archiving processes. Clearly specified roles and responsibilities for OTS modal agencies and relevant stakeholders
<ul style="list-style-type: none"> Difficulty in managing complexities arising from different multiple stakeholders at organizational, sectoral, and national settings, on account of different interests and motives. 	<ul style="list-style-type: none"> Provision of appropriate and timely financial support to sustain fluid communication and good data flow processes to address it.

2.4 Agricultural Sector

The project's outputs are drawn directly from the priorities outlined in Nigeria's NDC and are highly consistent with the requirements of UNFCCC communications, including National Communications (NC) and Biennial Update Reports (BUR)/ Biennial Transparency Report, as well as with other economic and social priorities of Nigeria.

A robust MRV framework for the agricultural sector will closely link to and integrate with other key priority sectors, and therefore lead to a better understanding of the mitigation and adaptation opportunities in the sector, given its important carbon sequestration capacity. With the objective of communicating reliable, transparent, and comprehensive information on GHG emissions, actions, and support, the transparency of climate action and support forms an essential basis for understanding current GHG emissions levels, the ambition of existing efforts, as well as understanding progress on both a national and international scale.

2.4.1 Crop

An integral component of an MRV system is identifying the organization(s) responsible for compiling and managing of the needed data for national reporting. A robust stakeholder consultation was conducted to assess the major gaps and needs within the sector, and this revealed some of the critical issues needing urgent attention if transparency in reporting must be achieved in the sector.

- There are no clear roles and responsibilities of relevant MDAs in the sector for activity data collection, archiving, and processing needed for developing a robust, sustainable MRV system.
- There is also no clear definition of institutional arrangements, data collection methodology and reporting structure, data transfer and sharing.
- We identified small teams with very limited resources and multiple responsibilities, making it difficult to meet the needed data requirements.
- There is difficulty in retaining expertise in priority MDAs relevant to the project (e.g., due to transfers within the civil service system).
- Highly incomplete or non-existent activity data, and lack of experimental data for developing country-specific emission and stock change factors.
- Insufficient documentation and absence of an archiving system from previous inventories.
- There is no QA/QC plan within the relevant MDAs identified as key stakeholders; and there is no defined path/working document to improve future national GHG inventory in the Crop and Livestock sector.
- Lack of support, capacity building and technology transfer to facilitate data collection, reporting, archiving and transfer.

The reasons for lack of support within the MDAs and private sector players were attributed to low visibility of the outputs produced by the GHGI, which generally are of technical and complex nature, and lack of awareness of the benefits that a robust and high-quality inventory can provide for the country. The challenge to increase the visibility of outputs could be addressed through a targeted communication

strategy demonstrating the benefits of the inventory data, as well as related underlying information and data, for various purposes, stakeholders, and audiences.

There is currently no specific finalized legal instrument in form of MoU or DSA between stakeholders in the Crop and Livestock Sector. There is, therefore, no definite legal obligation by any of the key emission sector players or MDAs to collect, process, and share GHG data with the DCC. The coherence within some of these institutions is lacking in terms of harmonization of already existing datasets which are held by individual officers instead of the institutions. This hinders the ability to build robust MRV systems and undermines the sustainability of any MRV data management processes.

The DCC can initiate the process of formalizing relationships between departments and sector partners. The DCC can draft MoUs (using a template) with organizations that collect relevant data; and share with the sector hubs like Federal Ministry of Agriculture and Rural Development (FMARD). The data harmonization process can strengthen all institutions via forward and backward inter-agency linkage and collaborations, knowledge sharing and capacity building.

2.4.2 Livestock

In Nigeria and many other developing nations, livestock GHG emissions make for a major share of overall GHG emissions. Enteric fermentation, manure management, and the deposit of dung and urine on pasture are the main sources of livestock emissions. Data gathering, archiving, monitoring, and reporting are all said to be lacking in the existing IA. The breadth of activity data subcategories has been limited due to a lack of country-specific emission variables, and Tier one level is also being employed. The increased reliance on default datasets allows for bias, divergence from actual national circumstances, and reduced inventory accuracy. Stakeholder engagement found that the sector lacks a robust national MRV framework.

Table 5: Summary of Identified Gaps and Needs in the Crop and Livestock Sector

Components	Key activities, Analysis and Comments	Needs (Activities for Implementation)
Institutional Arrangement	<p>Review of current MRV sectoral circumstance</p> <ul style="list-style-type: none"> • To meet the criteria of the enhanced transparency framework, the sector requires MRV of emissions, mitigation actions and support. • The DCC has built institutional capacity to integrate, coordinate, and monitor sectoral MRV implementation activities to achieve NDC goals. • Sectoral Institutional Framework • No clear roles and responsibilities of relevant MDAs in activity data collection, archiving and processing for developing a robust sustainable MRV system in the sector. • No clear definition of institutional arrangements, data collection methodology and reporting structure, data transfer and sharing. • There is currently no specific finalized legal instrument in form of MoU or data sharing agreements between stakeholders in the Crop and Livestock Sector. There is therefore no definite legal obligation by any of the key emission sectors or MDAs to collect, process, and share GHG data • Small teams with limited resources and multiple responsibilities. • difficulty in retaining expertise (transfers within the civil service system); 	<ul style="list-style-type: none"> • DCC and key stakeholders need to formally agree on what is to be included in the sectoral MRV systems derived from the requirements of the enhanced transparency framework and build the capacity (knowledge transfer) of all relevant staff within the MDAs to ensure adequate awareness and capacity for implementation. • The DCC will work towards developing a functional interagency linkage needed for a robust national MRV system however this cooperation needs to be formalized and institutionalized. The roles of the respective institutions and staff members regarding GHGI and MRV must be clearly defined. • The National MRV Framework (to be developed) to be used as the basis for the crop and livestock sectors' institutional arrangements for the sectoral MRV, but with possible modification. • Appoint specific staff within the DCC and other identified sectoral lead institution, with responsibilities for the coordination and oversight of the sectoral MRV work and build capacity through training as appropriate. Build on ICAT work and training to formalize the roles and responsibilities of lead institutions. • A system must be designed for identifying and tracking climate finance for NDC implementation for the crop and Livestock sector.

Components	Key activities, Analysis and Comments	Needs (Activities for Implementation)
Tools, Data and Capacity Building	<ul style="list-style-type: none"> • GHG data was captured from sectoral data with default IPCC emission factors but there is need to improve quality and completeness of the data for the sector, and to ensure continuity of the process. • Consider how existing data flows, responsibilities and processes could be adjusted and extended to build a system which can collect the required data for tracking NDC and SDG implementation, for the crop and livestock sectors. This step has not been done formally and documented but some considerations have been made at different consultative forums during stakeholder engagement. • The coherence within some of these institutions is lacking in terms of harmonization of already existing datasets which are held by individual officers instead of institutions. This hinders sustainability of the data management processes. • Incomplete or non-existent activity data for some categories, and lack of experimental data for developing country-specific emission and stock change factors. • Insufficient documentation and absence of an archiving system from previous inventories. • No quality assurance and quality control (QA/QC) plan within the relevant MDAs identified as key stakeholders; and no defined path/working document to improve future national GHG inventory in the Crop and Livestock sector. • Lack of support, capacity building and technology transfer to facilitate data collection, reporting, archiving and transfer. 	<ul style="list-style-type: none"> • Review, design and develop a greenhouse gas inventory system covering data capture and sharing, QA/QC, archiving and the coordination of the activities for the crop and livestock sectors that is to be integrated with the national MRV system for GHG inventory. • Formalize existing data capture, sharing and reporting arrangements through data sharing memoranda of understanding (MOUs) between data sharing parties that specify type, format, and frequency of data with clear responsibilities for the sector stakeholders. • Set up QA/QC systems for the crop sector. • In the MRV system for the crop sector, technology transfer and some capacity building to be captured for the actions prioritized in the updated NDC. • Support must be provided at various levels in setting up an efficient and effective robust data collection, archiving and reporting system that is sustainable. These systems must be transparent, accessible, and reliable. • Collaborative research must be commission between the MDAs and research institutes for the development of accepted national emission factors to increase accuracy and reliability of data generated. • Identify how existing data systems can be extended to address MRV data gaps in the crop and livestock sector to include NDC indicators.

2.5 Land Use, Land Use Change and Forestry (LULUCF) Sector

The series of interactive LULUCF stakeholders' engagements provided some insight into the challenges confronting the sector and hampering its maximum contribution towards delivering data for climate action and reporting of such actions as envisaged in Nigeria's Nationally Determined Contributions (NDCs), which constitute parts of the building blocks of the Paris Climate Change Agreement. The following challenges were recorded as the recurring critical issues that were highlighted by the stakeholders:

- Lack of reliable, good quality activity data
- Lack of country specific EFs,
- Ineffective IAs,
- Lack of a fully operational Inventory Management System (IMS) to cater for the steps of compilation.
- Given the constraints in (i-iv), heavy reliance on international databases for Activity Data (AD) estimations leads to adoption of default IPCC EFs while hoping for the development of a robust IMS for sustainable compilation of future GHG inventories.
- Lack of dedicated target-specific capacity building of national experts and critical stakeholders relevant to the set-up of a robust MRV system.

These challenges notwithstanding, the stakeholders were optimistic that the ICAT-Nigeria MRV System project, when completed, would be able to help plug these data gaps as well as build the capacity of national experts for the development of Nigeria's Inventory Management System (IMS) via:

- Plugging of knowledge and capacity gaps in the mining of existing data, and generation of experimental data sets that can be used to derive national emission factors unique to LULUCF components. These can be plugged via robust capacity building and training interventions, equipment procurement, technology transfer and support to help LULUCF sector experts understand the specific types of data needed during data collection, processing, reporting, and archiving.
- Facilitation of the implementation of a robust legal framework to be built into the sectoral MRV as part of a National MRV System to help define roles and responsibilities among the relevant MDAs and reporting structure.
- Development of sector-specific tools for tracking and recording GHG emissions data in the field.
- In the absence of a strong legal framework for data governance, facilitating seamless inter-agency collaboration through the strengthening of the Inter-Ministerial Committee on Climate Change (IMCCC) to ensure an easy flow of information among participating MDAs.

Table 6: Summary of Needs and Gaps Analyses LULUCF Sector

Components	Sector Analysis and Comments	Identified Needs and Recommendation
<p>Inventory and Institutional Arrangement</p>	<p>Sector assessment of current state of play in the LULUCF sector</p> <ul style="list-style-type: none"> Reviewed and mapped existing national MRV processes/systems in the LULUCF sector. A pilot REDD+ activity, implemented in Calabar. The lead agency (DCC) with the mandate of climate action reporting has built capacity to monitor and evaluate national MRV system. Such capacity can be strengthened to increase efficiency within the system. NCs and BURs (BTRs) require sectoral GHG inventories. Data gaps identified in LULUCF sector. Tier 1 estimation applied throughout but needs improvements in data quality. No national MRV has been established but LULUCF sectoral system proposed as part of an overarching national system being developed, and various sectoral measuring and reporting processes exist; some of which feed into the UNFCCC reporting (National Communications and BURs). The GHG inventory process has been an ad hoc process (no sustainable GHG Inventory system) and highly dependent on external support. 	<ul style="list-style-type: none"> Formally agree on what is to be included in the national and sectoral MRV systems based on the identified requirements and train all the relevant staff to ensure adequate awareness and capacity for implementation. Plugging of knowledge and capacity gaps in the mining of existing data, and generation of experimental data sets that can be used to derive national emission factors unique to LULUCF components. This can be plugged via robust capacity building and training interventions, equipment procurement, technology transfer and support to help sector experts understand the specific types of data needed during data collection, processing, reporting, and archiving. Formalize existing data capture, sharing and reporting arrangements through data sharing memoranda of understanding (MOUs) between data sharing parties that specify type, format, and frequency of data with clear responsibilities for the LULUCF sector. Set up sustainable robust QA/QC systems for the LULUCF sector.
	<p>Recommend the establishment of institutional arrangements for the oversight and coordination of MRV activities in the LULUCF sector.</p> <ul style="list-style-type: none"> Through stakeholder input agree on an overall sectoral lead institution for the LULUCF MRV system and define roles and responsibilities of key stakeholders in the system Develop appropriate rules and guidance for the LULUCF MRV 	<ul style="list-style-type: none"> Setup an MRV steering committee for the LULUCF sector. Setup a sectoral framework (to be developed) to be used as the basis for the LULUCF sector institutional framework with possible modification. Build the capacity through training of staff with clearly defined roles and responsibilities for coordination and oversight of the sectoral MRV work. Develop and publish appropriate rules and guidance on data sharing and information

Components	Sector Analysis and Comments	Identified Needs and Recommendation
	<p>system and interagency interaction.</p>	<p>management, clearly defining which data is to be shared, by whom, and how often between various government units and within the sectors, the required QA/QC, with clear instructions to guide various staff involved, and to ensure compliance with international level agreements for the LULUCF sector.</p>
<p>Data and Capacity Building</p>	<p>Assess data gaps and needs for the LULUCF sector.</p> <ul style="list-style-type: none"> • lack of reliable good quality activity data • lack of country specific EFs, • lack of a fully operational Inventory Management System (IMS) to cater for the steps of compilation. • Given the constraints in (i-iv), heavy reliance on international databases for AD estimations leading to adoption of default IPCC EFs while hoping for that the development of a robust IMS for sustainable compilation of future GHGs inventories. • Lack of dedicated target-specific capacity building of national experts and critical stakeholders relevant to the set-up of robust MRV system. 	<ul style="list-style-type: none"> • Design and develop a GHG inventory system covering data capture and sharing, QA/QC, archiving and the coordination of the activities for the LULUCF sector that is to be integrated with the national MRV system for GHG inventory. • Assess and prioritize data gaps, identifying data which are not yet collected, not available, not in the right format or frequency or not of the required quality in the LULUCF sector. Priority to be based on the relative importance for domestic and international reporting. • Develop data collection tools and protocols using sector specific standard approach. • Identify how existing data systems in the MDAs can be improved to address data gaps in LULUCF sector. • Setup of an automated efficient data management system. • Development of sector-specific tools for tracking and recording GHGs emission data in the field. • In the absence of robust legal framework for data governance, facilitation of a seamless inter-agency collaboration via strengthening of the Inter-Ministerial Committee on Climate Change (IMCCC) to ensure easy flow of information among the participating MDAs • Develop and apply guidelines for data verification, audits, quality checks and stakeholder consultations. • Develop and implement a plan for addressing sectoral data gaps.

Chapter Three – Sectoral Institutional Arrangement

3.0 Sectoral Institutional Arrangements

This section provides insight on the developed institutional arrangement for the focused sectors. The institutional arrangement was developed as part of the MRV Sectoral Framework deliverable under the ICAT project. It is important to note that these institutional arrangements were developed with inputs from the relevant stakeholders in the various sector.

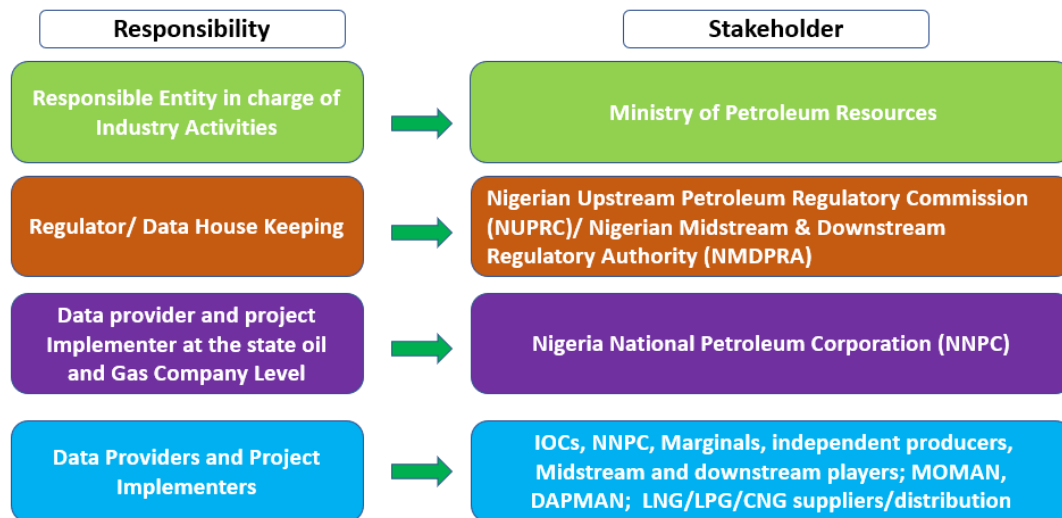
3.1 Oil and Gas Sector

Existing Institutional Arrangement

The identified existing institutional arrangement, as shown below, includes the national focal point, the regulators, and all the sector's players (companies).

- National Focal Point: Federal Ministry of Environment, Department of Climate Change.
- Regulator: NUPRC- Nigerian Upstream Petroleum Regulatory Commission/ NMDPRA- Nigerian Midstream & Downstream Regulatory Authority
- Oil & Gas Companies: Major players that is, NNPC, IOCs, Marginals, and the Independent Producers.

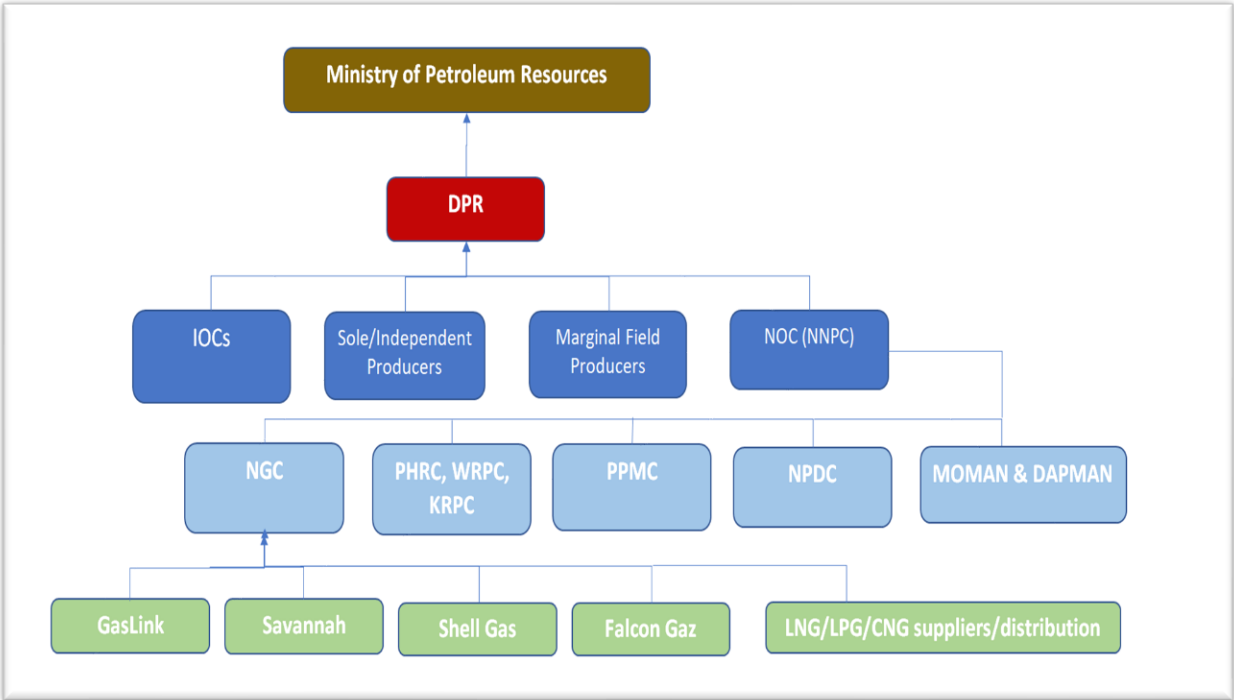
Figure 2: Existing Key Stakeholders and Responsibilities



Source: CLN Analysis

The existing institutional arrangement has the DPR which is now NUPRC and NMDPRA responsible for regulating and management of data within the sector. However, it has been recommended in the proposed institutional arrangement that going forward, the verification of data should be handled by an independent third-party entity who should have the sole responsibility of performing the role of QA. The third-party verifiers should be accredited by the regulators (NUPRC and NMDPRA) and the list should be published on their websites. The Operators (IOC, NOC (NPPC), MFO, Indigenous Operations and services providers should be allowed to select the verifier of their choice to avoid monopoly and conflicts of interest. Also, the verification should be witnessed by the regulators. This will further improve the quality of data that is collected before it is used for inventories and/or archived. It is also mentioned that there should be a mandate that officially obliges the NUPRC and NMDPRA to send collected and independently quality assured and verified data to the DCC, who is the national focal point; and responsible for developing national sectoral inventories while also adequately engaging all stakeholders within the sector.

Figure 3: Overview of the Existing Institutional Arrangement in the O& G Sector



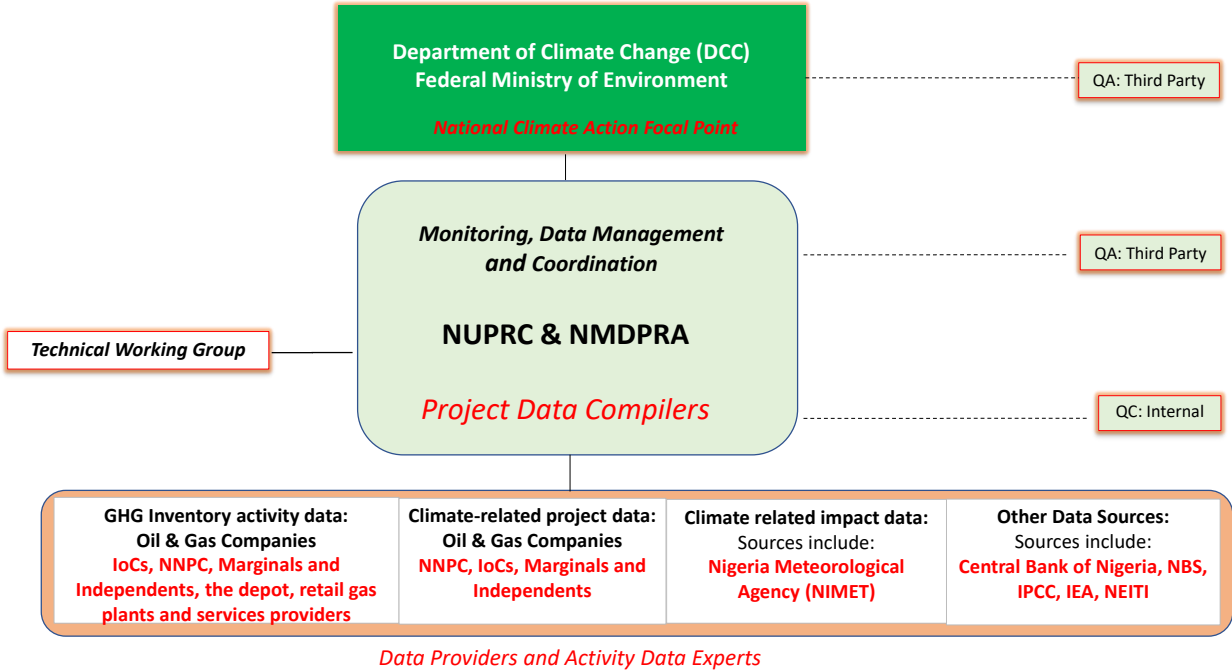
Source: CLN Analysis

Proposed Institutional Arrangement

The proposed institutional arrangements clearly highlight the responsibilities of all identified stakeholders while also reflecting the cross-cutting nature of managing the data gathering processes, analysis, compilation, quality control and assurance, reporting and the data flow and management in the sector.

It is designed to articulate the overarching climate goals and targets and the transparency outputs needed to track them. It will also ensure that all the institutions involved understand how transparency activities interact with their own mandates and other national development priorities. Another important parameter considered in the proposed institutional arrangement is the clarity in communicating data among the relevant stakeholders using legal binding documents to support the role of the custodians of the data and the external entities that would be performing the role of QA.

Figure 4: Proposed Institutional Arrangement for O&G Sector



Source: CLN Analysis

The proposed Institutional Arrangement includes a national focal point, which is the FMEnv, spearheaded by the DCC. The National Steering Committee and the national consultants have a direct relationship with the DCC, serving as the inter-ministerial committee and the Third-party auditor/ climate experts. The sectoral steering committee, external auditors (QA), internal auditors (QC) and data providers and activity data experts individually relates to the NUPRC and the NMDPRA, which assumes the role of GHG Inventory and Project/Mitigation compilers and Monitoring, Data Management, and Coordination before the data finally goes to the DCC.

It should be mentioned that all these institutions are largely in place except for the steering committee at the sectoral level and the QA and QC teams.

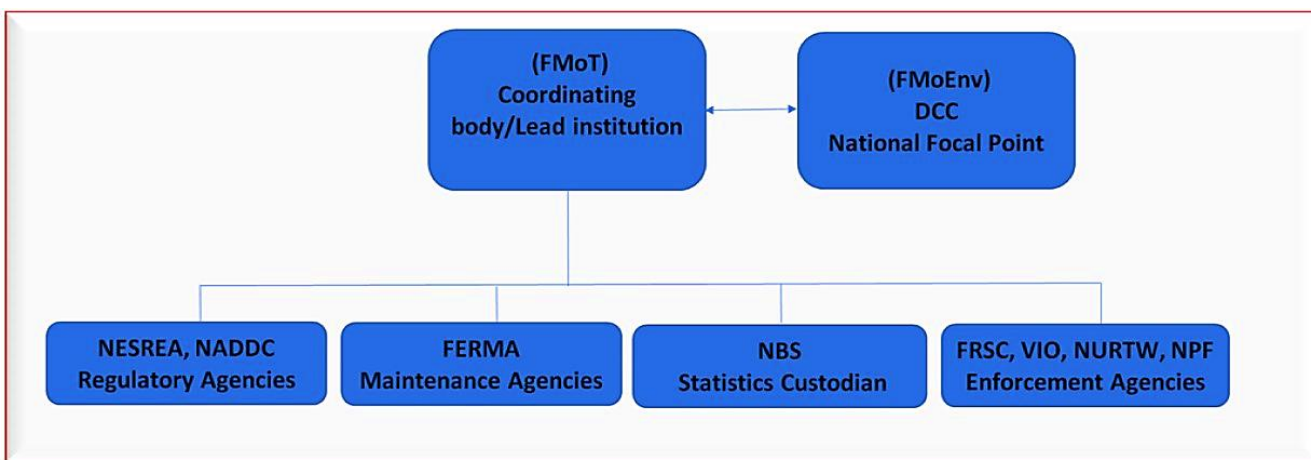
3.2 Road Transport

Existing Institutional Arrangements in Transport Sector

Existing institutional arrangements in the RTS sector is relatively fragmented and not clearly defined. This has, to a great measure, affected the reporting of mitigation actions and GHG inventories.

The Figure 5 below shows the identified existing institutional arrangement in the RTS.

Figure 5: Existing Institutional Arrangements



It is observable, on investigation, that the existing institutional arrangements lack some very key and basic experts who are useful in building a robust system for inventories and mitigation actions reporting. However, the proposed institutional arrangement gives a full representation of what a robust institutional arrangement should be going forward for the RTS.

Proposed Institutional Arrangement

The proposed institutional arrangement is designed to articulate the overarching climate goals, targets and the transparency outputs needed to track them. The structure shows the interaction between the institutions involved in the MRV process. Processes such as data gathering, QA/QC, reporting of mitigation actions and GHG inventories. It is structured to define all the roles and responsibilities of the identified stakeholders and institutions involved while also setting the way for a robust MRV framework for the RTS.

Figure 6 below shows the conceptual design for the Institutional Arrangement, while [Figure 7](#) shows the interactions between the institutions and the identified sector stakeholders. This will also bring clarity in terms of communicating data information within the relevant stakeholders.

Figure 6: Proposed Institutional Arrangement Conceptual Design

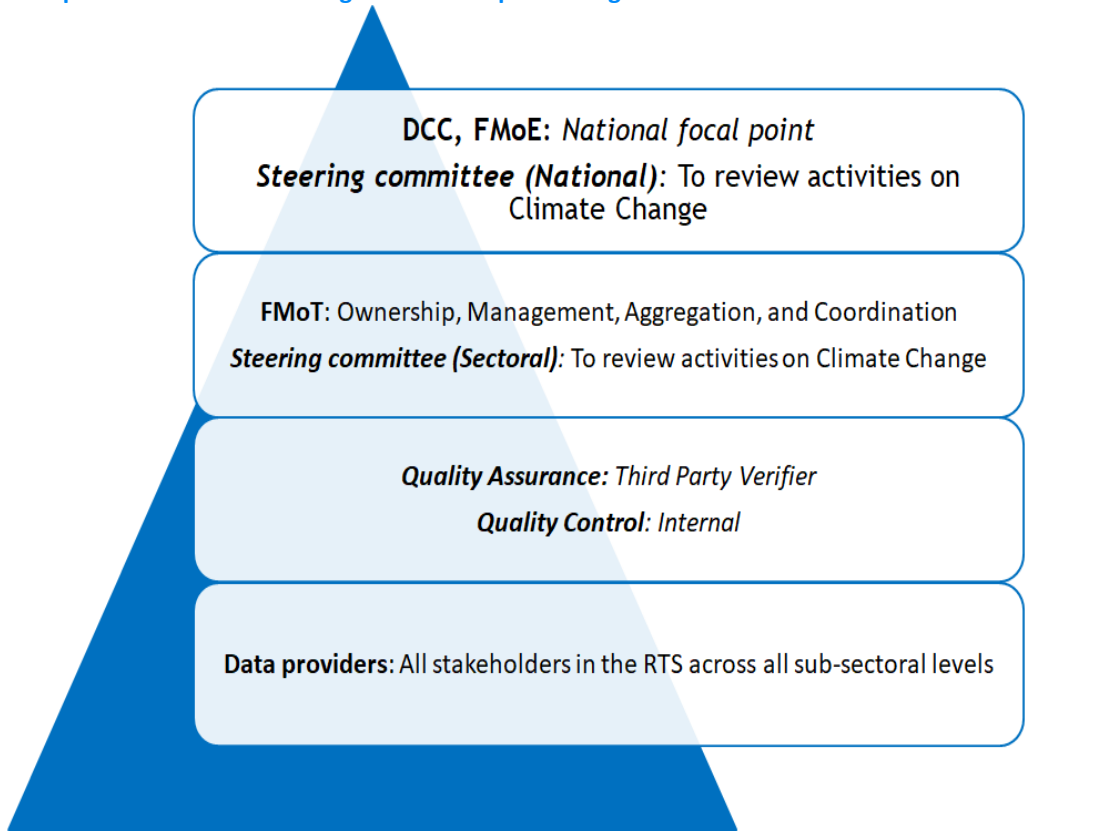


Figure 7: Interactions in Proposed Institutional Arrangement

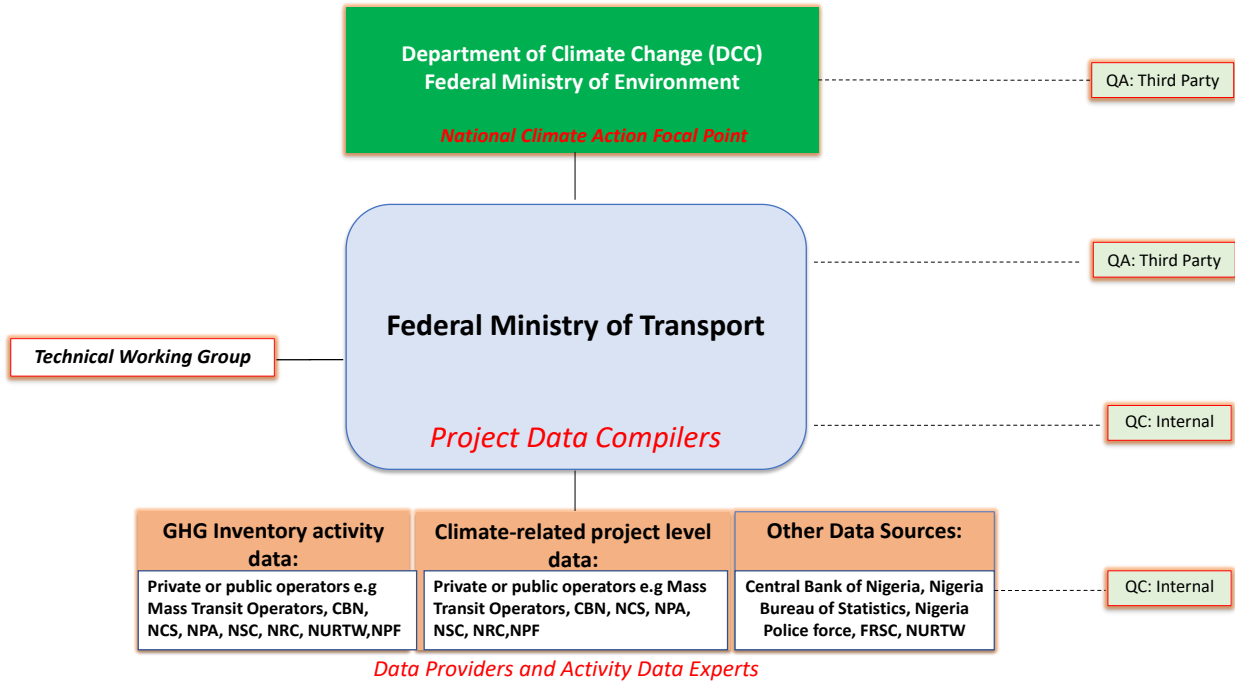


Figure 7 above explains the roles and responsibilities of the stakeholders. The structure shows who the data providers, compilers and coordinators are. It also shows the interactions involved in the process of data collection, verification, validation, and reporting.

3.3 Other Transport Sector

In other transport sector, operation and maintenance departments are responsible for the fuel (energy) utilized by the various vessels, which is critical data for the GHG Inventory. They maintain track of the transport vessels' movements. Staffing and process compliance provide a clear picture of the roles and duties of people responsible for data collecting, gathering, verification, and record keeping.

The Other Transport Sector (OTS) is comprised of these Modes (or sub-sectors) and Institutional/Agencies whose activities are climate change inclined.

Table 7: OTS Institutional/Agencies in Nigeria

Sub-sector (Mode)	Institutional Agencies
<ul style="list-style-type: none"> • Rail 	<ul style="list-style-type: none"> • Nigerian Railway Corporation (NRC).
<ul style="list-style-type: none"> • Water -borne Navigation: • In land Waterways; and • Maritime 	<ul style="list-style-type: none"> • Nigerian Maritime Administration & Safety Agency and NIMASA). • Nigerian Inland Waterways Authority (NIWA). • Nigerian Shippers Council (NSC). • Nigeria Institute of Transport Technology (NITT). • Maritime Academy of Nigeria (MAN).
<ul style="list-style-type: none"> • Aviation 	<ul style="list-style-type: none"> • Nigerian Civil Aviation Authority (NCAA). • Federal Airports Authority of Nigeria (FAAN). • Nigerian Airspace Management Authority of Nigeria (NAMA). • Nigerian Civil Aviation Technology (NCAT). • Nigerian Meteorological Services (NIMET).

These institutions (agencies) are grouped and placed under the supervision and control of two major Federal Ministries; the Federal Ministry of Transport and the Federal Ministry of Aviation (see Figure 8). These two Federal Ministries have overall responsibilities for policy formulation, regulation (i.e., safety and economic), planning and co-ordination for all the agencies under their respective purview or management. These institutions are, in turn, responsible for the implementation of policies, programmes, plans, and projects as set out by their respective supervisory government MDAs.

These agencies are statutorily established to carry out their respective functions but are presently handicapped, as they lack specific organizational mandates (e.g., enabling laws, MOUs, Presidential or ministerial directives, etc.) to:

- Undertake GHG emissions activity data collection, estimations, archiving, etc.
- Undertake sectoral GHG inventory preparation.
- Undertake GHG mitigation actions.

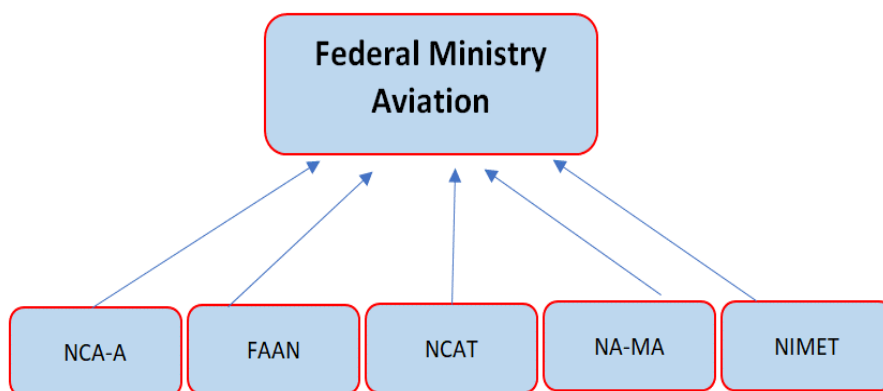
- Undertake sectoral reporting of their climate actions.
- Establish an MRV system (at modal and sectoral levels).

In addition to these two federal ministries, there are other notable federal MDAs that complement the work of the earlier mentioned two. These include the Federal Ministry of Budget and National Planning³, Nigerian Bureau of Statistics⁴; Nigerian National Petroleum Corporation (NNPC)⁵, and the Central Bank of Nigeria (CBN)⁶.

Although OTS modal institutions as well as the supportive institutions have been performing their statutory duties, there is no formal linkage between and among them. Hence, Nigeria’s GHG MRV, namely through a lack of links with the FME_{env} DCC. Lack of institutional connections with the DCC, as well as lack of formal capacity building in climate change data collection, etc. makes it difficult for Nigeria to attract and secure support to implement and mitigation actions that would enable Nigeria to achieve NDC targets in the OTS.

The Figures 8 and 9 below shows the existing IAs in the Aviation and Transport sectors of the OTS

Figure 8: Existing Sectoral Institutional Arrangements in the Aviation Sector of OTS



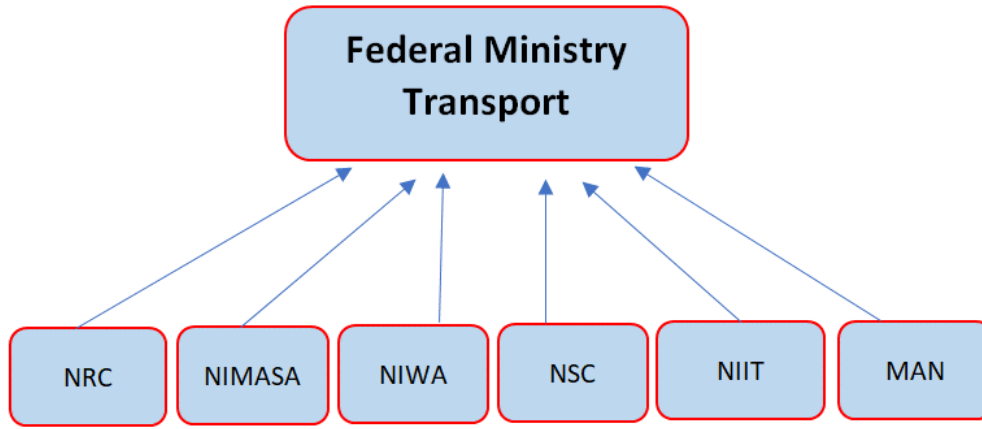
³ FMB&NP – ensures smooth funding of these two ministries and respective agencies through funds allocation in the country

⁴ (NBS – Custodian and provider of national data

⁵ Fuel supply/distribution in the country

⁶ Disbursement of funds so allocated and budgetarily appropriated for projects and programmes in the country, among other activities.

Figure 9: Existing Sectoral Institutional Arrangements in the Transport Sector of OTS



Above diagrams depicts:

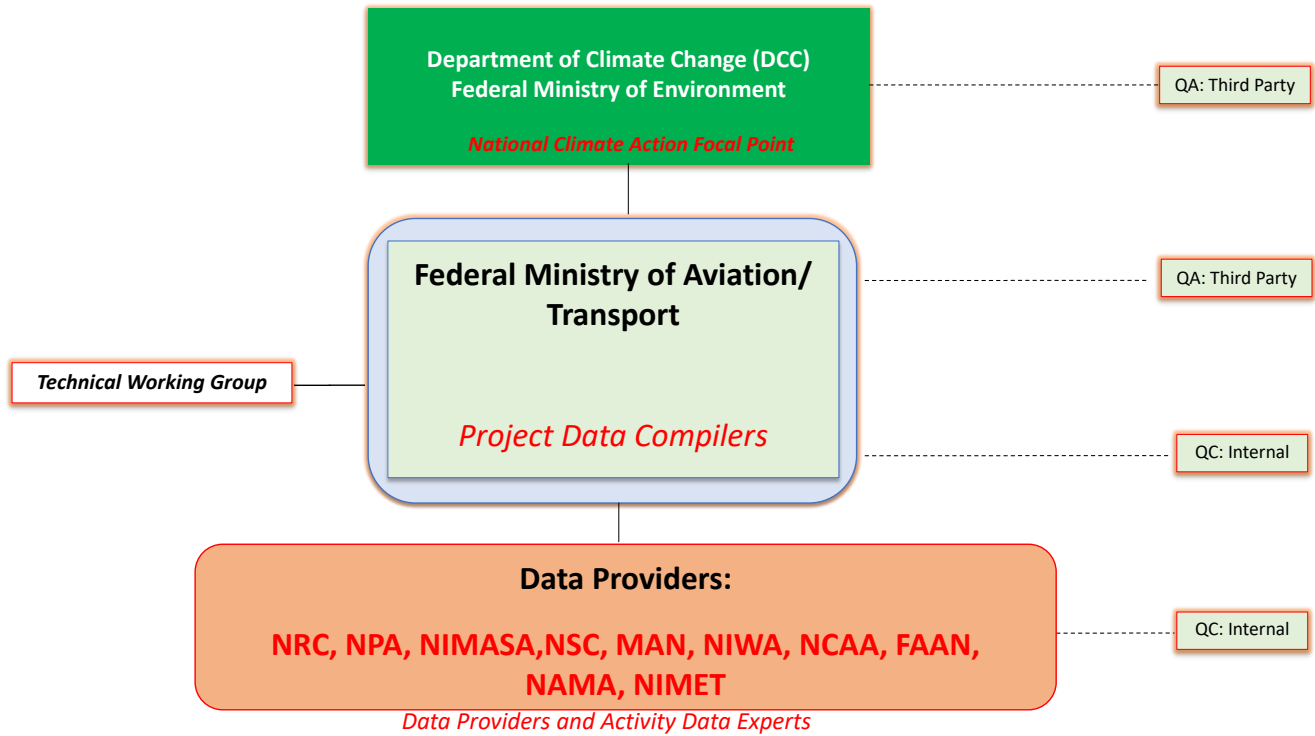
- Absence of linkages with FMEEnv/DCC on climate change issues.
- Absence of linkages between two ministries and amongst these agencies.
- No sign of real involvement in climate issues.

Identified Challenges in Sectoral Institutional Arrangements in OTS

The following are some of the identified challenges in sectoral institutional arrangements:

- Incompatible institutional arrangements, adversely affect sectoral co-ordination and integration.
- Weak or ineffective regulatory mechanisms.
- Weak enforcement of rules and regulations leads to poor Sectoral Co-ordination.
- Differences arising from financial arrangements, create a lot of inconsistencies in plans of each of the OTS modal agencies.
- Poor or ineffective communication.

Figure 10: Proposed Sectoral Institutional Arrangements for OTS



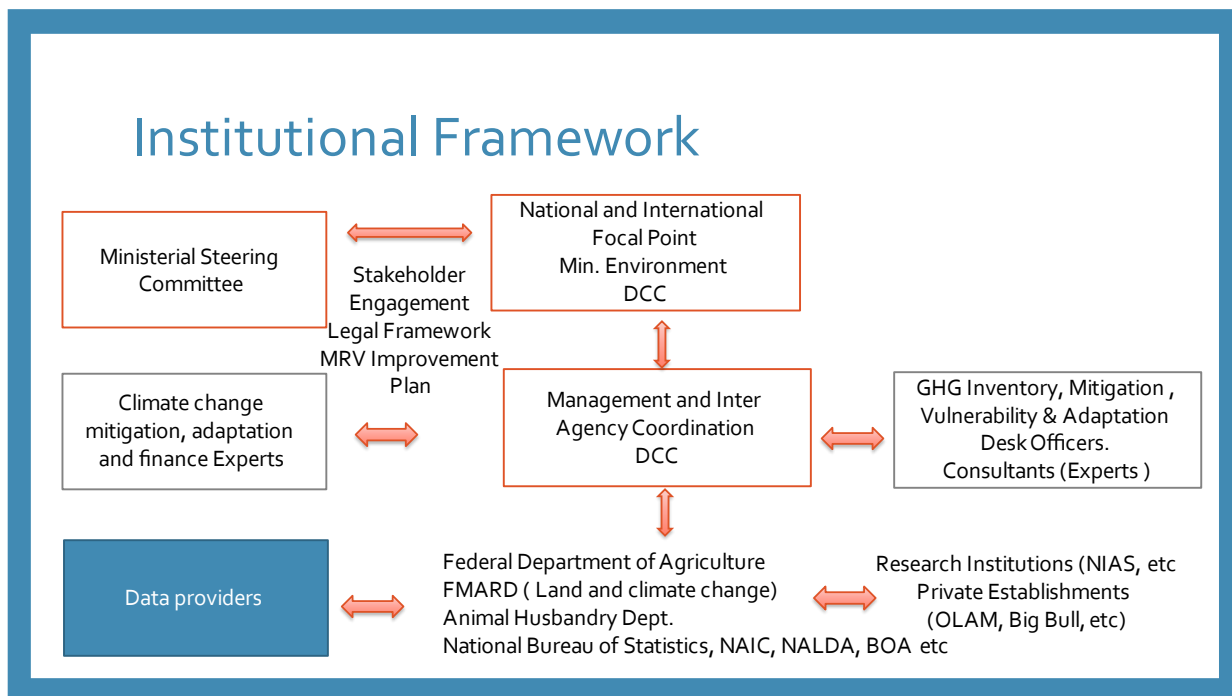
3.4 Agricultural Sector

3.4.1 Crops

Existing Institutional Arrangement

In the crop sector, the existing institutional setup for GHG inventory preparation is exclusively DCC's responsibility to coordinate, administer, and report on the inventory process, with the Federal Ministry of Agriculture and Rural Development providing data as needed. The data utilized in generating recent AFOLU sector inventory reports were sourced from default databases like FAOSTAT, according to previous National Communications (NCs) and Biennial Update Reports (BURs)

Figure 11: Existing Institutional Arrangement



Proposed Institutional Arrangement

The primary goal of clear institutional arrangements is to enable the operationalization of national and sectoral policy to meet climate change objectives, such as quality, transparency, consistency, and efficiency in the collection, analysis, and reporting of GHG data. Additionally, it facilitates the efficient deployment of program resources, such as data processing, quality control, and continuous improvement.

Other issues that affect the inventory cycle include:

- MRV program institutionalization (internal).
- Administrative management responsibilities.
- Program capacities (e.g., system and resources).
- Institutional framework.
- Legislation and regulations (e.g., existing, or new); and,
- Tracking and enforcement.

The institutional arrangement presented above considers the interconnections between organizations that will be engaged in the inputs, compilation processes, and outputs of the GHG inventory. Clarifying the institutional structure will aid in formalizing and communicating the functional roles of the organizations identified throughout the sectoral inventory compilation process.

Numerous actors and stakeholders have been identified who will be involved with and/or interested in the inputs, processes, and outcomes of the GHG inventory. Understanding these actors' and stakeholders' interests, contributions, and involvement aided in the design process and will further ease the construction of a long-term, well-functioning national GHG inventory system.

The proposed IA's organization defines DCC as the process's national focal point, and hence as the entity responsible for facilitating and managing the inventory cycle.

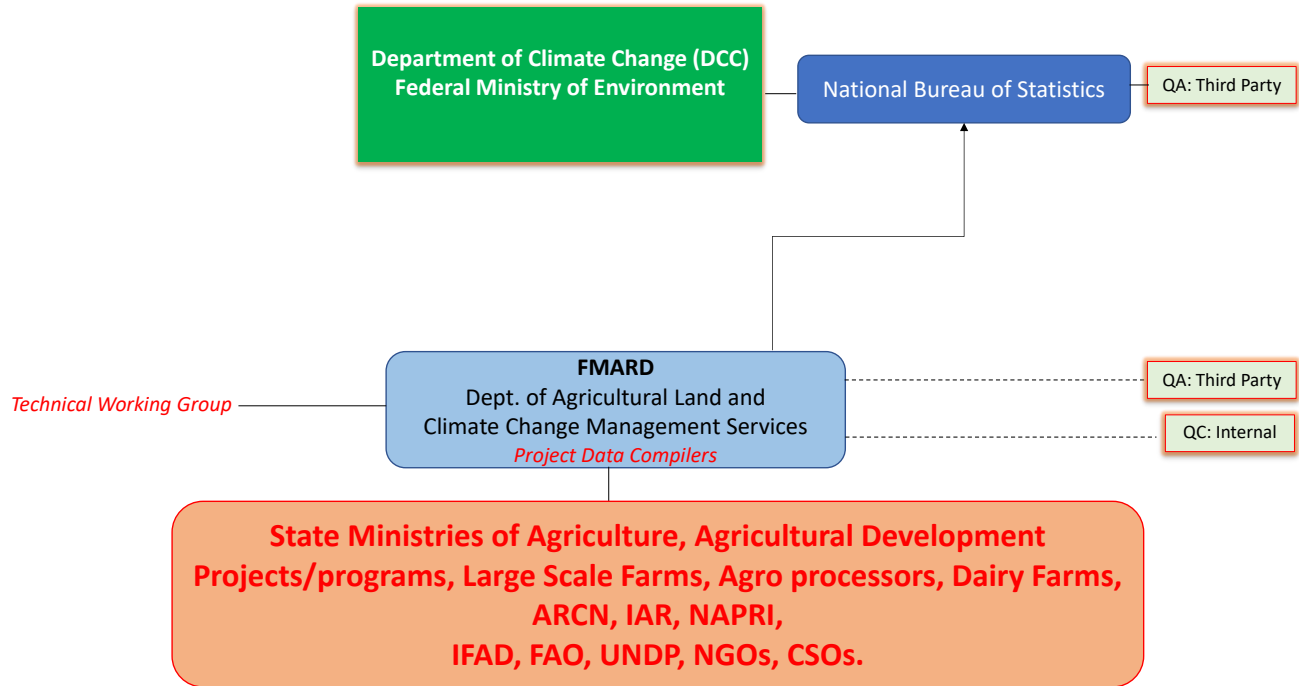
The Ministry of Agriculture's DALCCMS is responsible for coordinating climate change-related efforts throughout the sector. This places them in an advantageous position to coordinate the GHGI process at the sectoral level. Additional agency-to-agency engagement with the NBS will be required at various QA/QC stages of data collection and processing.

The data providers at the base will collaborate to generate, collect, harmonize, and report activity data during the GHGI preparation process by utilizing the Technical Working Group (TWG) platform, which was developed specifically for the sector.

Developing a comprehensive national inventory system requires a well-defined procedure with agreed-upon and adopted roles and responsibilities across the network by key stakeholders and data suppliers.

Figure 12 below shows the proposed IA for the Agricultural Sector.

Figure 12: Institutional Arrangement in Crop Production sub-sector



3.4.2 Livestock

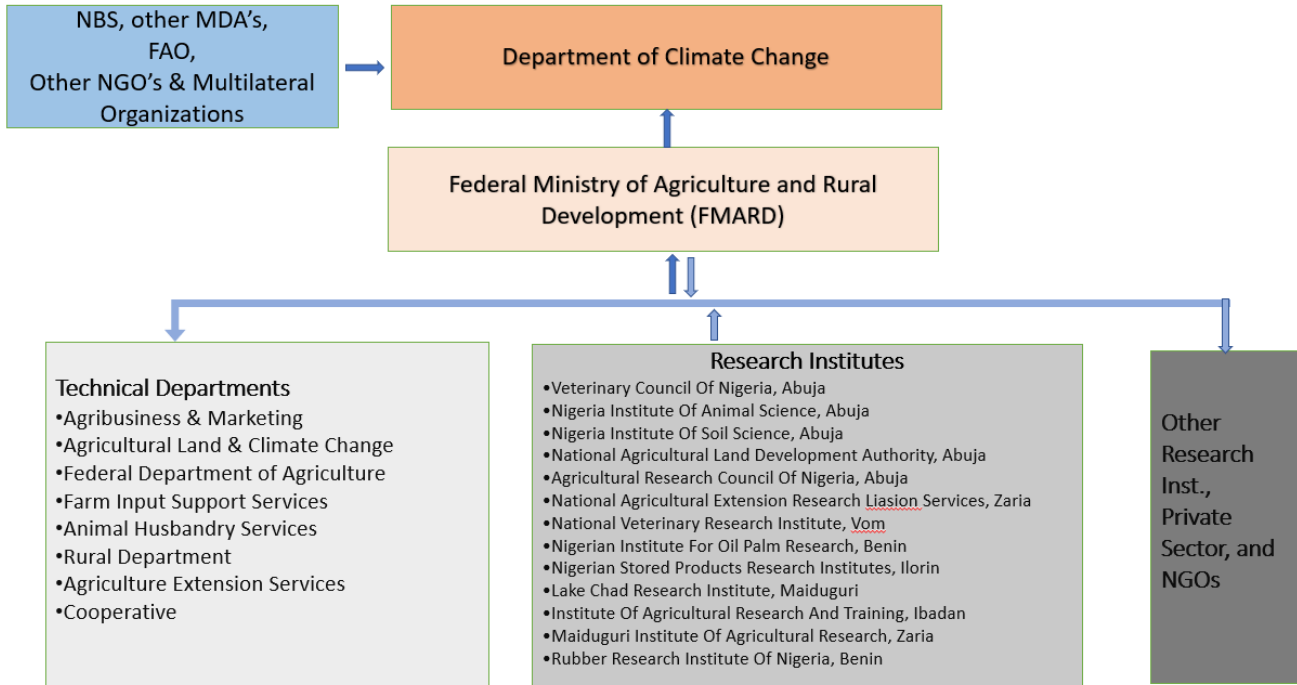
Existing Institutional Arrangement

The livestock sector component of the MRV is structured in a similar manner as in the crop subsector since both operate under FMARD.

The IA below still has the DCC as the national focal point for data collection, processing, reporting and storage while FMARD collects (oversees the collection of) required data and information necessary for calculating the sector's GHG emissions to develop a complete inventory of Nigeria's total GHG emissions. The figure 13 presented below shows the major stakeholders that report to the FMARD which coordinates other agencies and supported projects within the sector.

The current IA has been reported to be weak in data collection, archiving, monitoring, and reporting.

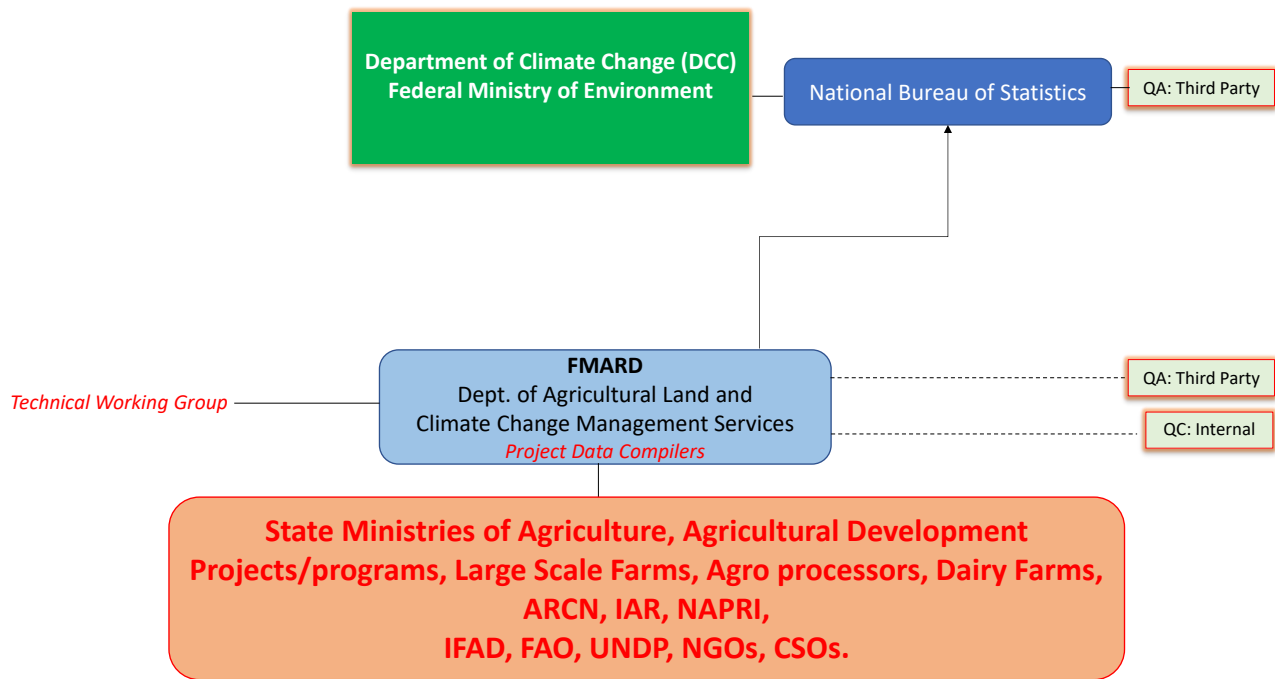
Figure 13: Existing Institutional Arrangement



Proposed Institutional Arrangement

The IA in the Livestock Sector enables the key public and private entities in the sector to collect essential GHG information and data to enable Government to develop and update GHG data and information in the sector to develop robust GHG reporting.

Figure 14: Proposed Institutional Arrangement for Livestock sub-sector



The proposed institutional arrangements in Figure 14 above include the interactions between organizations that will be involved with the GHG inventory inputs, compilation processes, and outputs. Clarifying the structure of institutional arrangements will help to formalize and communicate the functional roles of the identified organizations in the sectoral inventory compilation process.

There are many actors and stakeholders identified that will be involved with and/or interested in GHG inventory inputs, processes, and outputs. Key actors and stakeholder types are presented in Figure 14. Understanding the interests, contributions and involvement of these actors and stakeholders helped in the design process and will further facilitate the establishment of a long-term and well-functioning national GHG inventory system.

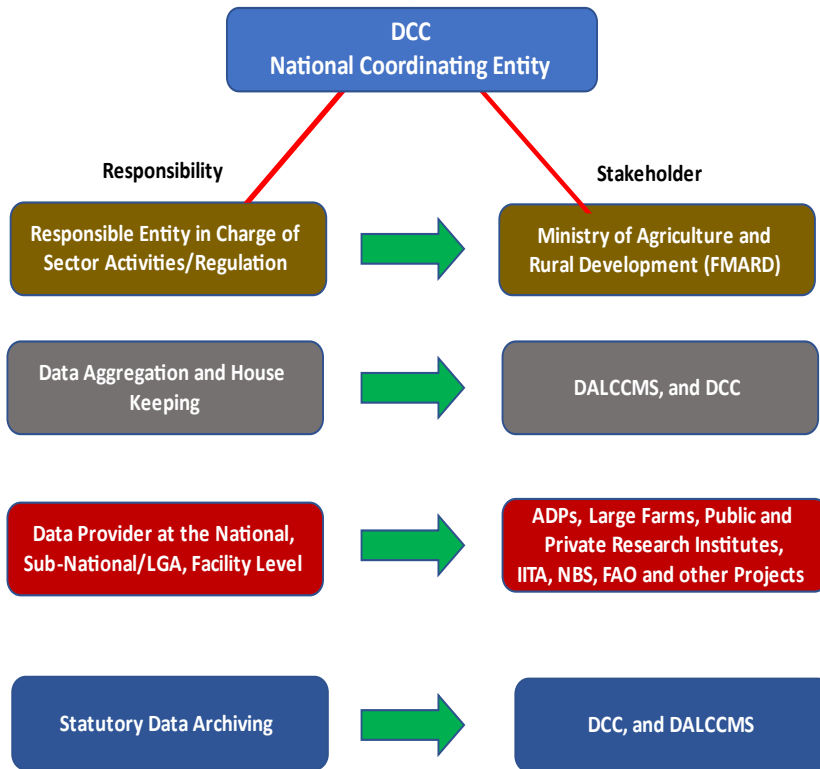
The structure of the proposed IA identifies DCC as the national focal point of the process and therefore plays the coordinating role needed to facilitate and manage the inventory cycle.

The DALCCMS from the ministry of agriculture has the mandate to coordinate climate change related activities within the sector. This rightly positions them to coordinate the GHGI process at the sectoral level. Other inter agency interaction with the NBS will be needed at various QA/QC stages of data collection and processing.

The data providers at the base will work together using the TWG platform, created for the sector, to generate, collect, harmonize, and report activity data during the GHGI preparation.

The figure 15 below further gives clarity on the expected roles and responsibility of the relevant MDAs in the MRV process.

Figure 15: Stakeholders and Responsibilities



3.5 Land Use, Land Use Change and Forestry Sector

Collecting data and utilizing the outputs demands a systematic approach to stakeholder involvement. The greater the level of interaction, the more effective (and helpful) the transparency system will be for evidence-based decision-making and climate change report preparation. Strong stakeholders' engagement ensures that the transparency system reaches a diverse range of stakeholders, including those from national and local governments, the private sector, academia, non-governmental organizations (NGOs), the media, and the public, to ensure that data is gathered from the most reliable and relevant sources and that the outputs inform their climate change decision-making processes. Engagement should include stakeholders who are directly involved in the action's implementation as well as those who give data and advise on how to interpret the data.

The following guiding concepts will lead this Stakeholder Engagement Plan (SEP):

- Sustaining ownership by all relevant stakeholders is critical for operationalizing the LULUCF sectoral MRV framework, which will be accomplished through a multi-stakeholder and consultative information and data gathering process.
- The SEP should foster a culture of information sharing, data sharing, shared obligations, and shared accountability among all stakeholders in the LULUCF sector web, according to their roles.
- Stakeholder engagement will be a continual process requiring follow-up, continuous updates, and frequent progress assessments.
- The SEP's operation should be inclusive and gender sensitive.
- The SEP should guarantee that none of the parties involved in the LULUCF MRV process have a conflict of interest.

The active participation of key stakeholders is required for the LULUCF MRV process to be successful. A formal technical working group will be formed to provide input and act as a QC/QA function for the data collected, the step-down of methodology, and the endorsement of project deliverables. The TWG will bring together representatives from the public and private sectors, academia, and civil society to provide direction and technical expertise on the MRV process.

Letters of Agreement, legally binding contracts outlining the specific operations/sub-activities to be undertaken, will be signed with individual responsible parties, establishing a legal basis for selected government authorities to participate in inventory activities. Additionally, working group meetings, stakeholder workshops, trainings/Training of Trainers, information and promotion campaigns, media, and various networking events (e.g., community forums), as well as internet and Facebook communications/forums, will be used to engage stakeholders.

Stakeholder engagement is an integral part of most policy and planning processes. This is unquestionably true for mitigation and adaptation, given its transversal and cross-sectoral nature. Engaging stakeholders in adaptation procedures is critical because it enables them to learn about climate change, the MRV process, and the importance of climate action and tracking. Participating in the formulation of adaptation plans, as well as climate action plans and projects, contributes to the development of a climate-literate community capable of meeting the demanding challenges posed by climate change to the entire society.

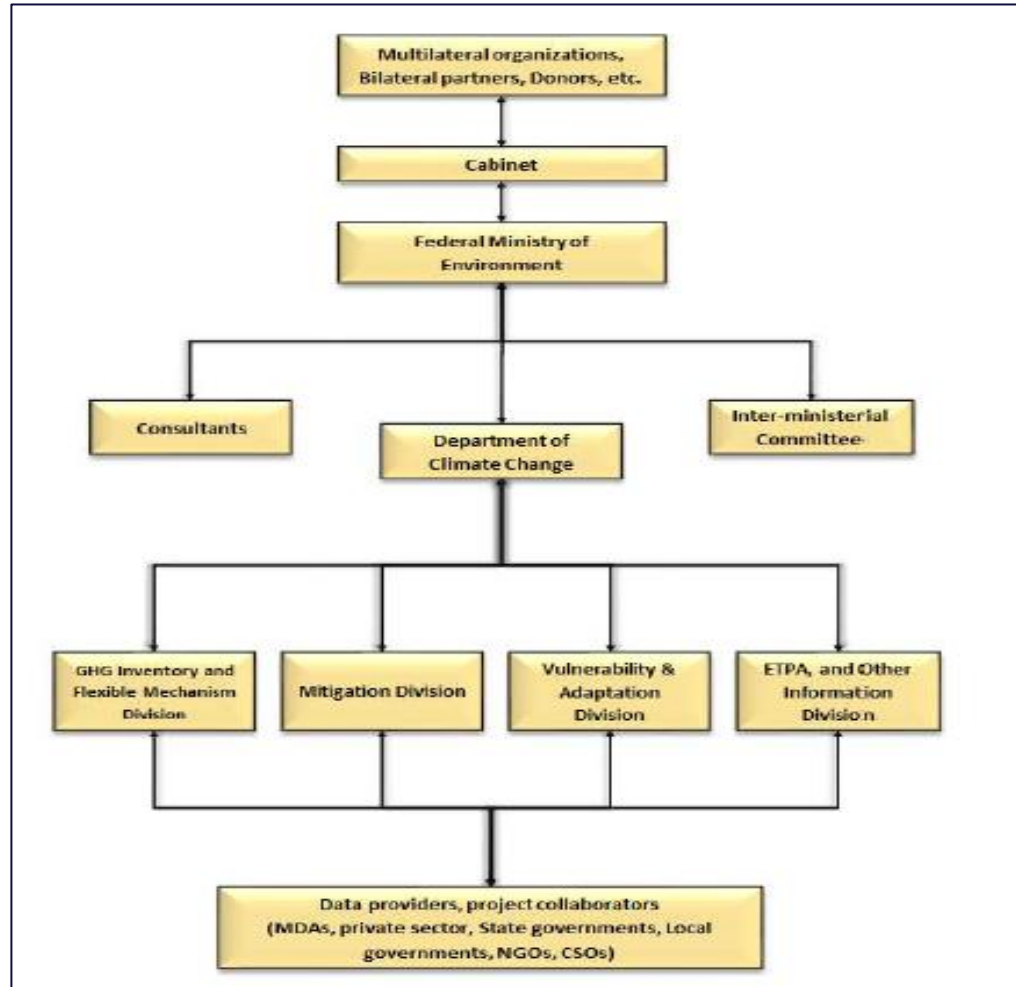
Adaptation is of interest to a broad range of stakeholders, all of whom are expected to contribute to the co-generation of necessary knowledge and decision-making throughout the process. Stakeholder interaction is critical at every stage of adaptation. However, there is a definite need to focus stakeholders' contributions to maximize the value of the engagement process. Participation of stakeholders should be organized and delegated to communication and mediation experts. A well-designed engagement process should prioritize openness, open communication, trust and relationships, unambiguous assignment of duties and responsibilities, and commitment on the part of all participants.

Letters of Agreement, legally binding contracts outlining the specific operations/sub-activities to be undertaken, will be signed with individual responsible parties, establishing a legal basis for selected government authorities to participate in inventory activities. Additionally, working group meetings, stakeholder workshops, trainings/Training of Trainers, information and promotional efforts, media, and various networking events (e.g., community forums), as well as internet and Facebook communications/forums, will be used to engage stakeholders.

Existing Institutional Arrangement

Using an organization chart to describe the structure of institutional arrangements provides a visual representation of the organizational relationships. This provides a generic structure that can be tailored to the unique situations of individual countries. Additionally, an informative organizational structure diagram might include the organization's name and a link to a more extensive table outlining key roles and duties.

Figure 16: Existing Institutional Arrangement



Source: Nigeria's Third National Communication 2020

The Nigerian LULUCF MRV sectoral framework was developed following continuous stakeholder engagement, assessment of various institutions with related mandate, roles, and responsibility. This enabled the team to evaluate various models of institutional arrangements using the subsisting national circumstance, review of the basic requirements and/or pathway for natural data flow and consideration of the appropriate institutional arrangements that fits the emerging enhanced transparency framework and biennial transparency reporting obligations under the Paris Agreement.

Basic Characteristics and Principles

It has been possible to identify some common requirements, characteristics, attributes, and stakeholder expectations by observing the LULUCF MRV system development efforts in other country. These are described below. The LULUCF MRV as part of the National Reporting will be used to:

- Meet international treaty obligations such as UNFCCC
- Support Nigeria's position in the international negotiations
- Provide information for domestic policy
- Provide monitoring capabilities (of emissions and removals)
- Provide the scientific and technical basis to negotiations
- Predict future GHG emissions and removals
- Provide the capacity for credible Reference Emission Level

To improve national Reporting on GHG to UNFCCC

Characteristics of the custodian institution for the LULUCF MRV may include:

- Transparent, including the publication and availability of data, tools, and results
- Able to undertake or supervise QA/QC and peer review
- Has capacity to outsource
- Stable and reliable with long term future in government
- Capable of compiling and finalizing LULUCF MRV outputs to standards and in formats as required
- Can support the Verification and Validation of the outputs by UNFCCC auditors and others
- Can manage the continual improvement of the system

Attributes of the host institution for the LULUCF MRV may include that it:

- Be an institution with ability to coordinate the development and updating of national reporting
- Be an institution with a credible governance structure
- Government and non-government stakeholders will have confidence.
- Be competent and credible, with the capacity to respond to the needs of global funding mechanisms
- Should have capacity to work with centers of expertise and specialization

Other Key Stakeholder Expectation:

- Government expects stability, reliability, robustness, policy and political relevance, cost effectiveness
- International community expects consistency, transparency, familiarity, and good practice
- Individuals may require accessibility, use of current technology and of good science

Taken in combination these principles and characteristics provided a means to assess the suitability for roles and responsibilities of the candidate institutions considered in the development of the institutional arrangement. It should be noted that at the time of preparing this report, there is no existing structure/framework put in place for the LULUCF sectoral MRV system in a clear, concise, and deliberate form. As observed from other country reports, the focus has been on only the forest and forest resources and consequently forest related agencies take the lead but most times overlooking the requirements for all lands and pools to be evaluated in the national

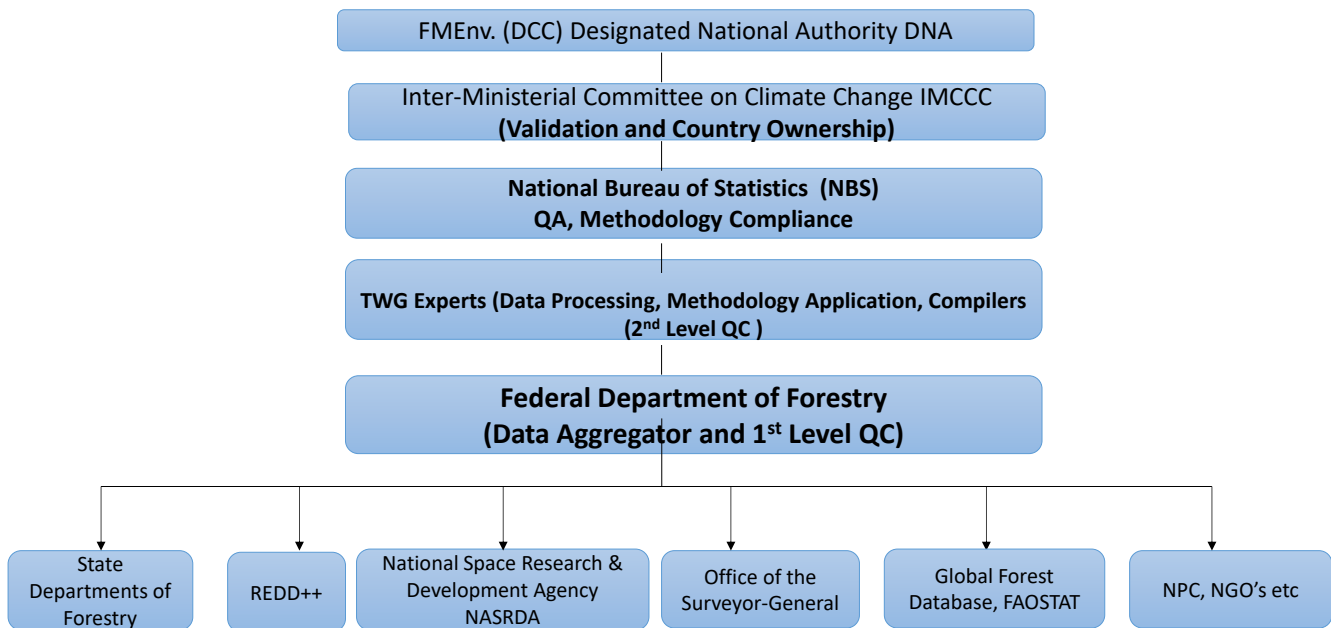
accounts. The team working on the sectoral framework is familiar with the requirements and on that understanding is proposing an institutional setup to provide a starting point for discussion among the identified key stakeholders and address in the first instance the key role of the Federal Department of Forestry and other related institutions.

It is a truism that everything rises and falls on leadership. The same can be extrapolated to MRV system setup and implementation: MRV implementation at all levels rises and falls on institutional framework. In this context, institutional framework represents the political, administrative, and technical leadership. The presence of a robust institutional framework is a key requirement for effective implementation of MRV system at every level of MRV interrogation, especially in a developing country like Nigeria.

Proposed Institutional Arrangement

For effective implementation of a robust MRV regime for the LULUCF in Nigeria in the post-Paris Agreement era, the following schematic represents the proposed institutional framework.

Figure 17: Proposed Institutional Arrangement



Structure, Form and Functionality

The proposed institutional framework mimics an “inverted T” or “Reverse Waterfall” which is strategic from a project management perspective to enable optimization of the use of resources and time as well as mainstream efficiency and effectiveness in implementation. The lean, simple structural design can be visualized as a “Reverse Waterfall” under the influence of a capillary force sucking the water (raw data) up from the pool (data collectors) at the base to the UNFCCC at the apex. Between the data collectors at the base and UNFCCC at the top are carefully selected entities calibrated into a vertical column with each step of responsibility and duty reinforcing the next steps with a view to address pre-existing structural challenges and gaps holistically and sustainably in the MRV governance and climate data management ecosystem by deploying project management best practices, conventions, and techniques that are considered the industry standard.

The “Inverted T” or “Reverse Waterfall” structure of the institutional arrangement encapsulate an inbuilt analytical approach that will be deployed for the planning, execution, monitoring, reporting and verification as well as sustainability of this MRV system setup project. The Logical Framework Approach [LFA] which could be seen below refined into a standard comprehensive 4x4 (16) Logical Framework Matrix will help in designing and planning data gathering and quality control templates that cover in-depth problem (cause and effect), stakeholder, objectives, and strategies [alternatives] analyses.

Before the design of this proposed institutional arrangement intervention, there was structured analyses of the existing situation and state of play (status quo), stakeholders relevant to addressing the issues, objectives of our proposed project interventions and strategies as well as alternatives to addressing structural challenges, plugging statistical gaps, and reducing reputational deficits associated with Nigeria’s climate change data management ecosystem.

All of these pointed to the need for a simple, mutually-reinforcing, design that flows horizontally at the base to capture data which is then sucked up vertically to be aggregated by the Department of Forestry of the FMEnv who maintains an active, kinetic interface with both the data providers under and national LULUCF experts above them.

After the aggregation of the data sets, the process moves up a notch where the national LULUCF experts start dimensioning and processing the data using the approved methodologies and templates. This happens while they maintain active, kinetic interface with the NBS above and Department of Forestry below them. The existence of an active, seamless interface means kinetic interactions and inputs of contiguous institutions are achieved leading to improved outcomes as the process moves up towards the UNFCCC.

After the dimensioning and processing phase, the datasets move up a notch for quality control which the NBS has the responsibility to deliver with the assistance of the National LULUCF Experts below and TWG above them.

After the QA duty of the NBS, the process advances to the TWG for quality assurance after which it moves up to the Inter-Ministerial Committee on Climate Change (IMCCC) which serves to interrogate the datasets and then adopts the Draft National MRV Report after being satisfied that it captures all the country’s climate change dimensions and dynamics. The adopted Final National MRV Report moves up to the next step where the FMEnv



via the DCC as National Focal Point takes possession of it and deploys its internal mechanism to align and/or improve the report after which the DCC submits Nigeria's National MRV Report to the UNFCCC and if required, the DCC will defend the Report on behalf of Nigeria with support of the Department of Forestry, National LULUCF Experts and the TWG as may be necessary.

Chapter Four – Coordination and Responsibilities

4.0 Overview

This section of the report focuses on how MRV system should be coordinated across the various sectors and the key responsibilities of the stakeholders in the respective sectors.

4.1 Oil and Gas Sector

In the oil and gas sector, coordination begins at the corporate level, as corporations are the key data sources. Currently, there is no explicit regulation requiring the sector to provide climate-related data. It is worth mentioning, however, that the sector's overall coordination is vested in the Ministry of Petroleum Resources (MPR) via the NUPRC and NMDPRA. The NUPRC and NMDPRA are responsible for the sector's key tasks, including monitoring, data administration and coordination, as well as GHG inventories and project/mitigation compilers. The NUPRC and NMDPRA's mandates enable it to act as the primary custodian of all industry data because it operates a National Data Repository (NDR). The repository acts as a data collection hub for the sector and a platform for the timely reporting of all sector data, as well as a digital platform for the NUPRC and NMDPRA, facilitating contact between the government and all industry actors. A Sectoral Steering Committee on Climate Change is required to facilitate effective collaboration and improve the quality of data in the sector. This committee will be comprised of representatives from the NUPRC and NMDPRA, the sector's businesses, and other agencies such as NOSREA and NESREA. The goal is to set up a good quality control process, especially for data that has been gathered, and to make the MRV process run more smoothly.

Focal Points: The DCC under the FMEnv is the focal point for the sector. The DCC is the main point of contact between the federal government and the rest of the world when it comes to coordinating activities that help the country follow the Kyoto Protocol and the Paris Agreement on climate change.

Stakeholders: Stakeholders within the sector are tasked with various roles and responsibilities. However, the Ministry of Petroleum Resources, through the NUPRC and NMDPRA; and the NNPC, are the sector's major aggregators of necessary climate data.

The Ministry of Petroleum Resources, which performs oversight functions, was established to develop and implement sound policies that would serve as a backbone for the then-burgeoning O&G sector's rapid development. It is responsible for the articulation, implementation, and regulation of policies in the sector. The MPR exercises a supervisory role over all stakeholders to ensure compliance with all applicable laws and regulations in the sector. It should be stressed that all responsibilities of the MPR are performed through the NUPRC and NMDPRA.

The NUPRC and NMDPRA act as the sector's regulatory agencies; and are mandated to make periodic declarations on the sector's production status. It obtains, collates, and pronounces the status of the sector.

It has the statutory responsibility to monitor compliance with all the sector's laws, regulations, and guidelines. These include monitoring of operations at drilling sites, producing wells, production platforms and flow stations, crude oil export terminals, refineries, storage depots, pump stations, retail outlets, and any other locations

where petroleum is either stored or sold, as well as all pipelines carrying crude oil, natural gas, and petroleum products. However, as it relates to MRV processes, the NUPRC and NMDPRA perform the following activities:

- Monitoring the Petroleum Industry operations to ensure compliance with national goals and aspirations to reduce gas flaring and ensure other gas obligations.
- Maintaining records on petroleum industry operations.
- Data reconciliation (measurement at well ends), which is usually carried out with companies, and calibrations are properly carried out by third party verifiers.
- Also, the NUPRC and NMDPRA carry out the annual reconciliation of volumes and tracking of oil spill volumes. This is done with all parties involved during reconciliation.
- NUPRC and NMDPRA are involved in the reconciliation of records of gas production, flare gas, and routine / operational flare volumes. This is done for the downstream records as well.

On the other hand, the NNPC's focus is on the optimal, efficient, and transparent management of the government's business interests in the sector. It stands as a corporate organization and an operator, representing the interest of the Nigeria's government in all the contractual arrangements in the industry with the International Oil Companies (IOCs). The corporation is responsible for providing data on emissions sources from the refineries and acts as a project implementer. NNPC, through its Renewable Energy Division (NNPC-RED), manages and screens mitigation projects within the upstream, midstream, and downstream aspects of the sector for Clean Development Mechanism opportunities and Carbon credits.

Other stakeholders in the sector includes:

- International Oil Companies (IOCs)
- National Oil Companies (NNPC)⁷
- Marginal Field Producers
- Independent Producers

Data Providers

All stakeholders across the value chain are considered data providers and are expected to report all data to the NUPRC and NMDPRA, who store all collected data through the NDR. As a side note, it's important to say that before data is stored in the NDR, there should be a process that allows a third-party verifier to check that all of the data reported and submitted is in line with international best practices

⁷ NOCs represent the state-owned oil companies such as NNPC and its Subsidiaries and those in partnership with the National company in a joint venture agreement.

Below Table 8 shows the list of the data providers in the sector:

Table 8: List of Data Providers in Oil and Gas Companies

S/N	Categories	Examples	Remarks
1	International Oil Companies (IoCs)	Chevron, Exxon Mobil, Shell, TOTAL etc.	Mostly are Joint Ventures with NNPC
2	Indigenous Companies	Seplat Petroleum, Newcross Exploration & Production, Neconde, Eroton Exploration and Production etc.	Mostly are joint venture with NNPC
3	Marginal Field Companies	Midwestern, Platform Petroleum, Energia, Corus etc.	Usually Profit-Sharing Contract (PSC) companies
4	Independent Companies	Folawiyo Petroleum, Lekoil, Aiteo	Mostly sole risk companies
5	NNPC Subsidiaries	Nigerian Petroleum Development Company (NPDC), Nigeria Gas Company (NGC), Pipeline and Petroleum Marketing Company (PPMC), Refineries (Kaduna, Warri, and Port Harcourt)	These are business units and subsidiaries of NNPC
6	Midstream and Downstream Operators	MOMAN, DAPMAN	Considered with all operations in the Midstream and Downstream

4.2 Road Transport

While there are several institutions in the RTS that should coordinate both GHG inventories and reporting of mitigation actions, oversight coordination and leadership of the RTS should be performed by the FMoT. The FMoT has the sole responsibility for supervision of parastatals and MDAs such as the Nigerian Airspace Management Agency (NAMA), Federal Airports Authority of Nigeria (FAAN), Nigerian Civil Aviation Authority (NCAA), Nigerian Maritime Administration and Safety Agency (NIMASA), Nigerian Railway Corporation (NRC), Nigerian Ports Authority (NPA), Nigerian Shippers' Council (NSC), and National Inland Waterways Authority (NIWA), amongst others. However, other stakeholder groups and agencies that by mandate should be involved in the coordination and leadership processes include the National Environmental Standards and Regulations Enforcement Agency (NESREA), the National Automotive Design and Development Council (NADDC), the Federal Ministry of Works (FMoW), the Federal Road Safety Commission (FRSC), and the National Union of Road Transport Workers (NURTW).

Focal Points: According to the institutional arrangements, the national focal point for the sector is the DCC, which is under the FMEnv.

Stakeholders: Sector Stakeholders include institutions and individuals that have financial, coordination, regulatory, operating, and/or reporting responsibilities and/or influence on the RTS.

- Governmental MDAs such as FMEnv, FMoT, FMoFB&NP, FMoW&H, CBN, NBS, Department of Petroleum Resources (DPR) now Nigerian Upstream Petroleum Regulatory Commission (NUPRC) and Nigerian Midstream and Downstream Petroleum Regulatory Authority (NMDPRA), Petroleum

Equalization Fund (PEF), the bicameral National Assembly (NASS), Nigeria Customs Service (NCS), etc.

- Non-Governmental Aid/Multilateral such as ICAT, United Nations Development Programmes (UNDP), etc.
- Governmental Sector-specific:
 - Road: FRSC, NESREA, Directorate of Road Traffic Service (DRTS, more commonly known as VIO), National Automotive Design and Development Council (NADDC), Nigerian Institute of Transport Technology (NITT), etc.
- Non-governmental (heavy road use operations) private sector players include the Dangote Group, the BUA Group, the Nigerian Association of Road Transport Owners (NARTO), the National Union of Road Transport Workers (NURTW), the Road Transport Employers Association of Nigeria (RTEAN), the Female Drivers Association of Nigeria (FEDAN), and others.

Data Providers: In the RTS, data providers include all stakeholders at all levels of government (local, state, and national). It is expected that stakeholders who implement mitigation actions or GHG inventories will report their data to the FMoT. Reporting of data to the FMoT will enhance data management and coordination. Data to be sent must have duly undergone the QA/QC processes.

Major data sources and custodians for the sector include the FMoT, NBS, the Motor Licensing Authorities of the State Ministries of Finance, the Nigerian Union of Road Transport Workers (NURTW), and the operators of mass transit, including luxury buses, fuel tankers, and trailers. The Nigeria Police Force and the FRSC are also the sole sources of road accident statistics.

4.3 Other Transport Sector

Co-ordination and Responsibilities

Co-ordination, in a multiple setting of different interests, motives, visions, missions; organizational mandates, is essential for climate MRV. Co-ordination is required to facilitate a seamless flow of data and information, cohesion, and integration in the sector. Where good coordination is present in any IA, all responsibilities can be easily understood, shared, and monitored to ensure accurate outputs are collated and aggregated.

These ingredients must be present for responsibilities to be properly carried out:

- A focal point; (to be identified first and appointed).
- Terms of Reference detailing the scope of the assignment.
- Technical competence of the focal point.
- Enabling environment to facilitate performance with the provision of necessary resources.

There are different types of Focal Point:

National Focal points (NFP): This is the national government body responsible for liaising with and reporting to the UNFCCC Secretariat, other international stakeholders. The National Focal Point provides the national framework (i.e., policies, guidelines, regulations, legislation, etc.) on climate change in Nigeria and is responsible

for communicating climate information and actions to the international community. It is tasked with the responsibility of coordinating and obtaining GHG emissions related data from all sectors (including OTS) in Nigeria and undertaking the preparation and submission of a Periodic National Report on Climate Matters to UNFCCC.

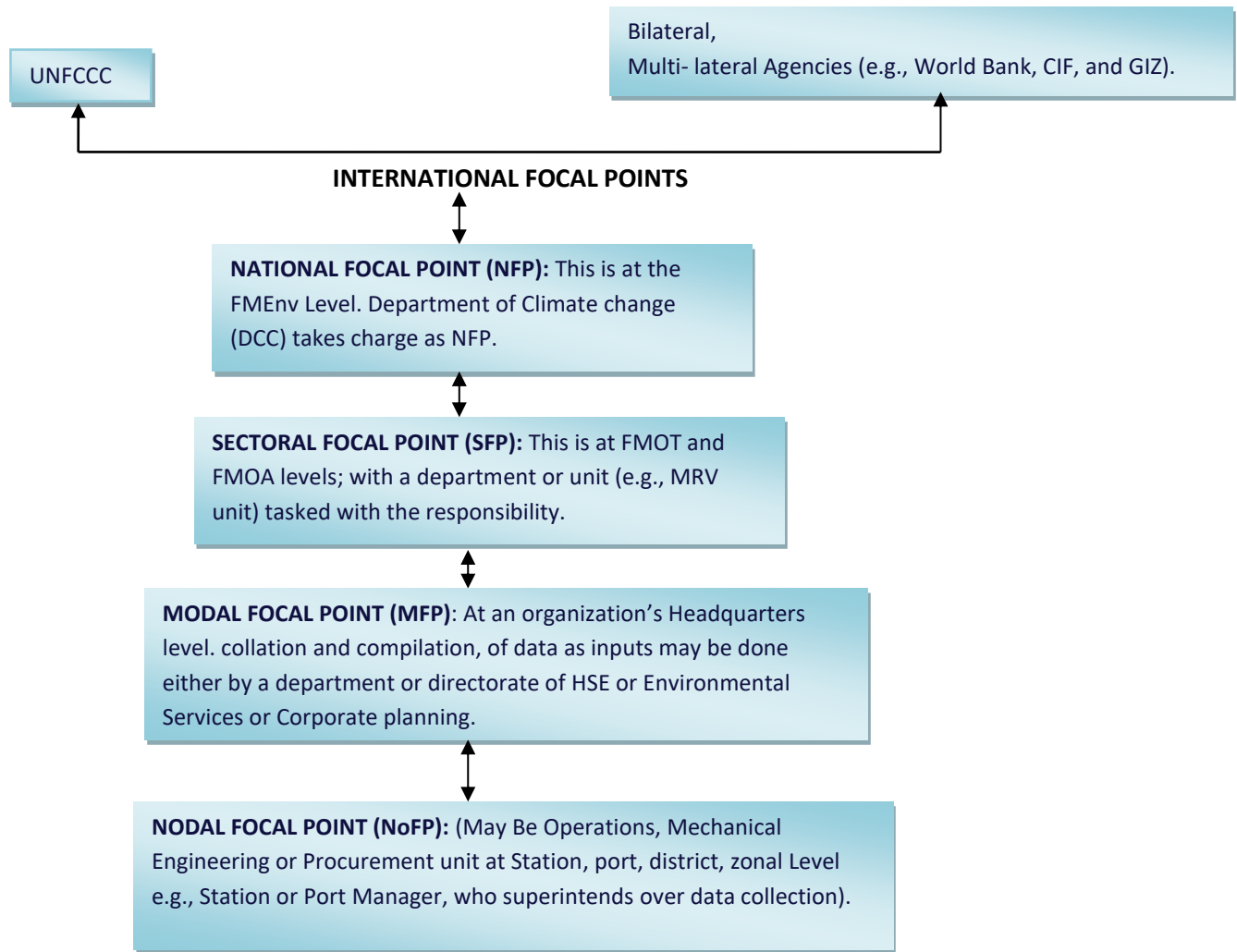
Sectoral Focal Point (SFP): The Sectoral Focal Points (SFPs) in OTS Nigeria are both the Federal Ministries of Transport (FMOT) and Federal Ministry of Aviation (FMOA), as they respectively collect GHG emission-related data, which serve as basis for preparation of National Communications (NCs) and Biennial Update Reports (BURs), with GHG Inventory being an input into these National Reports.

Modal Focal Point (MFP): This is a department, or a senior official designated in any of the OTS modal agencies (e.g., NRC, NPA, NIMASA, etc.) that is directly handling the aggregation of all relevant GHG emission-related data.

International Focal Point (IFP): The International Focal Point currently provides external assistance (technical and financial) on climate change and transport policy. e.g., bilateral, or multi-lateral institutions such as UNFCCC (technical assistance) and World Bank (financial support). For instance, some international bodies aid in area of training to local stakeholders (internal and external) on the matter of carbon finance e.g., Climate Investment Fund (CIF) on Transport. GIZ (German Technical Co-operation) provides technical assistance and project implementation support on transport and climate change. JICA (Japan International Co-operation Agency) also provides technical and financial assistance on climate action.

Nodal Focal Point (NoFP): This is the grassroots or primary source of the GHG emission related data (i.e., rail stations, seaports, airports, and terminals). This is the point where raw activity data is generated and when collected, is sent to the Modal Focal Point (MFP), through their respective Departments or Directorates for analysis and for their compilation, on standardized templates, and for onward dispatch to the Sectoral Focal Point (SFP).

Figure 18: A simple Illustrative Diagram Showing Different Stages of Focal Point in OTS



4.3.1 Rail Transport

Focal Points: The Focal points in the Railway sub-sector include:

- Sectoral Focal Point: Federal Ministry of Transport (FMoT)
- Modal Focal Point:
 - NRC's Corporate Planning Department, Health, Safety, & Environment Division
 - The Management Team
- Nodal Focal Points:
 - All operational Railway stations nationwide
 - All Fuel dispensing depot stations are nationwide
 - All District Superintendents, in all the seven Districts of NRC
 - All the District Mechanical/Electrical Engineers in all the seven Districts of NRC
 - All the District Procurement Officers in all the seven Districts of NRC

Stakeholders: The Stakeholders in the Rail Transport in Nigeria are:

- National Assembly (The House of Representatives and the Senate Committee on Rail Transport)
- Customers (i.e., passengers and freighters)
- Rail Governing Board
- Employees
- Management Team
- In-House Unions; (Nigerian Union of Railway men and Senior Staff Association)
- Government Officials (e.g., FMoT, FMEnv)
- Suppliers; (e.g., fuel suppliers, MOM, IOM)
- Funders (e.g., Federal Ministry of Budget and National Planning, Central Bank of Nigeria, and International Donors).
- Non-Governmental Organizations (e.g., Environmentalists).
- Academic Institutions (e.g., NITT, Research Centres, Universities, etc.)
- Local communities.
- ICRC (Infrastructure Concession Regulatory Commission).

Data Providers: The Data Providers in Rail Transport in Nigeria are:

- Fuel suppliers (e.g., NNPC, Independent and Major Oil Marketers).
- Procurement Department.
- Operations Department.
- Mechanical / Electrical Engineering Department.
- Corporate Planning Department / HSE unit.
- Nigerian Bureau of Statistics (NBS).

4.3.2 Maritime / Shipping

Focal Points

The Focal Points for the Maritime /Shipping Transport sub-sector in Nigeria are:

- Sectoral Focal Point (SFP): Federal Ministry of Transport.
- Modal Focal Points (MFP):
 - NPA: Health, Safety and Environment Division, under Directorate of Marine & Operations. (Pollution Control Unit).
 - NIMASA: Marine Environment Management Department, which has Marine pollution and control unit under its care.
 - NSC: Strategic Planning & Research Department.
 - NIWA: Research, Planning and Environment Department, which has Pollution Control Unit under its care.

- Nodal Focal Points (NFP):
 - NPA: All the six seaport Managers at Lagos Ports Complex, Tin Can Island Port Complex, Rivers Port Complex, Delta Port, Calabar Port and Onne Port (Collecting and compiling data from Procurement, Operations units/sections at each Port.)
 - NIMASA: All the principal operations stations in Apapa (Lagos), Warri, Sapele, Port Harcourt, Onne, Bonny, Yenagoa, Eket, Calabar, Lokoja and Abuja.
 - NSC: All the sixteen Area offices in all six geo-political zones of Nigeria.
 - NIWA: All the 22 (twenty-two) Area Managers located across the country.

Stakeholders: The Stakeholders in Maritime/Shipping Transport in Nigeria are:

- The National Assembly (i.e., House of Representatives and the House of Senate Committee on Maritime Transport).
- The Customers of each of these Organizations.
- The Ships, Vessels, Ferries, Boats, etc. Owners; (e.g., Nigerian Ship owners Association - NSC)
- The Government Institutions (i.e., FMoT, FMEnv, FMB&NP, CBN, Federal Ministry of Trade, Industry and Investments);
- The Academia, Research Institutions.
- Local Communities in coastal and riverine areas.
- The Governing Councils/ Boards of these institutions.
- The Employees of these institutions.
- The Management Team of these institutions.
- The In-house Unions.
- The Nigeria Chambers of Shipping (NCS).
- The Merchant Seafarers Association of Nigeria (MSAN).
- Stevedoring Firms/Terminal Operators.
- Importers and Exporters.
- Financial Institutions.
- Council for Regulation of Freight Forwarding in Nigeria.
- Nigerian Ports Consultative Council (NPCC).
- Private Service Providers (Boats, Ferries, Tourism, Recreational services providers).
- NGOs.
- ICRC (Infrastructure Concession Regulatory Commission).

Data Providers: The Data providers In Maritime Industry in Nigeria are, but not limited to:

- Shipping Companies (Indigenous and Foreign).
- Ships/ Vessels Operation.
- Fuel Suppliers (i.e., NNPC, Major and independent Oil companies).
- Nigerian Bureau of Statistics (NBS).
- NPA: Operations, Procurement Units at respective stations, ports are officers.
- NIMASA: Operations, Procurement Units at respective stations, ports are officers.
- NIWA: Operations, Procurement Units at respective stations, ports are officers.
- NAMA: Operations, Procurement Units at respective stations, ports are officers.

4.3.3 Aviation

Focal Points: The focal Points in Aviation sector in Nigeria are:

- Sectoral Focal Point (SFP): Federal Ministry of Aviation (FMOA).
- Modal Focal Points (MFP):
 - a. FAAN: Environment services dept under the Directorate of Airport Operations
 - b. NAMA: Directorate of Operations/Department of Air Traffic Control Operations
 - c. NCAA: Directorate of Operations and Training
 - d. NiMET: Climate Services Department under Directorate of Water Forecasting Services
- Nodal Focal Points (NFP):
 - a. FAAN: All Airport Managers in the 20 Airports country
 - b. NAMA: All Airspace Managers in all the Airports (Local and International) Airports in Nigeria
 - c. NCAA: All Regional offices located in Lagos, Kano, Port Harcourt, and Kaduna
 - d. NiMET: All its offices located in Nigeria Airports in Yola, Maiduguri, Calabar, Benin Airport, Kaduna International Airport, Mallam Aminu Kano Airport Kano, Musa Yar' Adua Airport Katsina, Ilorin International Airport, Ilorin.

Stakeholders: These include but not limited to:

- The National Assembly (House of Representatives and the House of Senate on Aviation)
- Government Institutions (e.g., Federal Ministry of Aviation, Federal Ministry of Environment, Federal Ministry of Budget & National, Planning; Central Bank of Nigeria, Federal Ministry of Internal Affairs Federal Ministry of External Affairs)
- Airline Operators (Indigenous and Foreign)
- Fuel Suppliers /Markets (NNPC; Major & Independent Oil Markets)
- Navigation Service Providers.
- Airport Cargo Handling Firms.
- Customers (i.e., Passengers)

- Financial Institutions (Local and Foreign)
- Nigerian Bureau of Statistics NBS
- Academia, Universities
- Governing Councils of FAAN, NAMA, NCAA, NiMET, NCAT
- Employees of FAAN, NAMA, NCAA, NiMET, NCAT
- Management Team of FAAN, NAMA, NCAA, NiMET, NCAT
- In House Unions of FAAN, NAMA, NCAA, NiMET, NCAT
- Local Communities in all Airports and Aerodromes in Nigeria
- NGOs
- Media: Both Print and Electronic media in Nigeria.
- Nigerian Customs Service
- Nigerian Immigration Service

Data Providers: These include but not limited to:

- Nigerian Bureau of Statistics (NBS)
- NiMET (Nigerian Metrological Agency)
- Fuel Marketers (NNPC; Major & Independent Markets)
- All Operating Airlines
- FAAN: Operations, Procurement Units at respective Airports Area/ Zonal Officers
- NAMA: Operations, Procurement Units at respective Airports Area/ Zonal Officers
- NCAA: Operations, Procurement Units at respective Airports Area/ Zonal Officers

Other national institutions active in other transport sector are universities and research institutes, resource partners, civil society and the private sector also play a key role in the process.

4.4 Agricultural Sector

The sectoral framework for the GHG inventory system provides a list of all stakeholders to be engaged in the GHG inventory compilation. It identifies the stakeholders' roles, proposes details of their engagement with the GHG inventory activities, and provides an essential reference point for the coordination of future engagement activities.

4.4.1 Crops

Focal Point: The sectoral stakeholder mapping identified the DCC and DALCCMS as the main focal points for the inventory process in the sector due to their existing mandate, capacity, and skills.

Department of Climate Change (DCC): The current IA has the DCC as the lead national agency responsible for implementing and reporting climate action.

Department of Agricultural Land and Climate Change Management Services (DALCCMS) is the focal department responsible for climate change mitigation and adaptation activities within the FMARD. They have

received basic capacity building on GHG inventory preparation, the nature of activity data needed and the reporting requirements of the sector. Engaging the department to take the lead.

Stakeholders: Key stakeholders were identified during the stakeholders mapping that will play pivotal roles during the inventory process, such as the NBS in the data QA/QC process. Of importance are stakeholders, which include State Ministries of Agriculture, Departments of Agriculture at the Local Government Areas, Agricultural Development Programs (project offices in the states), Development partners (FAO, World Bank, UNDP etc.), NGOs, CSOs, and other non-state actors.

Data Providers: The following organizations will play a key role in providing the needed activity data for the inventory process:

The Agricultural Development Project is designed to complement the key priority projects of FMARD at the subnational level through stepping down interventions in the sector, robust extension services, and capacity building of farmers. This role enables them to interface directly with project beneficiaries and enhance quality data collection, processing, and reporting for various donor funded projects.

State Ministries of Agriculture: The state ministries of agriculture coordinate the implementation of agricultural policies and projects at the state level and is a large repository of activity data at the subnational level. They will be a major source of real time data and other resources needed for the inventory process.

Departments of Agriculture at the Local Government Areas: The LGA's step down agricultural projects and policies at the micro level and having a direct impact on the beneficiaries. This direct interfacing with actual data sources positions them for quality data aggregation and processing. The capacity of the LGA staff needs to be developed on the kind of data needed, documentation method, and archiving process for onward transmission when requested.

Other Key Departments in FMARD include Agribusiness & Marketing, Federal Department of Agriculture, Farm Input Support Services, Animal Husbandry Services, Rural Department, and Agriculture Extension Services

National Bureau of Statistics is the main National Agency responsible for the development and management of official statistics, the authoritative source and custodian of official statistics in Nigeria. Through the publication of annual bulletins, quality data can be provided for the inventory process.

Development Partners such as the FAO, UNDP, World Bank, etc., also provide quality activity data through publications that serve to complement country level data. The FAOSTAT database is also a rich source of data for the sector during inventory preparation.

NGOs: these are independent organizations carrying out research in the agricultural space and provide quality data through various publications accessible through their websites or other channels. These data sources compliment national reports while also providing insight on identified gaps and needs for inventory improvement plans.

CSOs: a critical group in the inventory preparation process that plays a key role in data report validation and disseminating GHG inventory report details to the local communities. This approach increases ownership of the inventory report recommendations at the community level.

4.4.2 Livestock

Focal Points: Due to their current mandate, capability, and expertise, the sectoral stakeholder mapping highlighted the DCC and DALCCMS as the primary focal points for the inventory process in the sector.

Department of Climate Change (DCC): The DCC is designated as the key National Agency responsible for executing and reporting on climate action in the current IA.

The Department of Agricultural Land and Climate Change Management Services (DALCCMS) serves as the focal point for FMARD's climate change mitigation and adaptation operations. They have received basic capacity building in the preparation of GHG inventories, the sort of activity data required, and the sector's reporting requirements. Recruiting the department to take the initiative

Stakeholders: Other critical stakeholders were identified throughout the stakeholder mapping process, including the National Bureau of Standards, which would play a critical role in the inventory process, such as the NBS in the data QA/AC process.

Other stakeholders include state agriculture ministries, local government agriculture departments, agricultural development programs (state-level project offices), development partners (FAO, World Bank, UNDP, etc.), NGOs, CSOs, and other non-state entities.

Other national institutions, universities and research institutes, resource partners, civic society, and the commercial sector all play a critical role in the process.

Providers of Data: The following organizations will be critical in providing the inventory process with the necessary activity data.

The Agricultural Development Project is intended to complement FMARD's core priority initiatives at the subnational level by reducing sectoral interventions, strengthening extension services, and strengthening farmer capacity. This position allows them to communicate directly with project beneficiaries and to improve the quality of data collection, processing, and reporting for a variety of donor-funded programs.

Agriculture Ministries of State: State Agriculture Ministries coordinate the implementation of agricultural policies and initiatives at the state level and serve as a huge collection of subnational activity data. They will be a significant source of real-time data and other inventory-related resources.

Agriculture Departments in Local Government Areas: The LGAs scale agricultural initiatives and policies down to the micro level, directly benefiting the recipients. This direct connection to data sources enables them to do high-quality data aggregation and processing. The capacity of the LGA staff in terms of the type of data required, the method of documentation, and the archiving mechanism for onward transmission when asked must be developed.

Additional key FMARD departments include Agribusiness and Marketing, the Federal Department of Agriculture, Farm Input Support Services, Animal Husbandry Services, the Rural Department, and Agriculture Extension Services.

The National Bureau of Statistics is the primary national agency charged with the generation and management of official statistics in Nigeria, serving as the authoritative source and custodian of official statistics. Annual bulletins can be used to offer quality data for the inventory process.

Additionally, development partners such as the FAO, UNDP, and the World Bank contribute high-quality activity data through publications that supplement country-level statistics. Additionally, the FAOSTAT database provides a wealth of information for the sector's inventory preparation.

NGOs: these are non-profit groups that do agricultural research and disseminate high-quality data via their websites or other methods. These data sources supplement national reports by offering insight into recognized inventory shortfalls and requirements for inventory improvement plans.

CSOs are an integral part of the inventory preparation process. They are responsible for data validation and dissemination of GHG inventory report details to local communities. This strategy fosters community ownership of the inventory report recommendations.

4.5 Land Use, Land Use Change and Forestry Sector

Focal Points

National Focal Point: The DCC as the national focal point will coordinate the activities needed to ensure that outputs are prepared and are of sufficient quality to meet the country's commitments.

Technical Working Group: A technical working group will be created for the LULUCF sector (carefully selected representatives of public sector MDAs, the private sector, NGOs, CSOs, etc. who are relevant to the LULUCF sector) to provide a forum for collaboration around climate action, including monitoring challenges and proffering actionable solutions.

Management and Coordination: Effective coordination, robust systems and innovative tools will ensure that the team of national LULUCF sector experts can harness and access the organic data from the field, manage the data flow, perform QA/QC and produce timely outputs of sufficient quality that improves over time as it vertically progresses, under the influence of capillary forces, in the "Inverted T" or "Reverse Waterfall" column from the data providers at the base to the UNFCCC at the apex. The duty of the national LULUCF sector experts in facilitating continuous engagement and interaction with and/or among a wide range of stakeholders who provide data and make use of the outputs continues until the next reporting cycle to ensure reporting consistency, transparency, and sustainability. It is important that there be designated entities to coordinate and manage the MRV process. The Federal Department of Forestry working in collaboration with the national LULUCF experts, has been identified as the key entities to coordinate data collection, track MRV improvement plans, facilitate legal arrangements and data supply agreements, day-to-day maintenance of data management

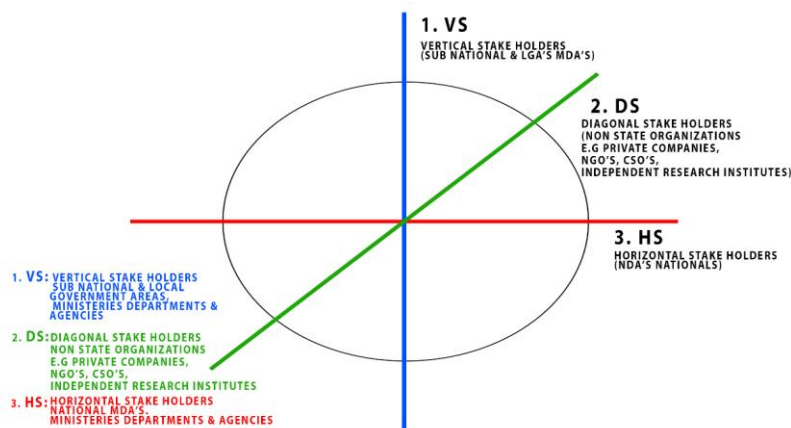
systems, and ensure inter-agency collaboration. They will also play a key role in facilitating the top-down financial support leading to improved MRV outcomes.

Establishing Legal Framework: Clear mandates backed by legal backing must be built into the institutional arrangement to ensure an efficient, sustainable, and robust MRV system for the LULUCF sector. It is established that these legal instruments are not yet in place; therefore, there is a need to establish the framework to operationalize the institutional arrangement. These frameworks formalize the new roles, responsibilities, resources, and relationships needed to deliver the transparency system outputs. In other agencies where some of the legal frameworks are already in existence, such as data collection mandate of the NBS or the Inventory compilation and reporting mandate of DCC; there is still a need to update the mandates to reflect the proposed institutional arrangement and ensure sufficient data and resources are available to establish a fully functioning transparency system that can deliver its mandated outputs. Such changes to the legal framework can include, but are not limited to:

- New laws and by-laws.
- Expansion of existing organizational mandates (e.g., on environmental data gathering and reporting).
- Well-structured service and framework contracts and/or MOUs.
- New DSAs.

Stakeholders: Based on the existing institutional arrangement of stakeholders, there was a stakeholder analysis that mapped and identified horizontal -Federal/National MDAs], vertical -Sub-National and Local Government Areas (LGAs) MDAs), and diagonal-Non-State organizations -Independent research institutes, NGOs, Private sectors, CSOs, and development partners as the stakeholders responsible for generating, collecting, and collating data required for the delivery of the Sectoral LULUCF MRV System in particular and meeting Nigeria’s national reporting obligations to the UNFCCC. These are illustrated in the diagram below:

Figure 19: Full-spectrum, Broad-Based Stakeholder Mapping



Source: (Ijeoma, S.I; 2019⁸)

⁸Unpublished proposal titled “Enhancing Structural, Statistical and Reputational Integrity of Nigeria’s Energy and Environment Data Management Ecosystem in Pursuit of Meeting Nigeria’s Obligations to the United Nations Framework Convention on Climate Change [UNFCCC] via Biennial Update Reports [BURs], National Communications [NCs] and Nationally Determined Contributions [NDCs] in the Post-Paris Climate Change Agreement Era” developed and submitted to The Partnership in Statistics for Development in the 21st Century (PARIS21) 2020 Trust Initiative Call for Proposal by Stanley Ijeoma on January 30, 2020.

This review also benefited from further consideration of the stakeholders of the dysfunctional data collection ecosystem and its impact on most of the stakeholders, as well as what the roles and interests of these different stakeholders might be in addressing the observed structural challenges, plugging the embedded statistical gaps, and abating likely reputational deficits.

Collecting data and making use of the outputs requires a strategic stakeholder engagement plan. The greater the engagement, the better (and more useful) the transparency system will be for evidence-based decision-making and the production of reports.

Strong stakeholder engagement ensures that the transparency system reaches a broad range of stakeholders, including those from national government, local government, the private sector, academia, NGOs, the media, and the public, so that data can be gathered from the most reliable and relevant sources and the outputs can inform their decision-making processes. Engagement should include stakeholders involved in the implementation of action, provision of data and advice on understanding the data. This Stakeholder Engagement Plan (SEP) will be based on the guiding principles below:

- Ownership by all the concerned stakeholders required for operationalizing the LULUCF sectoral MRV framework, which will be ensured via a multi-stakeholder and consultative process.
- Promote the culture of sharing responsibilities as well as accountability by all the stakeholders in the LULUCF ecosystem based on their unique roles and mandates.
- Stakeholder engagement will be an ongoing process with follow up, continuous update and regular assessment of progress.
- Promotion of an inclusive, broad based and gender sensitivity in its functioning.
- Minimize and/or eliminate any conflict of interest among stakeholders in the LULUCF MRV process.

Table 9: Major Stakeholders and Responsibilities in the LULUCF Sector

Stakeholders	Responsibilities
Department of Climate Change (DCC)	National Focal Point and MRV coordinating entity
Federal Department of Forestry	Propose policies, to oversee forestry administration nationwide, and to coordinate forestry development
State Departments of Forestry	State forestry departments deal with the management, development and protection and conservation of forest resources
Forestry Research Institute (FRIN)	The FRIN has a mandate to conduct research into all aspects of forestry, forest products utilization, wildlife, watershed management, and agro-forestry.
National Space Research and Development Agency (NASRDA)	Satellite imagery production, geospatial data collection and analyses.
National Bureau of statistics (NBS)	National Agency responsible for the development and management of official statistics, the authoritative source and custodian of official statistics in Nigeria.
National Population Commission (NPoPC)	Undertake periodic enumeration of population via sample surveys, censuses and provide data on population for the purpose of sustainable development planning
Office of the Surveyor-General of the Federation	Mandated to provide adequate geo-spatial and comprehensive mapping information for all sectors of the economy and all sections of Nigeria.

National LULUCF Experts and Technical Working Group (TWG)	Essential extra-institutional, non-state actors with relevant requisite expertise that will be empaneled and assigned defined roles/responsibilities in the proposed data sharing legislation, MOUs, and Agreements to ensure high quality data processing, management, and reporting outcomes. This is a value-adding novelty that fits into the innovative “Inverted T” or “Reversed Waterfall” institutional arrangement.
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Data Providers: Data providers were identified and classified during the broad-spectrum stakeholder mapping conducted at the beginning of the project. It is established that to have a sustainable MRV system, there is a need for a consistent and continuous flow of data that supports the calculations and analyses required to inform decision-making and reporting on climate action and support. The data comes from a variety of sources, including national government departments, National Bureau of Statistics, subnational governments, private sector organizations, academia, and NGOs. The list of data providers has been organically generated via robust stakeholders’ engagements and interactions and will be updated from time to time, which include:

- State Departments of Forestry
- Office of the Surveyor-General
- National Space Research and Development Agency (NASRDA)
- National Population Commission (NPOPC)
- The REDD++ Project Office
- Forestry Research Institute
- Other international data bases like FAOSTAT, Global Forest Database etc.

Chapter Five – Overarching Institutional Arrangement

5.0 Overview

This section presents the overarching institutional arrangement, which is harmonized and cuts across all the sectors covered in the GHG inventory. The relevance of an overarching institutional framework in the development of a robust MRV includes but is not limited to:

- Ensures reliable, comprehensive data flow of GHG trends and projections.
- Allows for effective compilation and reporting of climate actions.
- Provides opportunity for extensive improvement of key components of the institutional arrangement.
- Assures sustainability of the established MRV system.
- Informs key decision makers on the progress of climate action, the level of climate ambition and capacity needs.

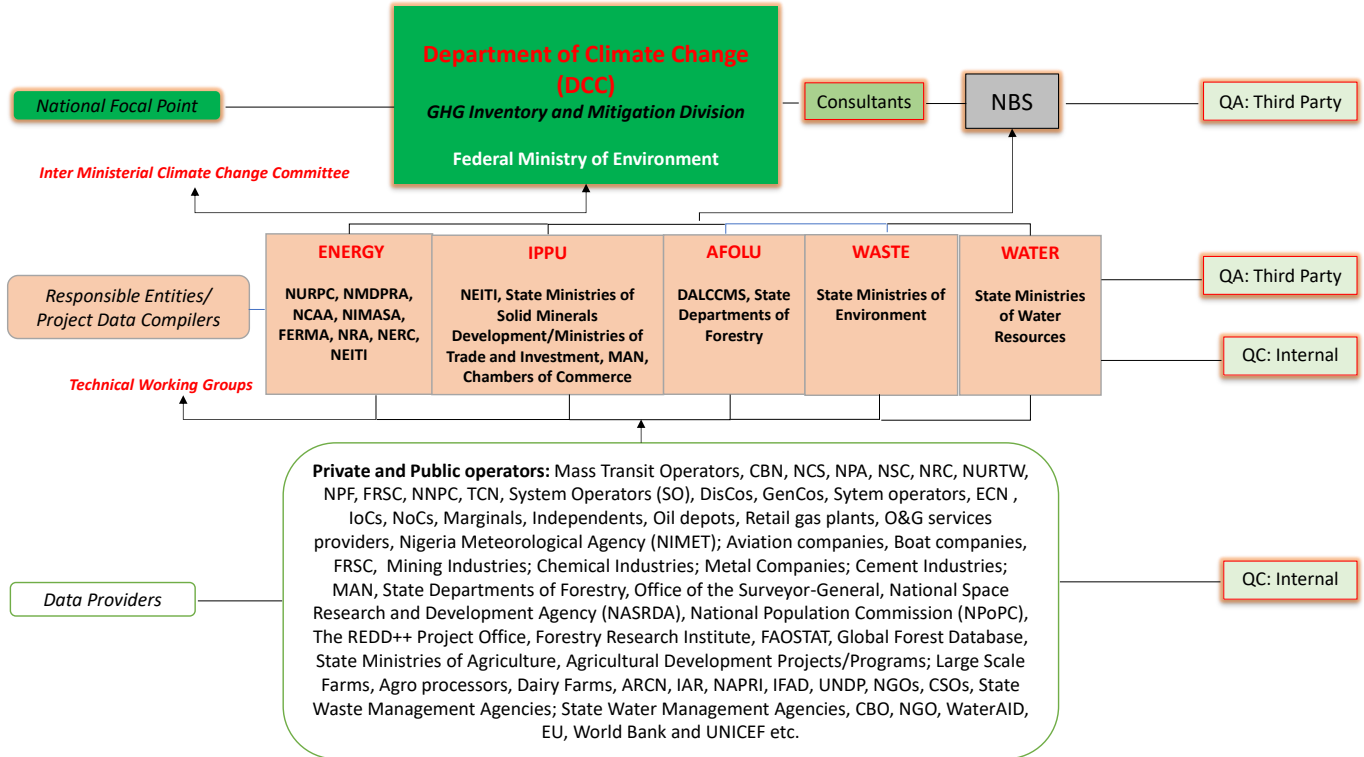
The development of the overarching institutional arrangement is one that will allow for effective monitoring and coordination of the country's climate ambitions and allow for active engagement across the various sector stakeholders.

The overarching IA was harmonized to include the NDC priority sectors and will allow for effective monitoring and coordination of the country's climate ambition while actively engaging identified sector stakeholders. The hybrid model proposed by the sector experts was mainstreamed into the overarching IA design in which the management and co-ordination of the inventory preparation and compilation are carried out in a centralized manner by the DCC, but sector specific mandates on data for both inventory and mitigation are designated to specific MDA(s) within the relevant sector to coordinate the sectoral inventory activity.

The DCC under FMEnv will be responsible for the coordination and compiling of the national GHG inventory. This role is expected to continue for data control purposes and coordination among all sectors. The compilation of the GHG inventory is coordinated by the DCC inventory division with support from sector experts (consultants).

Figure 20 below shows the Overarching Institutional framework for the relevant NDC sectors (see expanded version of the Overarching Institutional arrangement in the annex 1).

Figure 20: Abridged Overarching Institutional Arrangement



5.1 Institutions Involved in the Institutional Arrangement

5.1.1 Institutions Involved Directly with Data

- **Data Providers:** Data providers comprise of all stakeholders directly involved with data, as shown in IA Figure 20 above. The sources of data could be public or private companies. It could also be sub-nationals, such as state and local governments. As part of the vision to enhance transparency, a data gateway through multiple servers will be designed with backup using cloud data management systems to ensure data from providers is shared up to the national focal point (DCC). While the use of interconnected database servers would be in the mid to long term.
- **Data Coordination, Monitoring and Reporting:** The various Agencies or Ministries responsible as shown in IA Figure 20 above shall be responsible for coordinating all processes in the respective sectors (data gathering, tracking and improvements to the transparency system, facilitating legal arrangements for data supply, ensuring good communications and engagements among stakeholders).

Table 10: Data Providers Across the NDC Sectors

S/N	Category	Sector	Data Providers
1	Energy	Power	Generating Companies, REA
2		O&G	IoCs, NoCs, Independent Oil Companies, NGC, Refineries, NEITI, PPMC, The midstream and downstream operators (MOMAN, DAPMAN, LPG/LNG/CNG marketers and private refineries
3		Transport (RTS)	FMoT, NBS, the Motor Licensing Authorities of the State Ministries of Finance, the Nigerian Union of Road Transport Workers (NURTW), and the operators of mass transits, including luxury buses, fuel tankers and trailers.
4		Transport (OTS)	<p><i>Aviation</i> NBS, NiMET, Fuel Marketers (NNPC; Major & Independent Markets), All Operating Airlines, FAAN, NAMA, NCAA</p> <p><i>Maritime</i> Shipping Companies (Indigenous and Foreign), Fuel Suppliers (i.e. NNPC, Major and independent Oil companies), NBS, NPA, NIMASA, NIWA, NAMA</p> <p><i>Rail Transport</i> Fuel suppliers (e.g., NNPC, Independent and Major Oil Marketers), NBS, Nigerian Railway Corporation (NRC)</p>
5	AFOLU	Agriculture (Crop Production)	State Ministries of Agriculture, Agricultural Development Projects/programs, Private Sectors (Large farms, and Cooperatives), Research Institutions, (IAR, ARCN etc.), Development Partners (FAO, UNDP etc.)
		Agriculture (Livestock)	State Ministries of Agriculture, Agricultural Development Projects/programs, Private Sectors (Large farms, and Cooperatives), Research Institutions, (IAR, ARCN etc.), Development Partners (FAO, UNDP etc.)
		Forestry	State Departments of Forestry, Office of the Surveyor-General, National Space Research and Development Agency (NASRDA), National Population Commission, The REDD++ Project Office, Forestry Research Institute, Other international data bases like FAOSTAT, Global Forest Database etc.
6	IPPU	Industries ⁹	NEITI, MAN, SMEDAN, Ministry of Solid Minerals Development, Ministry of Trade and Investment, Private Sector Operators.
7	Waste	Waste	All Waste Management Agencies across the States and the Federal Capital Territory e.g., LAWMA, NISEPA, KUDA etc., Private Sector.
8	Water	Water	All Water Management Agencies across the States the Federal Capital Territory, Non-governmental and Donor Agencies such (CBO, Water AID, EU, World Bank and UNICEF etc.)

⁹ There are several industries in the country and will be very important to have e-registry for data in the sector to collect data at Industry level

- **Data Processing, Management, Archiving, and National Focal Point:** The DCC under the FMEnv is national focal point. It shall be responsible for interactions between the Federal government and the international communities (communications between the Nigerian Government and the UNFCCC on all climate change processes).

The DCC shall hire consultants from the various sectors in the country based on certain criteria to be determined by the department in line with international best practices. The pool of consultants shall be involved in the processes on an annual basis, and for each sector, a team of consultants shall be identified and engaged periodically as needed. The Department shall engage the Consultants for developing GHG inventory, mitigation tracking and archiving of the data. The focal point (DCC) shall also, as part of their responsibility, track internationally transferred mitigation outcomes, if applicable.

As part of the vision for the national focal point data management process, it is expected that the Master Server shall be resident in the DCC office where all data from all the sectors through NBS shall be data logged.

5.1.2 Advisory and Committees

- **Inter-Ministerial Committee:** This committee will be responsible for reviewing activities on Climate Change while also collaborating and sharing ideas on climate issues, challenges, and actions. The committee will be comprised of representatives of national ministries from the NDC sectors and other Departments as well as agencies relevant to Climate Change activities. The committee will review the climate change laws, contracts, and agreements to ensure that the mandates are achieved through the various legal instruments related to Climate Change. Where there are gaps, they will communicate with the federal government through the focal point institution, FMEnv.

The committee is proposed to constitute the following as shown in

Table 11 below.

Table 11: Composition of Inter-Ministerial Committee

S/N	Inter-Ministerial Committee	NDC Sector Represented
1	Ministry of Environment	Focal point & Waste Sector
2	Ministry of Agriculture	Crop Production, Livestock and Forestry
3	Ministry of Power	Energy – Power
4	Ministry of Petroleum Resources	Energy – Oil & Gas
5	Ministry of Trade & Industry	Industrial Processes and Product Use
6	Ministry of Aviation	Energy – Transport (Aviation)
7	Ministry of Transportation	Energy – Transport (Railways, Roads, Maritime, and Inland water ways)
8	Ministry of Water Resources	Water
9	Ministry of Science & Technology	Research & Development

- **Technical Working Group (TWG):** On the Sectoral level, the committee will be responsible for developing actions and measures that will bring about low GHG emissions within the sector. The working group will share innovative ideas on mitigation actions, tracking, data sharing, and GHG estimations. Capacity building sessions shall also be carried out at the level of the TWG. It will be comprised of representatives drawn

across the individual sectors of the NDC that can influence decisions to implement climate actions (e.g., technical, corporate planning and strategy, costing and HSE team, private and public sector operators, NUPRC, NMDPRA).

Table 12: Technical Working Group

S/N	Category	Sector	Data Providers
1	Energy	Power	Generating Companies, REA, TCN, System Operators (SO), DisCos, ECN (responsible for Energy Balance)
2		O&G	IoCs, NoCs, Independent Oil Companies, NGC, Refineries, PPMC, The midstream and downstream operators (MOMAN, DAPMAN, LPG/LNG/CNG marketers and Government/private refineries)
3		Transport (RTS)	FMoT, NBS, the Motor Licensing Authorities of the State Ministries of Finance, the Nigerian Union of Road Transport Workers (NURTW), operators of mass transits, including luxury buses, fuel tankers and trailers, FRSC, NCS, NPA, NSC, NRC, NPF.
		Transport (OTS)	Aviation NiMET, Fuel Marketers (NNPC; Major & Independent Markets), All Operating Airlines, FAAN, NAMA, NCAA Maritime Shipping Companies (Indigenous and Foreign), Fuel Suppliers (i.e. NNPC, Major and independent Oil companies), NPA, NIMASA, NIWA, NAMA Rail Transport Fuel suppliers (e.g., NNPC, Independent and Major Oil Marketers), Nigerian Railway Corporation.
4	AFOLU	Agriculture (Crop Production)	State Ministries of Agriculture, Agricultural Development Projects/programs, Private Sectors (Large farms, and Cooperatives), Research Institutions, (IAR, ARCN etc.), Development Partners (FAO, UNDP etc.)
		Agriculture (Livestock)	State Ministries of Agriculture, Agricultural Development Projects/programs, Private Sectors (Large farms, and Cooperatives), Research Institutions, (IAR, ARCN etc.), Development Partners (FAO, UNDP etc.)
		Forestry	State Departments of Forestry, Office of the Surveyor-General, National Space Research and Development Agency (NASRDA), National Population Commission, The REDD++ Project Office, Forestry Research Institute, Other international data bases like FAOSTAT, Global Forest Database etc.
5	IPPU	Industries	MAN, SMEDAN, Ministry of Solid Minerals Development, Ministry of Trade and Investment, Private Sector Operators.
6	Waste	Waste	All Waste Management Agencies across the States and the Federal Capital Territory e.g., LAWMA, NISEPA, KUDA etc., Private Sector.
7	Water	Water	All Water Management Agencies across the States the Federal Capital Territory, Non-governmental and Donor Agencies such (CBO, Water AID, EU, World Bank and UNICEF etc.)
8	Others		Research Institutes, Universities, NEITI

* Please note that all data shall be sent to the NBS who will be responsible for final verification and archiving of the data (data custodian).



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Federal Ministry of Environment

5.1.3 Data Quality Assessment Team

- **Quality Control of Data Collected:** It is expected that all data providers/suppliers and data coordinating, or management institutions shall have its own way of controlling the quality of data in its custody. For the providers, it could be through regular calibrations of meters, a re-certification process for equipment or measuring devices as applicable. This could also include material or mass balance, but all data should be quality checked internally before it is transmitted.
- **Quality Assurance of Data Collected and Methodologies:** The proposed institutional arrangement takes into cognizance the importance of the data QA process. QA shall be carried out by external entities (Third Party). This could be private organizations, academia, or other national institutions. The qualifications for QA shall be set by the Institutions requesting for the service. For example, data hosted by Nigeria Electricity Regulatory Commission (NERC) shall be the responsibility of NERC to define the expected qualifications required by the Consultants to carry out the QA.

5.1.4 International Institution

- **United Nations Convention for Climate Change (UNFCCC):** The UNFCCC provides the foundation for intergovernmental response to climate change and its impacts on humanity and ecosystems. As part of the United Nations' collective efforts to address climate change and achieve the objective of the Convention and the purpose and goals of the Paris Agreement, countries need to mobilize actions that will maximize opportunities for low GHG emission and climate-resilient development and minimize risks to financial returns, social cohesion, and environmental protection.
- The UNFCCC ensures regular collection, analysis, and use of reliable information on climate action and provides support to reduce GHG emissions and increase resilience. The data collected on GHG emission trends, both historical and projected, is essential for evidence-based decision-making and information-sharing, which in turn builds trust and understanding and promotes stakeholders' engagement. This data collection and reporting activity forms a critical component of what is commonly known as "MRV" under the Convention and has recently been encapsulated by the term 'transparency' under the Paris Agreement.
- Another key responsibility of the UNFCCC is communicating reliable, transparent, and comprehensive information on GHG emissions, actions, and support the transparency of climate action, the ambition of existing efforts, as well as understanding progress on both the national and international scale.

Chapter Six – Recommendations for National Reporting

6.0 Overview

This section of the report emphasizes on the need to put in place a legal framework that would enhance a functional MRV system in the various sectors. It provides recommendations; taking cognizance of lessons learnt and contributions from stakeholders on the most appropriate legal framework that fits the Nigeria perspective.

6.1 Legal Framework Requirement for the Institutional Arrangement

It is imperative that appropriate legal and institutional frameworks are put in place to achieve a functional Institutional arrangement. Legal framework is of paramount importance to the realization of a working overarching institutional arrangement.

Legal and institutional frameworks are essential for establishing the roles and responsibilities of the different actors (Stakeholders) that will be involved in data provision, data gathering, monitoring compliance to regulations and policies, Data Quality Assurance and Control and all other relevant activities involved in the MRV process.

To achieve a functional IA, the newly proposed data flow, compilation, and reporting activities shall require new mandates to be fulfilled by a larger and well-supported team of Nigerian experts. Achieving this will require additional human and financial resources.

These legal frameworks will help to formalize the new assigned roles and functions, responsibilities, resources, and relationships needed to deliver the transparency system outputs. While there are some legal frameworks already in existence within the National Climate Change Response Policy, there is more that needs to be put in place. For example, there is need for a legal framework that will allow data collated from all the sectors to be transmitted/reported annually to the DCC who have the responsibility for data collation. Since the process will need to be improved with new development in technology and innovations, the frameworks must be updated and complemented to ensure sufficient data and resources are available to establish a fully functioning transparency system that can deliver its mandated outputs.

It behooves the Federal Ministry of Environment to submit request through the Federal Government for changes to the existing legal framework which should include, but not limited to:

- New laws and by-laws (where applicable)

An overarching climate change law should be required to create a legally binding mandate and give legislative power to the institutional arrangements that is being proposed to ensure transparency. The legal mandate will enable the organizational frameworks to function and ensure that all the potential challenges faced by all the stakeholders that will carry out defined regular activities within the transparency framework receive adequate resources. When the climate change law is developed, it will enhance and legitimize resource requests, facilitate reforms, and allow for formulation of new responsibilities. It will remove all obstacles that may be associated with it.

with institutional barriers over data ownership and lack of cooperation among coordinators, experts and data providers, a climate change law can provide organizations or individuals with the authority required to incentivize data flows.

Should the climate change law be adopted, it will help to formalize the necessary collaboration and supply of data and expertise across all concerned government ministries, both intra and inter-ministerial, as well as interaction with the private sector. A climate change law could, for example, serve as the legal foundation to establish institutions, organizational structures, and financing to move towards a low-carbon and climate-resilient economy. The NDC implementation strategy shall be built in the Climate Change law to make the mitigation and adaptation targets legally binding and provide for tracking progress and attract financial support.

While there are ongoing efforts to introduce a Climate Change law¹⁰, the implementation of the IA shall require that the climate change law when passed into law and becomes effective is reviewed along the following factors:

- *Focus*: The climate change law should focus on climate change activities, particularly along the lines of expected actions, and could be more in the context of wider sustainable development objectives.
- *Scope*: It is expected that the mandate for climate policy would be driven by domestic outlook on climate change targets and objectives to allow ownership by the stakeholders and ease of interlinkages of national efforts with international targets and approaches.
- *Design*: The design should be based on the decision largely by the DCC on what it sought to achieve from the law when implemented such as NDC targets and perhaps soon, a carbon market through government planning and intervention.
- *Devolution*: The law should recognize the roles of the subnational actors as they play an important role in climate actions hence, the law should give the necessary mandates on their roles including the local government authorities as applicable. The level of devolution of responsibility should be in accordance with the existing legislation to avoid any legal issues.

If relevant laws are already in place, especially if there has been significant reprioritization since the development of a climate change law, it may be necessary to periodically assess those laws to ensure they are still fit for purpose. It is important that any climate change law be focused on specific national circumstances.

- Expansion of existing organizational mandates:

Most of the existing organization mandates will need to be expanded as the proposed IA includes new responsibilities. For example, the expansion of the roles for NBS. There will also be mandates on the expansion of data flow and reporting by all stakeholders involved in the proposed IA.

- Framework contracts and/or MOUs, as applicable:

Framework contracts and MOUs are expected to provide contractual or other written agreements between two or more parties to work together to serve the purpose of the institutional arrangements. For example, such agreements may exist between the various sub-sectors in the Energy sector. Under this type of agreement, parties cooperate, provide any agreed financial or human resources, and share information based on the

¹⁰ [Minister: Passage of climate change bill shows reps' commitment to Paris agreement | The Cable](#)

established conditions. This framework contract/agreement will be useful for establishing a regular, efficient flow of data and data analysis or for setting out an agreed approach for cooperation on research, development, and stakeholder engagement. When developing a framework contract or MOU, the following aspects could be considered:

- Objective: The objective of the agreement is from the perspective of all engaged parties.
 - Scope of Cooperation: The scope of the cooperation should be defined (e.g., which outcomes are being targeted; data and information that will be gathered, processed, and shared).
 - Forms of Cooperation: The “how” of the cooperative agreement: the methods of, frequency of, and any restrictions on the exchange of data and information or collaborative approaches.
 - Necessary Resources. If it is envisaged that the proposed cooperative approaches will require resources, then the agreement should highlight how the engaged parties are expected to access such resources.
 - Effective Date, Duration, and Termination: The agreement should set out a start date, initial duration, the scope for amendments, if any, and the conditions for termination.
- Data sharing agreement (DSA) among stakeholders

DSA is typically a form of agreement between stakeholders that defines the data supply, from whom, to whom, and when for the transparency system. This agreement is expected to be between the DCC as the national focal point/designated coordinator, the data supplier stakeholder, and the technical expertise provided by the team of national experts.

This agreement should be promoted by the Federal Ministry of Environment with the support of the central government as it will be beneficial for the national focal point (DCC), the technical experts (Sectoral Institutions) using the data and the data providers (the various companies, sub-nationals, and others).

The NBS as the institution with the mandate to collect data from all sectors, can take advantage of this existing national law and enhance it for the purpose of data supply and data-collection activities. While this has been a practice in developed countries where DSAs support national GHG inventory systems, in Nigeria, DSAs will need to be backed up by goodwill from the office of the President.

A possible content of a DSA that can be adopted in the country could include:

- Background information on the needs and mandate of the transparency system.
- Reference to existing laws (if applicable) and terms of reference and cooperation between the data supplier and the transparency system representatives.
- Objectives of the agreement, with reference to an annex specifying the details.
- Confidentiality provisions and commitments.
- Procedures that enable the receiving party (the data user, such as the national focal point or designated coordinator) to provide feedback to the data supplier on priorities for future improvement of the data set.
- Signatures of national focal point or designated coordinator representative and the data supplier (if appropriate).
- A technical annex containing details of the data to be supplied, including a unique title of the data set (to avoid confusion with other data sets)

Duties and responsibilities: Key roles stated in the Chapter 5 of this report should be clearly defined so that the transparency framework supports the implementation of action plans. Similarly, the roles and functions of Technical Working Groups and Steering Committees should be clearly defined.

Monitoring and reporting requirements: This should be done to satisfy the requirements of national reporting alongside international requirements. This will be helpful in keeping climate policy relevant and promoting accountability. Supporting an independent steering committee's role in reviewing progress against targets can also keep political momentum on track.

6.2 Design, System and Tools

Achieving an efficient and sustainable Institutional Arrangement requires proper design, systems, and tracking tools. They are important for the smooth functioning of the transparency system. This includes the architecture for managing the collection, analysis, QA/QC, summarizing, and archiving of data. The proposed IA is expected to provide for human resource development and maintenance of workplans, engagement tools, databases, data analysis, and reports.

Capacity Building: Capacity-Building Efforts (i.e., development of human capacities in technical areas of GHG emissions, Data collection, Analysis, documentation, and archiving, GHG Emission estimation/calculations, methodologies, and approaches. Such activities create awareness, build the efficiency of the workforce, and ensure community and continuity within the system.

Targeted trainings dedicated to data aggregation, QA/QC protocols, timeseries analysis, database management, etc., can be designed to meet core expert skills needed at different phases of the inventory cycle.

Data Providers

The transparency of the data provided is very critical in accordance with the Paris Agreement. Transparency relies on a consistent and continuous flow of data that supports the calculations and analyses required to inform decision-making and reporting on climate action and support. The data required is expected to come from a variety of sources, including national government departments and statistical offices, regional and local governments, private sector organizations, Research and University communities (academia), and NGOs. The data should be collected by a team who is familiar with the data and has the technical skills and knowledge to improve and enhance the data collection process. The team will be aware of the advantages and limitations of certain data sets and should be able to identify key improvements needed in the data-collection process when they understand the intended use of the data in the transparency system. The individual profile of a data provider varies and could include statistical officers, operators of industrial facilities or environmental officers on local councils. It is very important that data providers are aware of how the data they supply will be used and how they can contribute to the provision of quality data, data collection and management systems.

Existing organizational mandates:

Prior to the development of organizational mandates for the transparency system, there is a need to first consider existing mandates. This will give insight into outlining successful national pathways for cooperation. Existing mandates that support established data flows can help to engage key stakeholders and may have already established relevant relationships and coordination systems. Adapting and expanding existing

arrangements can be a way to use resources efficiently and can help to overcome institutional barriers to change and data ownership.

Contact points:

The key contacts for each organization, preferably to be included, shall be organization names or position titles and not individual names. The agreement should also set out the expectations for these key contacts, including any resource commitment and communication and knowledge-sharing.

Chapter Seven – Conclusion

7.0 Conclusion

The compilation of the GHG inventory continues to be a challenge, especially due to the non-availability of data for the computation of GHG emissions. The main objective of the overarching Institutional Arrangement is to create a pathway for enhanced transparency in implementing the MRV program at the national and sectoral levels. Institutional arrangements for the mandatory GHG MRV program are needed to provide the legal basis for binding commitments and reporting, enforcement, and efficient and effective program operation.

It is considered good practice that countries that desire to improve the quality of their reporting must also improve the quality (transparency, accuracy, completeness, comparability, and consistency (TACCC)) of national GHG inventories on a continuous basis. This can be achieved through the development of a robust national GHG inventory program. These reports are a critical source of useful national data and, if updated regularly, will prove reliable for policy development and tracking progress made towards achieving NDC commitments. There should be improvement over time to provide increasingly useful information on national GHG trends (including influencing factors) and transparent reporting. Establishing long-term national GHG inventory arrangements will help keep national GHG inventories up to date and improve over time.

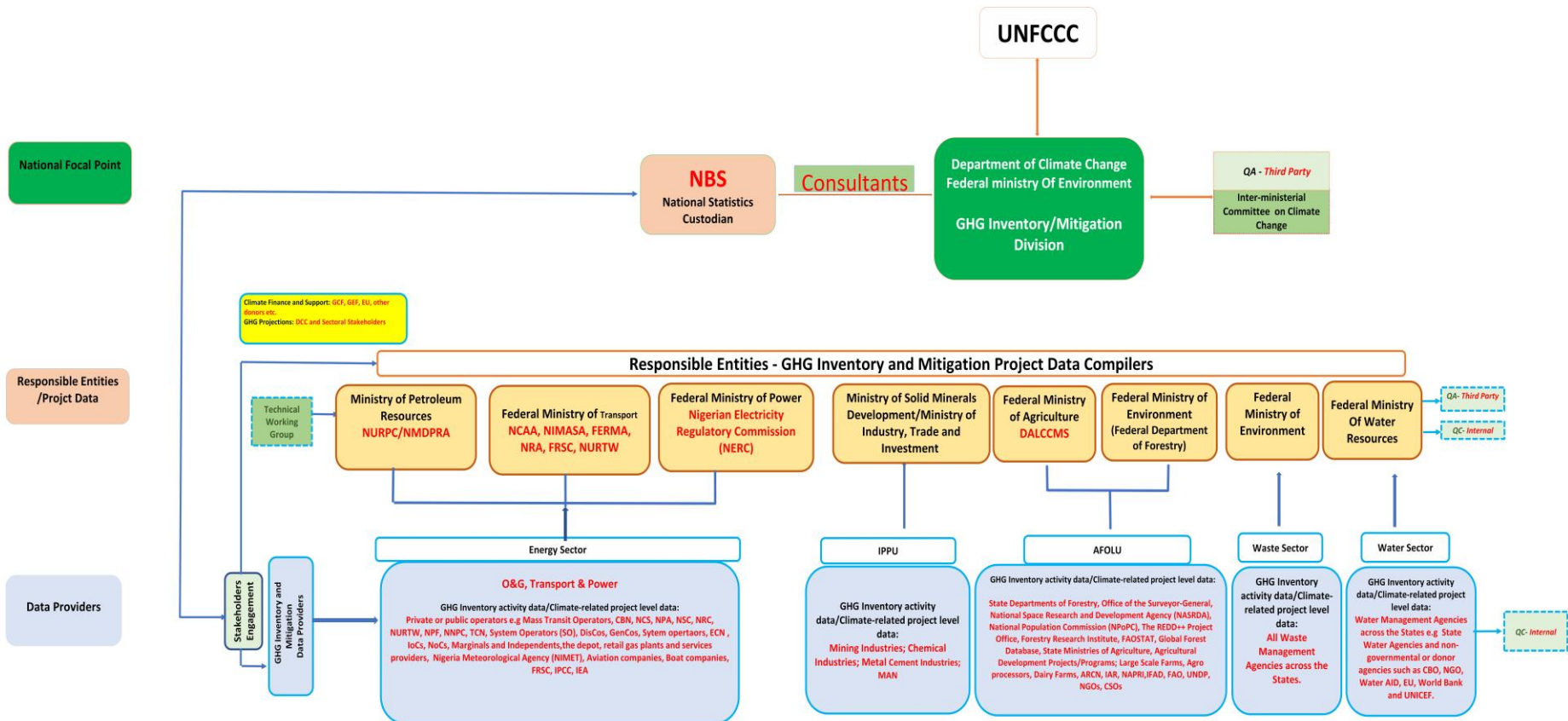
Developing a robust national inventory system requires a clear process with clear roles and responsibilities agreed upon and adopted across the network of key stakeholders and principal data providers. The main purpose of clear institutional arrangements is to enable national and sectoral policy to be operationalized for the program to achieve its policy and program objectives.

The recommendations made in the above sections of the report, if adopted, will beam the light towards achieving the enhanced transparency framework.

References

- Guiding Principles for Modalities, Procedures and Guidelines (MPGs):
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Oil and Gas Sectoral Institutional MRV System, Crop and Livestock Institutional MRV System, Land-Use, Land-Use Change and Forestry (LULUCF) Sectoral Institutional MRV System, Road Transport Sectoral Institutional MRV System, Other Transport Sector Institutional MRV System.
- The Cable:
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- UNFCCC (June 2019): what is Transparency and Reporting?
- UNFCCC (Sept. 2019):
Establishing and Maintaining IA for preparations of NCs and BURs. First Peer Review and MRV Network workshop, Southern Africa 23-27 Sept. 2019
- UNFCCC: CGE Training Materials - Biennial Update Reports. Institutional Arrangements.
- World Resources Institute (WRI): Paris Rulebook. Enhanced Transparency Framework.

Annex 1: National Institutional Arrangement Across the Relevant Sectors



* The Energy Commission of Nigeria (ECN) is proposed as the entity that will be responsible for energy balance statistics.

Annex 2: A Guide on Roles and Responsibilities

This Annex highlights the importance of the inventory coordinator stating its expected role and responsibility and what is required by each sector especially as it relates to preparation of its GHG inventory. The template below was adopted from the EPA Toolkit for Building National GHG Inventory Systems.

National Inventory Coordinator - Roles and Responsibilities

NIC Preparation

The NIC is typically responsible for managing all aspects of National GHG Inventory development, including providing technical and coordination assistance to all members of the National GHG Inventory Team, ensuring funding is in place, briefing senior management, and establishing the overall National Inventory Schedule. The coordinator should have a comprehensive understanding of the UNFCCC reporting requirements, IPCC guidelines, and a general understanding of all GHG sectors.

- ❖ Review the UNFCCC Consultative Group of Experts (CGE) training materials on the preparation of GHG inventories for reporting obligations (e.g., national communications (NCs)). [[CGE Materials](#)]
- ❖ Review the UNFCCC guidelines/manuals related to NCs and Biennial Update Reports (BURs). [[UNFCCC Guidance](#)]
- ❖ Review the BUR training materials on inventory arrangements. [[BUR Materials](#)]
- ❖ Review additional guidance on inventory arrangements and QA/QC in Volume 1 of the [2019 Refinement to the 2006 IPCC Guidelines](#) (e.g., Chapter 1: Introduction to National GHG Inventories).
- ❖ Review the IPCC Guidelines to understand the default methods, data sources, basic QA/QC, uncertainty assessment and reporting procedures. [[IPCC Guidelines](#)]
- ❖ Review the inventory chapter of the previous NC or BUR and other materials relevant to the previous National GHG Inventory.
- ❖ Understand which GHG sources or sinks the previous inventory identified as key categories.
- ❖ Review UNDP's [Managing the National Greenhouse Gas Inventory Process](#).
- ❖ Review the EPA's [Toolkit for Building National GHG Inventory Systems](#), which includes *Templates for Creating a National GHG Inventory System Manual* and additional resources.
- ❖ Review existing software packages for developing inventory estimates ([IPCC Inventory software or country-specific software](#)).
- ❖ Understand GEF funding options available for preparing NCs and BURs. [[GEF Funding Guidelines & Application Form](#)]

NIC Responsibilities and Activities

The following list highlights the main responsibilities and activities of the NIC:

- ❖ Manage and support the National GHG Inventory staff, schedule, and budget to develop the inventory in a timely and efficient manner to meet national priorities, along with international reporting needs.

- Prepare a detailed work plan for producing the National GHG Inventory, including interim deliverables/ outputs, in close consultation with inventory leads/coordinators and relevant data providers. To save time, the NIC may start with the sample work plan in EPA’s National GHG Inventory Inception Memorandum Template.
- Establish internal processes and schedule to ensure that the national inventory team has sufficient time for to apply QA/QC procedures and assess uncertainties of emission estimates.
- Develop Scope of Work documents and procure contracts with consultants to support inventory cross-cutting and report compilation tasks. To save time, the NIC may start with the National GHG Inventory Scope of Work template from EPA’s [Toolkit](#), and customize it as needed.
- Oversee sector leads/consultants responsible for report compilation both at the sector level and at the level of aggregate results (reflect all sector estimates combined) to ensure incorporation of the inventory in the NC and BUR for submittal to the UNFCCC.
- Schedule periodic meetings to check in on status of work and periodically brief inventory agency management on progress and results.
- ❖ Identify, assign, and oversee national inventory sector leads, recording their names and contact information. See the Sector Roles and Responsibilities guide for each sector (Energy, IPPU, Agriculture, LULUCF, and Waste), also in EPA’s [Toolkit](#), for a comprehensive list of the typical responsibilities of the sector leads.
 - Assist sector leads to prepare and implement sector specific work plans, including interim outputs/deliverables, as well as identify, collect, and organize data for inclusion in the inventory.
 - Assist sector experts with the use of activity data and select and apply appropriate IPCC Good Practice Guidance to improve existing methodologies and emission factors.
 - Become familiar with Methods and Data Documentation within EPA’s [Toolkit](#), and invite or direct sector leads or experts to use it as a resource while performing their duties.
- ❖ Assign cross-cutting roles and responsibilities, including those for Quality Assurance/Quality Control (QA/QC), archiving, key category analysis (KCA), uncertainty analysis, and compilation of the inventory section of the NC and/or BUR. Record the assignments in Template 2: Institutional Arrangements within EPA’s [Toolkit](#).
 - For all project activities (i.e., QA/QC, uncertainty analysis, archiving, etc.), coordinate with cross-cutting leads to convey responsibilities to sector leads, consultants, national agencies and institutions, and relevant international organizations, such as UNDP country offices, IPCC, UNFCCC, and GEF.
 - Manage QA processes and inventory review periods (if applicable) with support from the QA/QC Coordinator.
 - Manage implementation of QC procedures with support from QA/QC coordinator.
 - Become familiar with Template 4: QA/QC Procedures, Template 6: Archiving System, and Template 5: Key Category Analysis, within EPA’s [Toolkit](#) in order to prepare to supervise these processes and activities.
- ❖ Maintain and implement a national GHG inventory improvement plan using Template 7: National Inventory Improvement Plan within EPA’s [Toolkit](#). Foster and establish links with related national projects, and other regional, international programmes as appropriate.

NIC Qualifications

The NIC should have a strong scientific or technical background. A policy background, while not imperative, may however be helpful with respect to the communication of findings, though the inventory itself should be policy neutral. It is essential for the candidate to possess the ability to work both independently and with a wide variety of members of governments, agencies, non-governmental organizations, and research institutions. A strong understanding of UNFCCC National GHG Inventory reporting and the IPCC Guidelines for National Greenhouse Gas Inventories is a prerequisite. The following list provides examples of the qualifications and knowledge desired for a NIC. These qualifications can be revised or modified to suit national circumstances.

- ❖ Relevant experience in the field of climate change, with a focus on GHG inventories.
- ❖ A science degree in a subject related to environmental science/management, chemical engineering, or similar (an advanced degree such as Masters' or Ph.D. on processes or assessing emissions from specific GHG inventory sectors/categories could be beneficial).
- ❖ Demonstrated knowledge and application of the methodologies for preparing GHG inventories and familiarity with the IPCC Inventory guidelines (Good Practice Guidance reports, 2006 IPCC Guidelines, and other publications from the IPCC Task Force on GHG Inventories).
- ❖ Experience applying UNFCCC GHG inventory reporting guidelines.
- ❖ Familiarity with the content of National Communications, Biennial Update Reports and UNFCCC processes.
- ❖ Experience managing budget and distributing and balancing work among employees in accordance with the established workflow and employee skill levels and occupational specializations to assure timely accomplishment of the work unit's mission; and,
- ❖ Experience working on a diverse team of individuals with different technical backgrounds and specialties.

Sectoral Roles and Responsibilities

In implementing institutional arrangements for the National Greenhouse Gas (GHG) Inventory, it is important to communicate responsibilities to all contributing staff. This document describes the major responsibilities for the **Sector Leads on: Energy, Industrial Processes and Product Use (IPPU), Agriculture, Land Use, Land Use Change, and Forestry (LULUCF) and Waste** whose primary roles will be to manage and coordinate development of GHG emission estimates in the different sectors.

This document is part of EPA's [Toolkit for Building National GHG Inventory Systems](#) ("Toolkit"), which key members of a national inventory team may use to design and develop a sustainable inventory system. In addition, it complements EPA's *Templates for Creating a National GHG Inventory System Manual*, also within the Toolkit. Specifically, each Sector Lead is encouraged to use this template.

Each Sector Lead Should Understand:

- ❖ The specific responsibilities of their Sector Lead, including a clear understanding with its immediate supervisor/organization and the National Inventory Coordinator (NIC) on their role in producing the sector GHG estimates for the inventory,
- ❖ The expected and required deliverables and timeline for the submission of each deliverable,

- ❖ The estimated amount of time necessary to complete the tasks of their sectors,
- ❖ The budget, as institutional arrangements and national circumstances dictate, such as the funds allocated by their immediate supervisor or the NIC to develop their sector's GHG estimates, and how these funds may be utilized in support of developing and documenting the sector's estimates, and
- ❖ The IPCC Guidelines for their sector, including default methods, data sources, basic QA/QC, uncertainty assessment, and reporting procedures.

Individual Sector's Preparation

- ❖ Review the Consultative Group of Experts' (CGE) materials related to individual sector. [[CGE Materials](#)]
- ❖ Review the individual sector's section of the IPCC Guidelines to understand the default methods, data sources, basic QA/QC, uncertainty assessment, and reporting procedures. [[2006 IPCC Guidelines](#)]
- ❖ Review the UNFCCC guidance materials for additional information. [[UNFCCC Guidance](#)]
- ❖ Review the individual sector's section of the previous National GHG Inventory and other reports relevant to national GHG estimates for their sector. Reviewing sector's section from other country's GHG inventory reports can also be informative.
- ❖ Understand which categories in their sector were identified as key categories in the previous inventory.
- ❖ Review the EPA's *Templates for Creating a National Greenhouse Gas Inventory System Manual* and additional Toolkit materials available on the GHG Inventory Capacity Building portal. [[EPA Toolkit for Building National GHG Inventory Systems](#)]
- ❖ Use software packages, if applicable, that are relevant and useful for the sectors ([IPCC Inventory Software](#) or relevant country-specific software used in compiling previous inventories for the sectors).
- ❖ Be familiar with the role of the GHG inventory in UNFCCC reporting processes (e.g., National Communication (NC), etc.).

Sectors' (Energy, IPPU, Agriculture, LULUCF and Waste) Responsibilities and Activities

- ❖ Review the *2006 IPCC Guidelines for National Greenhouse Gas Inventories* and previous IPCC Guidelines, if applicable, such as *Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories*.
 - Understand the GHG categories that are sources in the sector.
 - At minimum understand the Tier 1 methodologies, data needs, and other requirements for developing GHG estimates for the sector and become familiar with those for Tier 2.
- ❖ Collaborate with the NIC to manage the sector budget and develop a sector-specific work plan and schedule that coincides with deliverables acknowledged in the overall National Inventory Schedule.
- ❖ Develop and implement a sector-specific plan for archiving all relevant information and materials, in coordination with the archiving coordinator and adhering to any existing archiving guidance materials for your national inventory (see EPA's [Template 6: Archiving System](#)).
- ❖ **Particular to Agricultural Sector:** Identify the types of agricultural practices in your country that are relevant to production of GHG emissions (e.g., Crop Production, Livestock Management, Burning of Agricultural Residues or Grasslands), contact national, regional, and local experts to determine if the necessary data is readily available, and establish institutional arrangements for collecting activity data.
- ❖ Oversee the establishment of arrangements between sector data collectors and data suppliers.
 - Collaborate with the NIC to record the institutional arrangements for the sector in EPA's [Template 2: Institutional Arrangements](#).

- If required, develop agreements such as Memoranda of Cooperation (MOC) with necessary organizations (e.g., Ministry of Energy, Ministry of Transportation, universities) to assist with activities required by the Sector Lead (e.g., data collection, generating GHG estimates), as appropriate (see EPA’s Memorandum of Cooperation template).
 - **Particular to LULUCF:** Contact federal agencies/ministries or non-governmental organizations to inquire about the existence of satellite imagery data for categories such as Agriculture Residue Burning. Ensure this is done in coordination with the agriculture sector that may also require access to imagery.
- Develop Scopes of Work (SOW) to issue to engage contractors, and/or sector experts. Manage the work being carried out under these contracts to ensure it is meeting the requirements and needs of your GHG inventory sector.
- If IPPU data are not publicly available or reported to the government, identify data providers for each industry (e.g., trade associations, private companies, etc.) **(Particular to IPPU Sector)**
- ❖ Coordinate with the data providers for fossil fuel combustion to determine how fuel was consumed and electricity was generated for each source category (e.g., energy industries, manufacturing industries, and other sectors).
- ❖ Coordinate with the Industrial Processes Sector Lead to determine if there will need to be any adjustments made for Energy fossil fuel combustion activity data.
- ❖ Coordinate with the Waste Sector Lead to determine the amount of waste incinerated used for electricity generation.
- ❖ Coordinate with the Energy Sector Lead to determine whether there is energy generated from waste incineration, and if so, whether that will be included in the Energy sector **(Particular to Waste Sector)**
- ❖ Contact federal agencies/ministries or non-governmental organizations to inquire about the existence of satellite imagery data for categories such as Agriculture Residue Burning. Ensure this is done in coordination with the LULUCF sector, which also requires access to imagery. **(Particular to Agricultural Sector)**
- ❖ Coordinate with the Energy Sector Lead to determine if there will need to be any adjustments made to either sector in cases where GHG estimates might overlap (e.g., iron and steel production, ammonia, etc.). **(Particular to IPPU Sector)**
- ❖ Identify which LULUCF categories are key categories in terms of their contribution to national emissions and removals. **(Particular to LULUCF Sector)**
- ❖ Consider potential improvements identified in the previous inventory for this sector. Assess whether to implement improvements based on the contribution to overall national emissions (by conducting a Key Category Analysis) and availability of resources.
- ❖ Oversee development of GHG estimates from all categories:

Particular to Energy/ Waste/IPPUs Sector

- Determine the most appropriate IPCC methodology to be used to estimate GHGs for each category in accordance with decision trees.
- Oversee choice and/or development of emission factors.
- Document all data collection arrangements, methodologies, and assumptions, including use of expert judgment.
- Complete the relevant tables in EPA’s Template 3: Methods and Data Documentation.

Particular to Agriculture Sector

- Determine the most appropriate IPCC methodology to be used to estimate GHGs for each category in accordance with decision trees.
- Oversee choice and/or development of emission factors.
- Coordinate with the LULUCF Sector Lead to determine emission calculations and activity data adjustments for complex categories such as Agricultural Soil Management and Manure Management.
- Ensure consistency of data between enteric and manure management (e.g., livestock populations and characterization).
- Ensure consistency between nitrogen quantities in Manure Management and Agricultural Soil Management.
- Coordinate with the Waste sector to ensure assumptions on application of sewage sludge and nitrogen content are consistent.
- Document all data collection arrangements, methodologies, activity data, emission factors, and assumptions, including use of expert judgment, in coordination with contractors and other technical experts that are developing the estimates.
- Complete the relevant tables in EPA's Template 3: Methods and Data Documentation.

Particular to LULUCF Sector

- Determine the most appropriate IPCC methodology to be used to estimate GHGs for each category in accordance with decision trees.
 - Oversee choice and/or development of emission factors.
 - Document all data collection arrangements, methodologies, and assumptions, including use of expert judgment.
 - Complete the relevant tables in EPA's Template 3: Methods and Data Documentation.
 - Determine the methodologies to be used to estimate GHG emissions and/or sequestration for soils and other carbon pools.
 - Develop a complete and consistent representation of the land base to establish a clear delineation of land use types (i.e., forestland, wetlands, croplands, grasslands, settlements, other) and conversions of lands between these land use types.
 - Coordinate with the Agriculture Sector Lead to determine emission calculations and activity data adjustments for overlapping categories such as Agricultural Soil Management and Manure Management.
- ❖ Complete both the sector and reference approaches to calculating GHG emissions from fossil fuel combustion in the sector and compare the two results.
 - ❖ In consultation with the QA/QC coordinator (who should be identified in EPA's Template 2: Institutional Arrangements), convene sector working group to review calculations and perform initial Quality Assurance/Quality Control (QA/QC).
 - QA includes review procedures conducted by personnel not involved in the inventory development process (e.g., experts not involved with estimate development, the public, other relevant agencies, non-governmental organizations, universities, etc.).
 - QC includes routine reviews implemented by the inventory development team to measure and control the quality of the inventory as it is prepared (e.g., sector leads and supporting experts involved with estimate development).
 - Ensure that QA/QC procedures are consistent with the general and sector-specific procedures described in EPA's Template 4: QA/QC, which you should be able to obtain from the NIC.

- ❖ Coordinate the response to comments received from QA (external) reviews of the sector GHG estimates and update the inventory if necessary.
- ❖ Review the final GHG estimates and the narrative describing the assumptions, methodologies, and results.
- ❖ Oversee the development of the uncertainty analysis.
- ❖ Identify any improvements needed for subsequent inventories, related to activity data, emission factors, methodologies, or other components of developing the estimates. Document these improvements in the relevant tables in EPA's Template 3: Methods and Data Documentation and discuss them with the NIC for prioritization in the overall inventory improvement plan (Template 7: National Inventory Improvement Plan).

Annex 3: Template Memorandum of Understanding

This document provides a template to be used to set up an agreement or a Memorandum of Cooperation between two ministry or agencies, typically between a data provider to the National GHG Inventory and the organization developing the Inventory. This template is part of EPA’s Toolkit for Building National GHG Inventory Systems (“Toolkit”), which can be adopted by the national inventory team to design and develop a sustainable inventory system.

MEMORANDUM OF COOPERATION

between

_____ [MINISTRY X] _____

and

_____ [MINISTRY Y] _____

on

The National Greenhouse Gas Inventory and Program B, C, etc....

I. OBJECTIVES

The objectives of this Memorandum of COOPERATION (MOC) between [Ministry X] and [Ministry Y] are:

- 1)
- 2)

Examples:

- 1) *To develop a system of data sharing between Ministry X and Ministry Y, to support the development of the National Greenhouse Gas Inventory (for UN reporting obligations (e.g., National Communication, BUR and/or national policy purposes)). Ministry X has been tasked under [degree, law, act, etc.] to coordinate development of the national GHG inventory.*
- 2) *To commit to work together to develop and jointly implement a program to slow the growth of greenhouse gas emissions.*

II. AUTHORITIES AND RELATED ACTIVITIES

Nothing in this agreement alters, or is intended to alter, the legal and regulatory authorities of Ministry X and Ministry Y. This agreement is solely intended to facilitate the fulfillment of legal requirements and cooperative efforts.

A. The National Greenhouse Gas Inventory

1. The Program

Provide a description of the program in question and context for the program in this MOC.

Example from the USA: Section 1605 (a) of the Energy Policy Act (EP Act), requires that the Secretary of Energy, through the U.S. Energy Information Administration (EIA), develop an inventory of national aggregate greenhouse gas emissions. The inventory shall be established in consultation with EPA using existing and readily available data. Information in the inventory shall be analyzed and updated annually, also using available data.

The Clean Air Act Amendments of 1990 require that EPA: prepare national and international inventories of methane; monitor and report CO₂ emissions from certain stationary sources; pursue pollution prevention, including prevention of greenhouse gas emissions; and address substances which deplete stratospheric ozone (many of which, including their substitutes, are greenhouse gases). The CAA also authorizes EPA to compile and verify emission inventories of criteria air pollutants, most of which are implicated in climate change as indirect greenhouse gases. Section 103 (c) of the CAA requires that EPA conduct a program of research, testing, and development of methods of sampling, measurement, monitoring, analysis, and modeling of air pollutants, to ensure the comparability of air quality data collected in different States and obtained from different nations.

The Global Climate Protection Act of 1987 requires that the President, through EPA, develop a coordinated national policy on global climate change. As the necessary first step in meeting this requirement, EPA will continue to develop greenhouse gas inventories in cooperation with other agencies and various international organizations. EPA has developed the national inventories of U.S. emissions consistent with draft Intergovernmental Panel on Climate Change guidelines.

2. Authorities

Provide descriptions for the national authorities that are relevant to this MOC.

Example from the USA: EP Act Section 1605 (b) (4) allows reporting entities to use information reported through the voluntary reporting system to demonstrate achieved reductions of greenhouse gases.

B. Program B (If necessary)

1. The Program

Provide a description of the program in question and context for the program in this MOC.

2. Authorities

Provide descriptions for the national authorities that are relevant to this MOC.

III. PROVISIONS

A. The National Greenhouse Gas Inventory

It is mutually agreed:

- 1) to...;
- 2) to...

Examples from the USA:

- 1) *to cooperate in the development of greenhouse gas inventories to meet the EP Act provisions and the E.S. commitments under the UNFCCC.*
- 2) *to share expertise, emission factors, methodologies, and data pertaining to the development of greenhouse gas inventories; and,*
- 3) *to establish appropriate points of contact for this section who will be available to regularly meet, review cooperative activities, and to raise issues as necessary.*

Ministry X agrees:

- 1) *to continue to consult with DOE on EPA's maintenance and preparation of the greenhouse gas inventories to meet the U.S. commitments under the UNFCCC.*
- 2) *to ensure that this inventory will undergo full interagency review, and that any outstanding issues will be raised to the Office on Environmental Policy or its Monitoring, Evaluation, and adjustment Task Force for final resolution; and,*
- 3) *to forward the inventory to the Department of State for submission by the U.S. Government under the UNFCCC.*

Ministry Y agrees:

- 1) *to make available supporting technical reports, models, and data that may form the basis of the guidelines; and,*
- 2) *to provide, in advance, a schedule for review of draft and final materials which includes, to the extent possible, adequate time for review and comment.*

B. Program B (If necessary)

It is mutually agreed:

Ministry X agrees:

Ministry Y agrees:

IV. MEETINGS AND CORRESPONDENCE (optional)

To accomplish the goals and activities set forth in this MOU, Ministry X and Ministry Y will fully possible:

- 1) Regularly meet for the purposes of program planning and monitoring and evaluating outcomes.
- 2) Respond to correspondence by telephone or email in a manner and timeframe that promotes efficiency and the timely progress or completion of objectives and tasks consistent with the goals and activities described above; and,
- 3) Agree to specific meeting or call times and dates as far as possible in advance of the appointed occasion.

V. POINTS OF CONTACT

The points of contact for the MOC on The National Greenhouse Gas Inventory are:

Ministry X
Position

Ministry Y
Position

Points of contact may be re-designated by the signatories.

VI. DURATION OF THE AGREEMENT

This MOC may be amended by written agreement between Ministry X and Ministry Y. The agreement becomes effective on the date of signature by both parties. It shall remain in effect for a ____ year term from the effective date. This MOC may be terminated by mutual written agreement of X and Y or by either party with ____ days' notice to the other party.

This memorandum of cooperation is entered into
On the ____ day of ____ in the year ____

Signatures:

Name
Position
Ministry X
Date of Signature

Name
Position
Ministry Y
Date of Signature

Annex 4: Typical Legal Framework

Setup of national greenhouse gas inventory system, to be called NIS-GHG, established within the Federal Ministry of Environment responsible for climate change management and sustainable development.

The purpose of this overarching system is to collect and process data relating to the sectors emitting greenhouse gases and all other data necessary for the preparation, in accordance with international standards, of the national inventory report

Table 1.1: Designated Inventory Agency

Designated National GHG Inventory Preparation Agency/Organization	UNFCCC Focal Point (Name) and UNFCCC Focal Point Agency	Describe the arrangements or relationship between Inventory Agency/Organization and UNFCCC Focal Point Agency, if different.
GHG Inventory Division of the Department of Climate Change, Federal Ministry of Environment	Department of Climate Change, Federal Ministry of Environment	National Designated Authority and Focal Point

Table 1.2: National Inventory Management Team

Sector	Role	Coordinating Entity
<ul style="list-style-type: none"> <i>Inventory Director/Coordinator</i> 	<ul style="list-style-type: none"> - Approve the national inventory report. - Approve the internal Rules of the NIS and its updating. - Give opinion and present any proposal relating to the measures to be taken to support national efforts in the fight against greenhouse gas emissions. - Approve the annual training and skills development plan, proposed by the National Inventory Unit 	Federal Ministry of Environment Department of Climate Change
<ul style="list-style-type: none"> <i>National Inventory Unit</i> 	<ul style="list-style-type: none"> - Ensure the availability of inventory results. - Approve the methods applied. 	GHG Inventory Division of the Department of Climate Change

Sector	Role	Coordinating Entity
	<ul style="list-style-type: none"> - validate the training and skills development plan for the implementation of the NIS-GHG. - Ensure the follow-up of the inventory work. 	
<ul style="list-style-type: none"> • 	<p>Each sector coordinator is responsible for collecting data relating to GHG emissions from contributors, according to the roles, and if necessary, processing them and carrying out the calculations necessary for the GHG emissions inventory and their transmission to the national coordinating entity.</p>	
<ul style="list-style-type: none"> • <i>Energy Sector Lead (Oil and Gas)</i> 	<p>Coordinate sectoral GHG data collection, processing, and analysis</p>	<p>Department of Petroleum Resources (DPR) now Nigerian Upstream Petroleum Regulatory Commission (NUPRC) and Nigerian Midstream and Downstream Petroleum Regulatory Authority (NMDPRA)</p>
<ul style="list-style-type: none"> • <i>Agriculture Sector Lead</i> 	<p>Data on GHG emissions from contributors in the agriculture sector are collected by the sector coordinator, who then processes the data and performs the computations for the GHG emissions inventory before transmitting it to the national coordinating agency.</p>	<p>Department of Agricultural Land and Climate Change Management Services (DALCCMS)</p>
<ul style="list-style-type: none"> • <i>LULUCF Sector Lead</i> 	<p>Coordinate sectoral GHG data collection, processing, and analysis</p>	<p>Department of Forestry</p>
<ul style="list-style-type: none"> • <i>Road Transport Sector Lead</i> 	<p>Coordinate sectoral GHG data collection, processing, and analysis</p>	<p>Ministry of Transport</p>
<ul style="list-style-type: none"> • <i>Other Transport</i> 	<p>Coordinate sectoral GHG data collection, processing, and analysis</p>	<p>Federal Ministry of Transport Federal Ministry of Aviation</p>
<ul style="list-style-type: none"> • <i>Archive (Data and Document) Manager/Coordinator</i> 	<p>The Archiving Coordinator is responsible for ensuring that all archiving procedures are performed for the</p>	<p>Sectoral Leads, NBS and DCC</p>

Sector	Role	Coordinating Entity
	inventory and all supporting documents and spreadsheets are retained appropriately	
<ul style="list-style-type: none"> <i>QA/QC coordinator</i> 	Coordinates internal and external reviews of the inventory document and ensures that comments are incorporated into the inventory	DCC for QC and independent auditors for QA processes
<ul style="list-style-type: none"> <i>Uncertainty Analysis coordinator</i> 	Coordinate aggregation of sectoral datasets, and analysis and submission of uncertainty analysis report	National Bureau of Statistics
<ul style="list-style-type: none"> <i>Other: e.g., GHG Policy Specialist who tracks capacity building efforts and IPCC processes</i> 	Track and report capacity building efforts and IPCC process	External consultants

Transparency Tools

Description	Potential Tools that could be employed
<p>To comply with the Enhanced transparency framework (ETF) requirements, Parties will have to collect, compile, organize, archive, and report a huge amount of data on different pillars:</p> <ul style="list-style-type: none"> the GHG inventory, the mitigation action tracking and evaluation (including indicators and Policies & Measures tracking as well as projections) the support needed and received tracking. Adaptation can also be part of the national system put in place and strong links exist with Sustainable Development Goals (SDGs). <p>In this context, the development of national transparency tools will be critical to organize the work and be ready for reporting the first Biennial Transparent Report (BTR) by 2024</p>	<ul style="list-style-type: none"> RISQ: MRV Platform developed by Citepa (France) SINAMECC: MRV Platform developed by Costa-Rica

Check List Summary (Tier 1)

QC Activity	Procedures	Task Completed		Corrective Measure Taken	
		Name/ Initials	Date	Supporting Documents (List Document Name)	Date
Data Gathering, Input, and Handling Checks					
Check that assumptions and criteria for the selection of activity data and emission factors are documented.	<ul style="list-style-type: none"> • Cross-check descriptions of activity data and emission factors with information on categories and ensure that these are properly recorded and archived. 				
Check for transcription errors in data input and reference.	<ul style="list-style-type: none"> • Confirm that bibliographical data references are properly cited in the internal documentation (MDD template report) • Cross-check a sample of input data from each category (either measurements or parameters used in calculations) for transcription errors. • Utilize electronic data where possible to minimize transcription errors. • Check that spreadsheet features are used to minimize user/entry error: <ul style="list-style-type: none"> ○ Avoid hardwiring factors into formulas. ○ Create automatic look-up tables for common values used throughout calculations. ○ Use cell protection so fixed data cannot accidentally be changed. ○ Build in automated checks, such as computational checks for calculations, or range checks for input data. 				
Check that emissions/removals are calculated correctly.	<ul style="list-style-type: none"> • Reproduce a representative sample of emissions/removals calculations. • If models are used, selectively mimic complex model calculations with abbreviated calculations to judge relative accuracy. 				

QC Activity	Procedures	Task Completed		Corrective Measure Taken	
		Name/ Initials	Date	Supporting Documents (List Document Name)	Date
Check that parameter and emission/removal units are correctly recorded and that appropriate conversion factors are used.	<ul style="list-style-type: none"> • Check that units are properly labeled in calculation sheets and (MDD template report) • Check that units are correctly carried through from beginning to end of calculations. • Check that conversion factors are correct. • Check that temporal and spatial adjustment factors are used correctly. 				
Check the integrity of database files.	<ul style="list-style-type: none"> • Confirm that the appropriate data processing steps are correctly represented in the database. • Confirm that data relationships are correctly represented in the database. • Ensure that data fields are properly labeled and have the correct design specifications. • Ensure that adequate documentation of database and model structure and operation are archived. 				
Check for consistency in data between categories.	<ul style="list-style-type: none"> • Identify parameters (e.g., activity data, constants) that are common to multiple categories and confirm that there is consistency in the values used for these parameters in the emissions/removals calculations. 				
Check that the movement of inventory data among processing steps is correct.	<ul style="list-style-type: none"> • Check that emissions/removals data are correctly aggregated from lower reporting levels to higher reporting levels when preparing summaries. • Check that emissions/removals data are correctly transcribed between different intermediate products. 				
Data Documentation					
Review of internal documentation and archiving.	<ul style="list-style-type: none"> • Check that there is detailed internal documentation to support the estimates and enable duplication of calculations. • Check that every primary data element has a reference for the source of the data (via cell comments or another system of notation). • Check that inventory data, supporting data, and inventory records are archived and stored to facilitate detailed review. 				

QC Activity	Procedures	Task Completed		Corrective Measure Taken	
		Name/ Initials	Date	Supporting Documents (List Document Name)	Date
	<ul style="list-style-type: none"> • Check that the archive is closed and retained in secure place following completion of the inventory • Check integrity of any data archiving arrangements of outside organizations involved in inventory preparation. 				
Calculation Checks					
Check methodological and data changes resulting in recalculations.	<ul style="list-style-type: none"> • Check for temporal consistency in time series input data for each category. • Check for consistency in the algorithm/method used for calculations throughout the time series. • Reproduce a representative sample of emission calculations to ensure mathematical correctness. 				
Check time series consistency	<ul style="list-style-type: none"> • Check for consistency in time series input data for each category. • Check for consistency in the algorithm/method used for calculations throughout the time series. • Check that the effects of mitigation activities have been appropriately reflected in time series calculations. 				
Check completeness	<ul style="list-style-type: none"> • Confirm that estimates are reported for all categories and for all years from the appropriate base year over the period of the current inventory. • For subcategories, confirm that the entire category is being covered. • Check that known data gaps that result in incomplete category emissions/removals estimates are documented, including qualitative evaluation of the importance of the estimate in relation to total net emissions (e.g., subcategories classified as 'not estimated'). 				
Trend checks	<ul style="list-style-type: none"> • For each category, compare current inventory estimates to previous estimates, if available. If there are significant changes or departures from expected trends, re-check estimates and explain any difference. Significant changes in emissions or removals from previous years may indicate possible input or calculation errors. • Check value of implied emission factors (aggregate emissions/removals divided by activity data) across time series. Are changes in emissions or removals being captured? 				



Department of Climate Change
Federal Ministry of Environment

QC Activity	Procedures	Task Completed		Corrective Measure Taken	
		Name/ Initials	Date	Supporting Documents (List Document Name)	Date
	<ul style="list-style-type: none">• Check if there any unusual or unexplained trends noticed for activity data or other parameters across the time series.				

Source: This list has been adapted from IPCC Good Practice Guidance and the 2006 IPCC Guidelines for National GHG Inventories.

Nigeria-ICAT Project Team

A. National Project Consultants

S/N	Names	Responsibility
1.	Dr. Bala Bappa	Coordinating Consultant/In-Country Facilitator
2.	Engr. James Ogunleye	Lead Consultant, Oil and Gas
3.	Mr. Kazeem Sanusi	Consultant, Road Transport
4.	Mr. Ogunsegun Omotosho	Consultant, Other Transport (Railway, Maritime, and Aviation)
5.	Mr. Stanley Ijeoma	Consultant, Land Use, Land Use Change and Forestry
6.	Mr. Agbo Chinonso Bathlomeo	Consultant, Agriculture (Crops)
7.	Ms. Grace Chinwe Chukwu	Consultant, Agriculture (Livestock)

B. National ICAT Project Steering Committee – Department of Climate Change, Federal Ministry of Environment

S/N	Names	Responsibility
1.	Mrs. Halima Bawa Bwari	Ag. Director, Department of Climate Change
2.	Ms. Asmau Jibril	ICAT Focal Point/Head of Mitigation Division
3.	Mrs. Chioma Amudi	NDC & MRV Desk Officer, Mitigation Division
4.	Mr. Bayo Adekoje	Vulnerability & Adaptation Division
5.	Ms. Sa'adatu Gambo	Education, Awareness & Outreach Division
6.	Mrs. Benny Ejiofor	GCF Desk Officer, Mitigation Division
7.	Mr. Faruk Raji	GHG Inventory Division

C. International Consultants Team

S/N	Names	Responsibility
1.	Julien Vincent	CITEPA, France - Lead
2.	Mike Bess	GHGMI, USA - Co-Lead
3.	Etienne Mathias	CITEPA, France
4.	Jean-Marc André	CITEPA, France
5.	Jerry Seager	GHGMI, USA
6.	Katie Goldman	GHGMI, USA
7.	Alissa Benchimol	GHGMI, USA