ICAT

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JUST & GENDER INCLUSIVE TRANSITION: MONITORING REPORTING VERIFICATION IMPLEMENTATION ROADMAP

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Table of Contents

Abbreviation

µg/m3	Micrograms per cubic meter
ESIA	Environmental and Social Impact Assessments
FDI	Foreign Direct Investment
FTE	Ful Time Equivalent
GCF	Green Climate Fund
GDP	Gross Domestic Product
GEF	Global Environment Facility
GHG	Greenhouse Gas
GIS	Geographic Information System
HA	Hectares
ILO	International Labour Organization
IR	Implementation Roadmap
JGIT	Just and Gender Inclusive Transition
KPI	Key Performance Indicator
KWh	Kilowatt hour
LGA	Local Government Area
MDA	Ministries Departments and Agencies
MRV	Monitoring, Reporting and Verification
NBS	National Bureau of Statistics
NDC	Nationally Determined Contribution
NGO	Non- Governmental Organization
NMVOCs	Non-Methane Volatile Organic Compounds
ppb	Parts per billion
PPP	Public Private Partnerships
SDGs	Sustainable Development Goals
SLCPs	Social and Labor Convergence Program
VOC	Volatile Organic Compound

Executive Summary

The Nigeria Just and Gender Inclusive Transition (JGIT) Monitoring and Evaluation (M&E) Roadmap represents a significant initiative to transform Nigeria's economic, environmental, and social structures towards a sustainable and equitable future. This comprehensive roadmap builds on extensive sectoral scoping studies and impact assessments in the oil and gas, energy, and agriculture sectors, identifying key indicators and potential policy impacts to guide the transition. Given the current trends in which these sectors play crucial roles in employment and the economy yet contribute significantly to environmental degradation and social disparities, the JGIT framework aims to mitigate these challenges while promoting sustainable development.

The objective and vision of the JGIT M&E roadmap are aligned with Nigeria's Long Term Low Emissions Development Strategy (LT-LEDS), which seeks to make Nigeria a low-carbon, climate-resilient, high-growth circular economy. By 2050, Nigeria aims to reduce its emissions by 50%, moving towards net-zero emissions by 2060. The framework emphasises economic diversification away from oil dependency, the adoption of renewable energy, robust environmental conservation practices, and social inclusivity. The ultimate goal is to enhance energy security, reduce greenhouse gas emissions, and ensure equitable benefits for all Nigerians, particularly the most vulnerable populations.

The implementation roadmap is structured into four key phases: foundation building, initial implementation, scale-up and integration, and consolidation and sustainability. Each phase outlines specific activities and expected outcomes, ensuring a systematic approach to achieving the framework's objectives. The overall deployment strategy emphasizes continuous stakeholder engagement, capacity building, and the integration of best practices in data management and analysis.

Institutional arrangements are critical to the successful implementation of the JGIT M&E roadmap. The National Bureau of Statistics (NBS) will be the central coordinating body, overseeing data collection, validation, and quality control/quality assurance (QC/QA) procedures. A steering committee comprising representatives from key ministries, including Environment, Agriculture, Power, and Health, along with other stakeholders such as the Nigerian Women and Youth Ministries and environmental CSOs, will provide strategic guidance and oversight. Data collection will involve a multi-tiered approach, with federal ministries, state ministries, and local governments playing essential roles in gathering and validating data. Community organisations, NGOs, and universities will support qualitative data collection to ensure a comprehensive understanding of impacts.

The linkage of the JGIT MRV with the National MRV framework is crucial for enhancing reporting obligations to the UNFCCC and meeting Nigeria's NDC targets. This integration will ensure consistency in data reporting and help track progress towards national climate goals. Data management and inter-agency coordination will be streamlined through advanced analytical tools and methodologies, with the NBS ensuring data quality and consistency across all levels. The roles and responsibilities of personnel involved in the JGIT framework will be clearly defined, with dedicated roles for data coordination, QC/QA, and stakeholder engagement.

The data type and collection process will encompass various indicators, including environmental, social, and economic impacts. The analysis of this data will provide actionable insights for policy decisions, ensuring alignment with the just transition vision and

objectives. The budget for the framework, estimated at $2.9 million over two years, will be coordinated by the NBS, with funding from government allocations, international grants, and private sector contributions. The budget covers personnel costs, training and capacity building, third-party audits, media and communication, and technology infrastructure.

The implementation plan outlines key milestones for each phase, ensuring timely and effective execution of the framework. Risk identification and mitigation strategies are integral to the roadmap, addressing potential challenges such as stakeholder resistance, data inaccuracies, and financial constraints. These strategies include proactive stakeholder engagement, robust validation processes, and securing diverse funding sources.

In conclusion, the JGIT M&E Roadmap provides a comprehensive and systematic approach to transitioning Nigeria towards a sustainable, equitable, and resilient economy. The detailed strategies and mechanisms outlined in this report are designed to ensure effective implementation, continuous improvement, and stakeholder collaboration. By adhering to this roadmap, Nigeria can achieve its ambitious climate and development goals, positioning itself as a leader in climate action and sustainable development on the African continent. The recommendations emphasise the need for sustained commitment, inclusive participation, and robust data management to achieve the framework's objectives, ensuring a just transition that benefits all Nigerians.

1.0 Introduction

The journey towards developing Nigeria's Just and Gender Inclusive Transition (JGIT) MRV Framework and Roadmap development began with comprehensive sectoral scoping studies in the Oil and Gas, Agriculture and Forestry sectors. These studies identified key environmental, economic, social and gender mainstreaming challenges, setting the stage for target-specific impact assessments. These assessments were crucial in pinpointing specific indicators and potential policy impacts, providing a detailed understanding of the sectors' current state and the necessary next steps towards a just and gender-inclusive, sustainable development.

The impact assessments revealed critical insights into emissions, land use changes, and socio-economic factors, highlighting areas needing immediate intervention. This led to the development of a robust Monitoring, Reporting, and Verification (MRV) framework designed to proactively monitor the pressure points of the fast-emerging and rapidly evolving just transition. The MRV framework will establish standardised data collection, analyses, and reporting protocols, ensuring transparency and accountability in tracking progress towards the transition goals. By leveraging innovative technologies and rigorous quality control measures, the MRV framework has created solid foundations for policymakers and political authorities to make informed decisions.

Building on the JGIT MRV Framework outcomes, the Implementation Roadmap (IR) aims to provide a clear, phased strategy for achieving the JGIT MRV Framework’s objectives. It outlines specific milestones and actions necessary to track key sectors in transition, like Agriculture, Forestry, Oil and Gas, to more sustainable practices through participatory processes while promoting social equity and economic resilience. The IR focuses on establishing robust institutional arrangements, securing diversified funding, managing risks proactively, and engaging stakeholders comprehensively. This strategic approach ensures that every step of tracking the transition is inclusively participatory, well-coordinated, and effectively implemented.

Developing a dynamic and robust roadmap is essential to guide tracking of the complex transition process, ensuring all stakeholders are aligned through consensus-making while working towards common goals of economic justice, social protection and shared prosperity. It provides a structured path forward, detailing the actions required, the timeline for implementation, and the roles and responsibilities of different actors. By setting clearly defined milestones and leveraging data-driven insights, the roadmap aims to facilitate seamless monitoring, reporting and verification of just transition progress, positioning Nigeria as a champion of climate leadership, nature stewardship and environmental sustainability. Nigeria can achieve a just and gender-inclusive transition through this detailed plan, fostering a resilient and equitable future for all its citizens.

1.1 Background and Country Context

Nigeria, a major player in Africa's economy, relies heavily on its natural resources and extractive industry-dependent sectors, such as agriculture, forestry, oil, and gas. These sectors significantly contribute to its GDP, government revenue, and foreign exchange earnings.

However, this sector also poses substantial environmental and social challenges, including greenhouse gas (GHG) emissions, environmental degradation, and social inequalities. As Nigeria embarks on its energy transition, reducing these impacts is critical for achieving just and gender-inclusive outcomes in a climate-challenged and resource-constrained African continent.

The agriculture sector, which employs about 70% of the workforce and contributes 30% to the GDP[1][2], faces significant challenges. Outdated farming practices, deforestation, and climate change impacts threaten food security and rural livelihoods.[3][4] Transitioning to sustainable agricultural practices and improving land use are essential for reducing emissions, conserving biodiversity, and ensuring food security. These changes align with the broader goals of a just transition, integrating environmental sustainability with economic prosperity and social well-being.

Tracking progress towards these goals is vital for Nigeria. A robust Monitoring, Reporting, and Verification (MRV) framework allows for proactive, informed policy decisions, effective economic planning, and support. It supports the achievement of Nationally Determined Contributions (NDC) targets under the Paris Climate Change Agreement and other sector-focused policies. By monitoring and verifying progress, Nigeria can ensure that policy adjustments are based on accurate data, balancing economic growth with environmental sustainability, social equity, and NDC alignment.

The JGIT MRV Framework, comprehensive builds on existing MRV systems, seeks to address Nigeria's complex economic, social, and environmental challenges. This IR roadmap, therefore, provides a phased approach to tracking the implementation of sustainable practices, reducing emissions, and fostering social inclusivity. It supports climate commitments encapsulated in Nigeria’s Updated NDC and enhances resilience against economic and environmental shocks, ensuring a just and sustainable future for all its citizens.

[1] https://www.fao.org/nigeria/fao-in-nigeria/nigeria-at-a-glance/en/
[2] https://www.statista.com/statistics/1193506/contribution-of-agriculture-to-gdp-in-nigeria/
[3] https://sterling.ng/agricultural-practices-and-environmental-social-impact/
[4] https://link.springer.com/referenceworkentry/10.1007/978-3-030-45106-6_155

2.0 Vision and Objective

Vision

The JGIT Implementation Roadmap's vision is to ensure a comprehensive and sustainable implementation of a JGIT MRV process by 2030 and transform Nigeria into a leader in sustainable development and climate action by 2060, where economic growth harmonises with environmental stewardship and social equity.

This aligns with the JGIT vision of successfully transitioning Nigeria's key economic sectors to sustainable practices, significantly reducing emissions, conserving biodiversity, and improving livelihoods by 2060. This transition will be inclusive, ensuring that all citizens, especially the most vulnerable, benefit from the economic and social opportunities created by a green economy.

Objective

The JGIT Implementation Roadmap (IR) provides a structured, phased approach to transitioning the oil and gas, agriculture, and renewable energy sectors towards sustainable practices. This IR enhances economic resilience, environmental sustainability, and social equity by integrating robust data management, stakeholder engagement, and proactive risk management. It ensures that data-driven policy decisions support Nigeria's climate commitments and foster long-term prosperity and inclusivity.

The objectives and vision are in alignment and inspired by Nigeria’s Long Term Low Emissions Development Strategy (LT-LEDS) Framework, which seeks to make Nigeria a country of low-carbon, climate-resilient, high-growth circular economy that reduces its current level of emissions by 50% by 2050 and moves towards net-zero emissions across all sectors in a gender-responsive manner by 2060

3.0 Implementation Roadmap

The Implementation Roadmap (IR) for the JGIT MRV Framework outlines the key phases, expected outcomes, and deployment strategies to ensure effective implementation and alignment with national priorities. This roadmap focuses solely on establishing and operationalising the JGIT monitoring, Reporting, and Verification (MRV) system.

Phase	Outputs	Intermediate Outcomes	Years	Final Outcomes
Phase 1: Foundation Building	• Central Coordination by NBS. • Utilize existing infrastructure and resources. • Engage MDAs and local communities via awareness and training programs.	• Define the MRV system components and framework • Conduct baseline assessments. • Build capacity through training programs.	0-1	• Robust MRV framework. • Comprehensive baseline data. • Enhanced stakeholder capacity.
Phase 2: Initial Implementation	• Collaborative approach involving all government levels. • Leverage private sector partnerships. • Regular stakeholder consultations to refine strategies and address challenges.	• Pilot data collection systems in key sectors. • Start real-time data collection and reporting. • Establish feedback mechanisms.	2-4	• Effective data collection and reporting systems. • Initial data reports. • Operational feedback loops.
Phase 3: Scale-Up and Integration	• Continued coordination by NBS and relevant ministries. • Strengthen public-private partnerships. • Expand training and capacity-buil	• Scale up data collection systems to national coverage. • Integrate MRV findings into national policies. • Enhance data systems for	5-7	• National MRV programs operational. • Integration into governance frameworks. • Advanced data systems.

	ding programs.	comprehensive tracking.		
Phase 4: Consolidation and Sustainability	• Maintain strong governance and engagement. • Encourage continuous learning and adaptation. • Promote international collaboration for knowledge exchange and support.	• Consolidate gains from the MRV system developed and deployed. • Conduct comprehensive evaluations. • Foster continuous improvement and innovation.	08-11	• Sustainable MRV practices embedded. • Regular evaluations. • Ongoing innovation and adaptation.

3.1 Overall Deployment Strategy

Governance: Central coordination by NBS with support from the Ministry of Labour and Employment and other relevant ministries.

Stakeholder Engagement: Regular consultations with federal, state, and local governments, the private sector, NGOs, and communities.

Reporting and Feedback: Transparent reporting mechanisms and feedback loops to inform policy and ensure alignment with just transition objectives.

3.2 Institutional Arrangements

The institutional arrangements for the coordination, data collection, validation, quality control/quality assurance (QC/QA) and reporting of Nigeria's Just and Gender Inclusive Transition (JGIT) framework involve a multi-tiered structure to ensure efficiency, accuracy, and accountability.

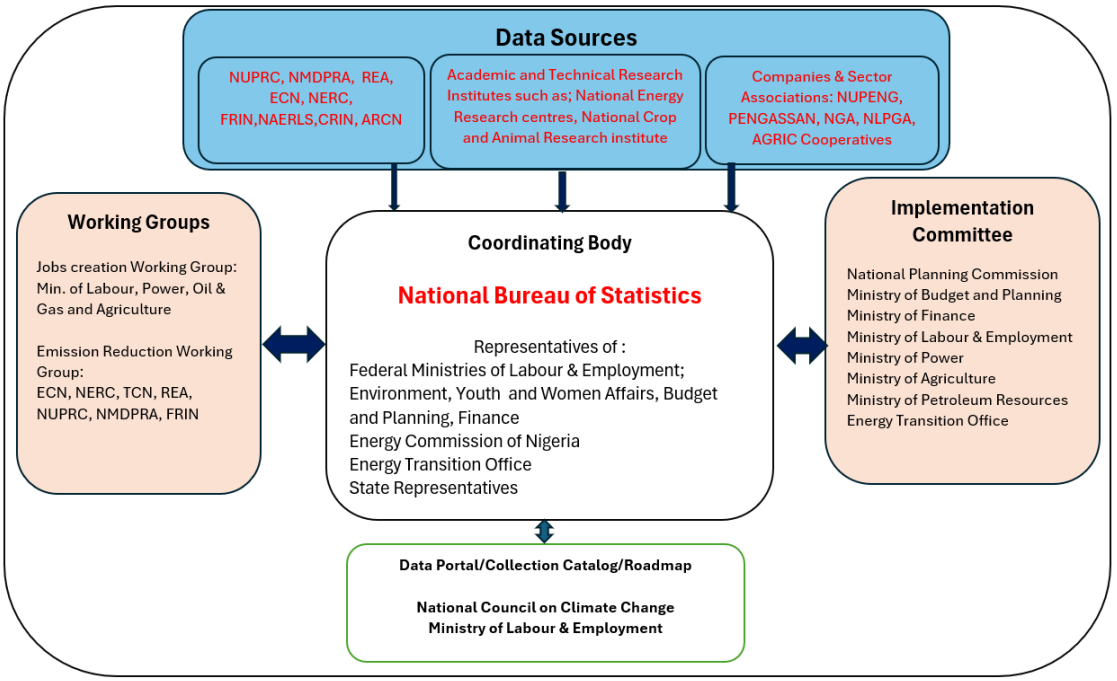


Figure 1: Proposed Institutional Framework

Coordination:

Central Coordinating Body: The National Bureau of Statistics (NBS) will be the central coordinating body. The NBS will oversee data integration from various ministries and sub-national levels, ensuring consistency and standardisation.

Steering Committee: The Steering Committee for the JGIT MRV Framework will provide strategic guidance and oversight to ensure the effective implementation and alignment of the framework with national priorities and international commitments. Comprising representatives from key ministries and a diverse range of stakeholders, the committee will ensure comprehensive and inclusive governance. Key members include the Ministry of Labour and Employment, which will lead the oversight of the JGIT MRV framework and coordinate activities across various sectors; the Ministry of Environment, responsible for tracking environmental impacts, including GHG emissions and biodiversity conservation; the Ministry of Agriculture, which will focus on monitoring sustainable agricultural practices and land use changes; the Ministry of Power, which will track data on energy transition, including renewable energy adoption and energy efficiency measures; and the Ministry of Health, which will gather data on health impacts related to environmental changes and air pollution.

The Steering Committee will also include diverse stakeholders to ensure that the transition is inclusive and addresses the needs of all segments of society. This includes representatives from the Nigerian Youth Congress, who will ensure that the voices and interests of the youth are heard in the transition process; the Conservation Foundation, which will bring expertise in environmental conservation and sustainability; advocacy groups representing people with disabilities to ensure that the transition is inclusive and addresses their specific needs; and environment-related civil society organisations (CSOs) to provide grassroots perspectives and ensure community engagement.

The Steering Committee will provide high-level strategic direction, ensuring that the JGIT MRV Framework aligns with the overarching goals of the JGIT and national development plans. It will oversee the implementation of the MRV framework, monitor progress, and ensure adherence to established protocols and standards. To ensure inclusive and participatory processes, the committee will facilitate continuous dialogue with all relevant stakeholders, including local communities, private sector partners, and international donors. Based on the data and insights generated from the MRV system, the committee will make policy recommendations to the federal and state governments to guide legislative and regulatory actions. Additionally, the committee will ensure that findings and progress reports are regularly communicated to the public, maintaining transparency and fostering trust in the transition process.

Data Collection:

Data collection for the JGIT MRV framework will involve a multi-tiered approach to ensure comprehensive and accurate data gathering. At the federal level, various ministries will collect sector-specific data. For example, the Ministry of Environment will handle GHG emissions and biodiversity data, while the Ministry of Agriculture will focus on agricultural practices and land use. The Ministry of Power will collect data on energy transition, and the Ministry of Health will gather information on health impacts related to environmental changes and air pollution. The National Bureau of Statistics (NBS) will coordinate these efforts to maintain consistency and quality across all data collection activities.

At the subnational level, state ministries and local governments will be critical in collecting localised data. This approach ensures that regional variances and grassroots realities are accurately captured through qualitative data. The data collected at the local level will be integrated into the national system coordinated by the NBS, providing a comprehensive picture of the transition's progress across Nigeria.

To supplement the collection of quantitative data, the involvement of community service organisations, schools, and NGOs will be crucial. These organisations will provide on-the-ground insights and help capture the socio-economic and cultural dimensions of the transition. Universities with crosscutting mandates or faculties focused on just transition and social science research will also play a pivotal role. These academic institutions can offer expertise in designing and implementing qualitative research methodologies, conducting interviews and focus groups, and analysing the data to provide a deeper understanding of the transition's community impacts and social dynamics.

Validation and QC/QA:

- **Validation**

Each ministry will establish internal validation teams responsible for verifying the accuracy of the data before submission to the central system. These internal teams will cross-check data within their respective sectors to ensure consistency and reliability. Additionally, cross-validation between ministries and subnational bodies will be conducted to enhance data integrity. This process will involve periodic reviews and audits to detect and rectify any discrepancies.

To further ensure the data's robustness, third-party validation will be incorporated into the JGIT MRV Framework. Independent third-party auditors will be selected through a transparent and competitive process to provide an impartial data assessment. These auditors will be chosen based on their expertise, credibility, and experience in environmental and social data verification. The third-party validation will occur annually, with new auditors selected every three years to maintain objectivity and prevent conflicts of interest. This external validation will complement the internal efforts, providing an additional layer of assurance.

- **Quality Control (QC)/Quality Assurance (QA)**

A dedicated Quality Control (QC) and Quality Assurance (QA) unit within the National Bureau of Statistics (NBS) will be established to rigorously check the data for consistency, completeness, and accuracy. This unit will employ advanced analytical tools and methodologies to maintain high data standards. The QC/QA unit will conduct regular checks and audits, utilising statistical techniques and software to identify and correct errors in the data.

The QC/QA process will involve multiple stages, including initial data checks, in-depth reviews, and final verification before data is used for reporting and analysis. The unit will work closely with internal validation teams within each ministry and subnational bodies to ensure a seamless data verification process. Feedback from third-party auditors will be integrated into the QC/QA process to improve data quality continuously.

Reporting:

- **Regular Reporting**: The NBS will compile quarterly and annual reports, integrating data from all levels. These reports will highlight progress, identify challenges, and provide recommendations.
- **Stakeholder Communication**: Reports will be disseminated to all stakeholders, including government bodies, private sector partners, NGOs, and the general public. Accessible formats and multiple languages will ensure broad understanding and engagement.

3.3 Linking the JGIT MRV with the National MRV

To ensure coherence and integration between the JGIT Monitoring, Reporting, and Verification (MRV) system and Nigeria's existing national MRV frameworks for GHG emissions, the following steps will be undertaken:

Integration of Data Systems:

- **Unified Data Platform**: The National Bureau of Statistics (NBS) will develop a unified data platform that consolidates data from the JGIT MRV and the existing national MRV frameworks. This platform will enable seamless data sharing and integration, ensuring consistency in reporting.

- **Data Standardization**: Standardize data collection methodologies across JGIT and national MRV systems to ensure compatibility. This includes aligning data formats, units of measurement, and reporting protocols.

Coordinated Reporting and Verification:

- **Harmonized Reporting Schedule**: Synchronize the JGIT MRV's reporting schedules with the national MRVs to ensure timely submission of consolidated reports. Annual reports generated by the JGIT MRV will feed into the national MRV reporting cycle.
- **Joint Verification Processes**: Joint verification teams will be created, comprising experts from the National Bureau of Statistics (NBS), the Ministry of Environment, Labour, Power, Petroleum Resources, Agriculture, Women Affairs, Youths and Sports, Budget and National Planning and other relevant ministries. These teams will be responsible for conducting cross-verification of data to ensure consistency and reliability across different sectors and levels of government.

The joint verification teams will review and validate data collected at the federal and subnational levels. This collaborative approach will facilitate the identification and resolution of discrepancies, ensuring that the data reflects a comprehensive and accurate picture of the progress and impacts of the JGIT framework.

In addition to the internal verification efforts, independent third-party verification will be integrated into the joint verification processes. The joint verification processes, supplemented by third-party verification, will involve the following steps:

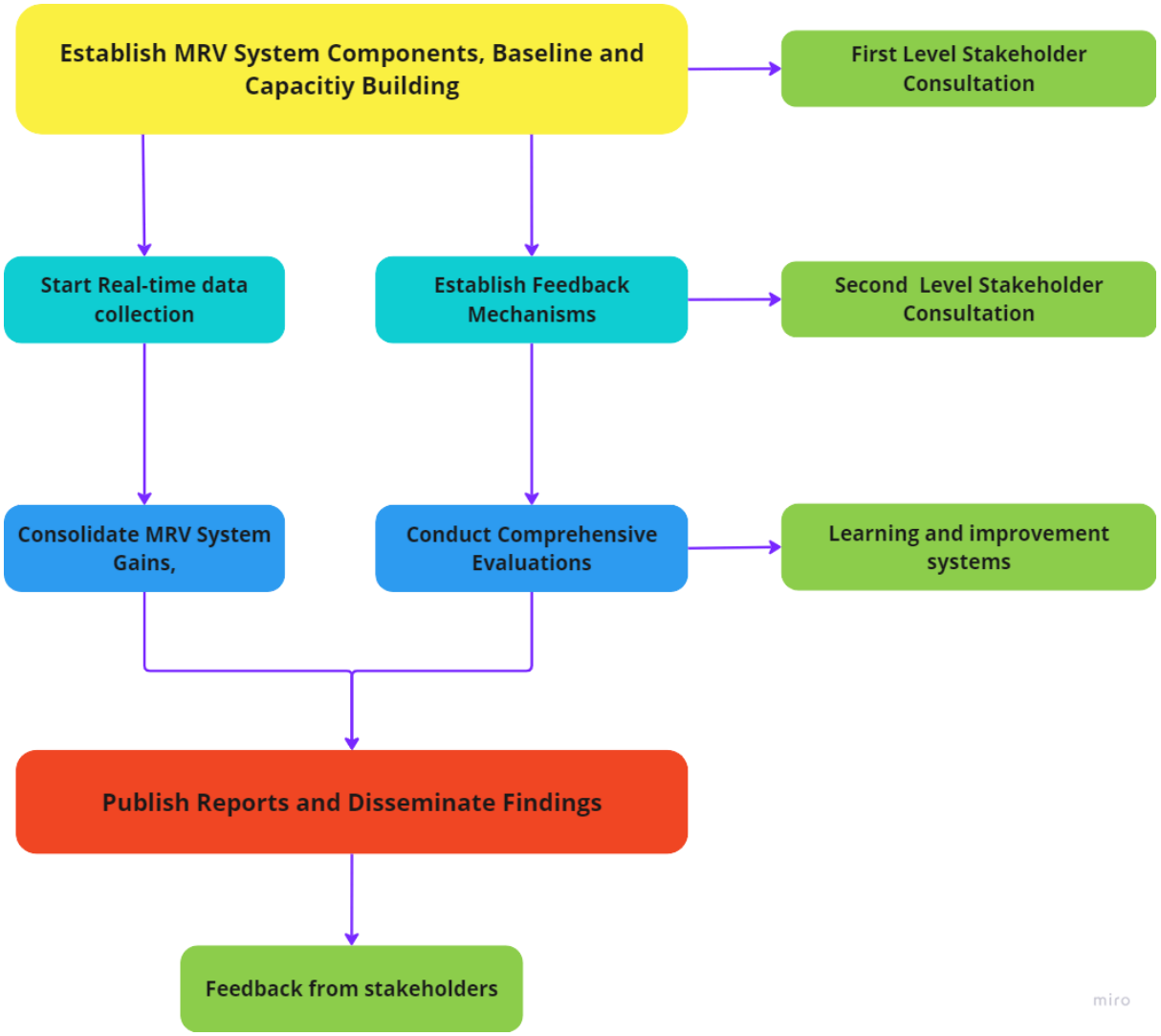
- Initial Data Review: Internal validation teams within each ministry will conduct preliminary reviews of their sector-specific data.
- Cross-Verification: Joint verification teams will perform cross-verification to ensure data consistency across ministries and sub-national bodies.
- Third-Party Verification: Independent third-party auditors will review the data annually, providing an unbiased assessment of its accuracy and reliability.
- Feedback Integration: Feedback from third-party auditors will be used to address any identified issues and improve the overall data collection and verification processes.

Capacity Building and Technical Assistance:

- **Training Programs**: Implement capacity-building programs for JGIT and national MRV systems stakeholders. This includes training on data collection, analysis, and reporting to ensure consistency and accuracy.
- **Technical Assistance**: Provide technical assistance to subnational bodies and other stakeholders to integrate JGIT MRV data into the national MRV framework.

3.4 Stakeholder Engagement and Communication

The approach to stakeholder engagement and communication will involve a comprehensive and participatory process that actively includes all relevant parties in the decision-making and implementation stages.



Inclusive Stakeholder Consultations: Regular engagement with stakeholders through annual workshops, quarterly online seminars, and consultations will be a cornerstone of the JGIT MRV framework. These events will bring together representatives from government ministries, local communities, private sector partners, NGOs, academic institutions, and other relevant organisations. The consultations will be designed to ensure that all voices are heard and that diverse perspectives are incorporated into the MRV system, respecting the unique contributions of each stakeholder.

- **Workshops and Seminars:** These are organised periodically (annually and quarterly) to discuss progress, share findings, and gather input from stakeholders. They will facilitate knowledge exchange and collaborative problem-solving.
- **Community Consultations:** These are held locally to ensure that community members, including those from vulnerable groups, are actively involved in the MRV process. This will help ensure that the data collected reflects grassroots realities and community needs.
- **Advisory Committees:** Establishing advisory committees comprising representatives from various stakeholder groups to provide ongoing guidance and oversight of the MRV system.

Transparent Communication: Maintaining transparent communication channels is essential for building trust and ensuring that all stakeholders are informed about the progress and integration efforts of the JGIT MRV framework. This will include:

- **Regular Updates:** Provide stakeholders with regular updates on the status of the MRV system, key findings, and any adjustments made based on feedback through newsletters, reports, and digital platforms.
- **Public Reports:** Comprehensive reports detailing the data collected, analysis performed, and implications for policy and practice will be published. To ensure transparency, these reports will be accessible to all stakeholders.
- **Feedback Mechanisms:** Creating mechanisms for stakeholders to provide ongoing feedback and raise concerns. This will include online platforms, suggestion boxes, and dedicated contact points within the NBS and relevant ministries.

Interactive Platforms: Utilizing interactive platforms to enhance communication and engagement. These platforms can include:

- **Web Portals:** An online portal where stakeholders can access real-time data, reports, and updates. The portal will also provide forums for discussion and feedback.
- **Social media:** Leveraging social media channels to disseminate information quickly and engage with a broader audience.
- **Mobile Applications:** Developing mobile apps to facilitate easy access to information and enable stakeholders to provide real-time feedback.

Collaborative Partnerships: Fostering collaborative partnerships with NGOs, academic institutions, and community-based organisations to support the qualitative data collection and community engagement efforts. These partnerships will help ensure that the MRV system is grounded in local contexts and benefits from the expertise and networks of these organisations.

3.5 Data Management and Inter-Agency Coordination

Effective data management and inter-agency coordination are crucial for achieving the objectives of Nigeria's Just and Gender Inclusive Transition (JGIT) framework. Here are key recommendations to enhance data management and coordination:

1. **Establish a Centralized Data Repository**:

- **Unified Platform:** Develop a centralised data repository managed by the National Bureau of Statistics (NBS) to store and integrate data from various agencies. This platform should be accessible to all relevant ministries and agencies to ensure seamless data sharing and collaboration.

- **Data Standardization**: Implement standardised data collection and reporting protocols across all agencies to ensure consistency and reliability. This includes adopting common formats, units of measurement, and data validation procedures.

2. **Strengthen Inter-Agency Communication:**

- **Regular Coordination Meetings**: Organize regular inter-agency meetings to discuss data collection processes, challenges, and progress. These meetings should involve representatives from the Ministry of Labour and Employment, Ministry of Environment, Ministry of Agriculture, Ministry of Power, Ministry of Health, and state-level counterparts.
- **Communication Channels**: Establish clear communication channels, such as dedicated email lists, collaborative platforms (e.g., Microsoft Teams, Slack), and regular newsletters to keep all stakeholders informed and engaged.

3. **Enhance Data Quality and Integrity**:

- **QC/QA Protocols**: Develop and implement robust quality control and quality assurance (QC/QA) protocols to ensure data accuracy and integrity. The NBS should lead the QC/QA efforts, and each ministry should conduct initial validation before submitting data.
- **Third-Party Audits**: Engage independent third-party auditors every three years to review and verify the data, ensuring transparency and accountability.

4. Capacity Building and Training:

A robust capacity-building and training program is essential for the successful implementation and sustainability of the JGIT MRV framework. Using best practices from similar initiatives, such as Ethiopia's development of a data hub to support green economy models, Nigeria will adopt a 'trainer of trainers' approach to ensure long-term capacity and self-sustaining training programs.

Training Programs: Comprehensive training materials will be developed to cover all aspects of data management, analysis, and reporting. Regular training sessions will be conducted for data collectors and analysts across all relevant agencies. These programs will focus on advanced technologies, data validation techniques, and reporting standards to

ensure participants are well-equipped with the necessary skills. The training will also include modules on remote sensing, IoT, and other digital tools to enhance data collection and analysis capabilities.

Trainer of Trainers Model: To ensure the sustainability of the training program, a 'trainer of trainers' pipeline will be established. This approach involves selecting a core group of IT staff from key ministries and partnering universities, who will receive intensive training on the MRV system and data hub. These trainers will then train additional staff within their respective ministries and institutions. This model enhances the reach and impact of the training program and builds a self-sustaining capacity within the system, reducing the dependency on external trainers.

Technical Assistance: Subnational bodies and other stakeholders will receive ongoing technical assistance to support their data collection and reporting efforts. This assistance will include troubleshooting, hands-on support during data collection phases, and continuous updates on best practices and new technologies. Stakeholders can maintain high data quality and consistency across all levels by establishing a support network.

Integration with Universities and Research Institutions: Partnering with universities and research institutions will play a crucial role in the capacity-building initiative. These institutions will serve as training hubs and contribute to continuously developing training materials and methodologies. Academic partnerships will ensure that the training programs remain current with the latest research and technological advancements, fostering an environment of continuous learning and innovation.

Regional Training Centres: Regional training centres will be established nationwide to facilitate easy access to training and support. These centres will host regular workshops, seminars, and hands-on training sessions. They will also serve as coordination points for the 'trainer of trainers' program, ensuring that knowledge and skills are effectively disseminated to all regions.

5. **Implement Advanced Data Analytics:**

- **Analytical Tools**: Utilize advanced data analytics tools and software to process and analyse data efficiently. This will enable the identification of trends, patterns, and insights that can inform policy decisions.
- **Real-Time Monitoring**: Incorporate real-time monitoring systems to track progress continuously and make data-driven adjustments to strategies as needed.

3.6 Roles and Responsibilities of Personnel

The table below outlines the roles and responsibilities of personnel involved in the data management and inter-agency coordination for Nigeria's Just and Gender Inclusive Transition (JGIT) framework:

Title	Ministry/Agency	Role and Responsibilities

Data Coordination Lead	National Bureau of Statistics (NBS)	• Oversee centralised data repository. • Coordinate data integration from all ministries. • Ensure data standardisation and quality control
QC/QA Manager	National Bureau of Statistics (NBS)	• Implement QC/QA protocols. • Conduct regular data audits. • Collaborate with third-party auditors for validation
Sector Data Analysts	Ministry of Environment	• Collect and analyse environmental data. • Monitor GHG emissions and biodiversity metrics. • Report findings to the NBS
Agriculture Data Analysts	Ministry of Agriculture	• Collect and analyse data on agricultural practices and land use. • Track climate-smart agriculture initiatives. • Report findings to the NBS
Energy Data Analysts	Ministry of Power	• Monitor renewable energy projects and energy efficiency measures. • Collect data on the electrification of transportation. • Report findings to the NBS
Health Data Analysts	Ministry of Health	• Collect data on health impacts related to environmental changes. • Monitor public health improvements. • Report findings to the NBS
Employment Data Analysts	Ministry of Labour and Employment	• Track job creation and social inclusion indicators. • Monitor employment trends in green sectors. • Report findings to the NBS
State Data Coordinators	State Ministries	• Coordinate data collection at the state level. • Ensure regional data integration and accuracy.

		• Liaise with NBS and federal ministries
Local Data Collectors	Local Governments	• Gather localised data on environmental, agricultural, and social metrics. • Provide on-the-ground insights. • Report data to state data coordinators
Training and Capacity Building Manager	National Bureau of Statistics (NBS)	• Organize training programs for data collectors and analysts. • Provide technical assistance. • Enhance skills in data management and reporting
Stakeholder Engagement Officer	Ministry of Labour and Employment	• Engage with local communities, NGOs, and private sector. • Facilitate regular stakeholder consultations. • Incorporate stakeholder feedback into the data management process
Communication Specialist	Ministry of Information	• Develop and disseminate reports. • Ensure reports are accessible and in multiple languages. • Maintain transparent communication with all stakeholders
Third-Party Verifiers	Independent Audit Organisation	• Conduct annual reviews and verification • Ensure transparency and accuracy of reported data. • Provide validation reports to NBS and relevant ministries

3.7 Data Type and Collection Process

The Data Type and Collection Process section outlines the methodology for gathering and managing data critical to the Just and Gender Inclusive Transition (JGIT) framework. This section details the data types required, including environmental, economic, and social metrics, to monitor progress across key sectors such as oil and gas, agriculture, and renewable energy. It explains the standardised protocols for data collection, ensuring accuracy and consistency. The process involves the integration of advanced technologies and real-time data collection methods, supported by rigorous quality assurance and control measures to maintain data integrity and reliability. This comprehensive approach ensures

that all data collected is actionable and provides a solid foundation for informed decision-making and policy adjustments.

Data Collection Process

Data collection involves a multi-tiered approach to gathering comprehensive and accurate data across key sectors. Data types are identified based on environmental, economic, and social indicators pertinent to the oil and gas, agriculture, and renewable energy sectors. These include greenhouse gas emissions, land use changes, energy consumption, agricultural productivity, and social metrics such as employment and gender inclusion. The National Bureau of Statistics (NBS) oversees this process, ensuring data requirements align with the framework's objectives.

Standardised protocols (templated) will be established for data collection to ensure data accuracy and consistency. These protocols involve using advanced technologies such as remote sensing, IoT devices, and GIS mapping for real-time data acquisition (where applicable). Field surveys and administrative records complement these technological tools, providing granular insights into sector-specific conditions. Data collectors at federal, state, and local levels receive comprehensive training to adhere to these standards, ensuring the reliability of the collected data. Regular updates and audits are conducted to maintain high data quality.

Data from various sources is integrated through a centralised data repository coordinated by the NBS. This repository allows for seamless data aggregation and facilitates cross-sectoral analysis. Rigorous quality assurance and quality control (QA/QC) measures will be implemented, including biannual validation checks and annual third-party audits. These measures ensure that the data remains accurate, complete, and useful for informed decision-making.

Table: Agriculture Sector Selected data category

Impact Categories	Specific Impacts Identified	Indicators	Possible Data Collection Agency
Environmental Dimension			
Climate change mitigation	Reduced emission from rice fields	Net emissions reduction of greenhouse gases (CO2, CH4, N2O, (t/year) and in carbon dioxide equivalent (CO2e) using global warming potential	Ministry of Environment, NCCC, NBS
	Reduced emission from improved soil management		
	Reduced emissions from improved fertiliser management	Number of livestock per category Net emissions of greenhouse gases (CO2, CH4, (t/year) and in carbon dioxide equivalent	FMAFS, NCCC, FMAFS, NBS

		(CO2e) using global warming potential	
	Reduced emissions from improved feed and manure management	Annual change in degraded or desertified arable land (% or hectares) Area of forested land as a percentage of original or potential forest cover Area of forest under sustainable forest management	Ministry of Environment, FMAFS, NCCC, NBS
	Increased emissions from deforestation and land development	Proportion of land area covered by forests Arable and permanent cropland area	Ministry of Environment, FMAFS, NBS
	Increased soil erosion	The proportion of land that is degraded over a total land area	Ministry of Environment, NBS
	Increased biodiversity loss	Forest area as a proportion of total land Proportion of important sites for terrestrial and freshwater biodiversity covered by protected areas, by ecosystem type Progress towards sustainable forest management	Ministry of Environment, NBS
Air quality, health impacts of air pollution	Reduced pollution from open burning and biomass burning	Net emissions of short-lived climate pollutants (SLCPs): black carbon, organic carbon, CO, NMVOCs, sulphates	Ministry of Environment, FMAFS, NCCC Ministry of Health, NBS
	Reduced pollution from water contamination	Emissions of air pollutants such as particulate matter (PM2.5, PM10), ammonia, CO, SO2, NO_2, fly ash and other toxic pollutants (t/year) Concentration of air pollutants (mg/m3) Mortality (avoided premature deaths per year)	Ministry of Environment, Ministry of Health, NBS
	Reduced air pollution from fossil fuel generators (water pumps and mills)		Ministry of Environment, Ministry of Power, NBS
	Increased air pollution from increased production of goods and services due to increased income and economic activities		Ministry of Environment, Ministry of Industry, NBS

Waste generation and disposal	Increased waste generation from increased production and processing activities	Solid waste generated (t/year) Recycling rate (percentage of waste recycled) Proportion of materials reused Proportion of waste composted	Ministry of Environment, Ministry of Agriculture, NBS
Access to clean, affordable, and reliable energy	Increase access to smart renewable irrigation solutions	Percentage of population in the sector with access to clean, reliable, and affordable energy for agricultural activities Price of energy Emissions per unit of energy in the sector Number and length of service interruptions	Ministry of Power, Ministry of Agriculture, NBS
Social Dimension			
Quality and safety of working conditions	Increased safety and working conditions in production and processing activities	Number of fatal and non-fatal occupational injuries per 100,000 workers in the sector, by sex and age status Number of people compliant with safety working recommendations relevant to the sector workers Level of national and subnational compliance with labour rights (freedom of association and collective bargaining) based on International Labour Organization (ILO) textual sources and national legislation by sex and age status	Ministry of Labour and Employment, Ministry of Agriculture, NBS
Capacity, skills, and knowledge development	Increase in training for skilled workers in both production and processing activities	The proportion of youth and adults with scientific, technological, or other skills by type of skill Number of people who have received skill-based training The extent to which climate change education is mainstreamed in national education policies, curricula, teacher education and student assessment The proportion of the population aware of climate change Number of people who have received climate change-related training	Ministry of youths and sports, Ministry of Women Affairs Ministry of Education, FMAFS, Ministry of labour, NBS, Ministry of Education, Ministry of Environment
Climate change education, public awareness, capacity-building, and research	Increased number of people with climate change education		

Gender equality	Increased number of women and youth participation in decision-making	Average income for women and men Gender wage gap Proportion or number of girls and women in school Proportion or number of women in tertiary education Proportion or number of women in the labour force Proportion or number of women in senior management positions Proportion or number of women in senior government positions Women's decision-making power within family/community Women's ability to spend income earned	Ministry of Women Affairs, Ministry of Youth and Sports, Ministry of Labour, NBS
Economic Dimension			
Jobs	Increased job agriculture field production sector	Number of people employed Number of people unemployed Employment rate Unemployment rate Number of jobs in the sector, including short-term jobs and long-term jobs, across the value chains Number of new jobs created across the value chain	Ministry of Labour and Employment, Ministry of Agriculture, NBS
	Increased job processing value chain		
	Increased job in input manufacturing (chemicals, tools, seed etc.)		
Income	Increased income of households, institutions, and other organisations due to increased productivity in the sector	Income per capita Median household income Annual growth in household income in the sector Average daily/hourly wage (in the agriculture sector and sub-sectors) Average daily/hourly wage for different groups (by gender, income, etc.)	Ministry of Finance, Ministry of Agriculture, NBS
Increased business opportunities	Increased business opportunities for farm mechanisation services	Number of new companies Revenue and profit Amount of new investment Number of active, long-term partnerships Total exports from the sector GDP Gross national income State/LGA GDP Annual growth rate of real GDP per capita	Ministry of Industry, Ministry of Agriculture, NBS
	Increased business opportunities for farm input manufacturing		
	Increased business opportunities in		

	product transportation		

Table: Identified relevant indicators for tracking impacts in the energy sector.

Impact Categories	Indicators	Possible Data Collection Agency
	Environmental Impact	
Climate change mitigation (SDG 13)	• Measurement of emissions of GHGs such as CO2), CH4 and N2O resulting from human activities, particularly from industrial processes. • Net emissions of SLCPs include black carbon, organic carbon, CO, NMVOCs, sulphates, etc.	Ministry of Environment, NCCC, NBS
Sustainable Management of Chemicals and Waste (SDG 12)	• Volume of chemicals used (e.g., litres, kilograms) per unit of production or operation (e.g., barrels of oil equivalent, cubic meters of gas). • Percentage reduction in the use of hazardous chemicals compared to baseline levels. • Number of spills or releases (count) or volume of chemicals spilt (e.g. litres, kilograms) per spill. • Volume of waste generated (e.g., cubic meters, metric tons) per unit of production or operation.	Ministry of Environment, NCCC, NBS
Promotion of Sustainable Land Practices (SDG 15)	• Total land area occupied by oil and gas facilities, including flow stations, pipelines, access roads, and ancillary infrastructure, measured in hectares (ha) or acres. • The percentage of disturbed land reclaimed or restored to a natural or productive state after oil and gas operations, assessed through satellite imagery and ground surveys.	Ministry of Environment, NCCC, NBS
Halting Biodiversity Loss (SDG 15)	• Assessment of species diversity and abundance in areas affected by oil and gas activities, including flora and fauna surveys and biodiversity indices. • Mapping critical habitats, ecological corridors, and biodiversity hotspots to identify priority areas for conservation and mitigation efforts, measured in hectares (ha) or square kilometres (km^2). • Identification and protection of ecologically sensitive areas (e.g., biodiversity hotspots, critical habitats) from oil and gas development through regulatory authorities	Ministry of Environment, NCCC, NBS

Access to Safe and Affordable Drinking Water (SDG 6)	● Percentage of drinking water samples meeting microbial safety standards measured through regular water quality testing. ● Concentrations of chemical pollutants (e.g., heavy metals, pesticides, nitrates) in drinking water compared to regulatory limits through laboratory analysis. ● Measurement of turbidity levels and visual clarity of drinking water ● Volume of drinking water available per person per day, measured in litres or cubic meters, considering population size and water demand. ● The percentage of the population served by piped water supply systems or other improved water sources, ensuring equitable access to safe drinking water across urban and rural areas. ● The average distance travelled by households or individuals to access safe drinking water, measured in kilometres or minutes, considering the proximity to water points and transportation infrastructure.	Ministry of Water Resources, Ministry of Environment, NBS
Occupational Safety	● Number of work-related injuries and illnesses, including both non-fatal and fatal incidents. ● Number of lost time injuries (resulting in days away from work) ● Number of hazards identified and reported by workers or through workplace inspections. ● Total hours spent on safety training for workers, including training and emergency response drills.	Ministry of Labour and Employment, Ministry of Health, NBS
Economic Impact		
Revenue Generation/ Redistribution of Wealth	● Total royalty revenue from oil and gas production measured in USD per year. ● Total income tax revenue from oil and gas companies measured in USD per year. ● Total revenue from licensing fees for oil and gas exploration and production rights measured in USD per licensing round. ● Total revenue from export taxes on oil and gas products measured in USD per volume of exports. ● Reduction in fuel subsidies funded by oil and gas revenues measured by percentage reduction in subsidy expenditure. ● Investment in education and training programs funded by oil and gas revenues measured in USD per program.	Ministry of Finance, NBS, Ministry of Petroleum Resources

	● Expenditure on social welfare programs funded by oil and gas revenues measured in USD per program area (e.g., education, healthcare, infrastructure) ● Allocation of funds to regional development projects in oil-producing areas measured in USD per region. ● Total revenue from environmental taxes or levies on oil and gas activities measured in USD per year. ● Fines imposed on oil and gas companies for flaring associated gas during production measured in USD per amount of gas flared.	
Promote Economic Growth (SDG 8)	● Total revenue generated from oil and gas production and export measured in USD per annum. ● Total foreign direct investment (FDI) and domestic investment attracted to the oil and gas sector measured in USD per year. ● Total investment in oil and gas infrastructure development, including pipelines, refineries, and terminals, measured in USD per year. ● Number of direct jobs created, disaggregated by energy source, measured in full-time equivalents (FTEs). ● Number of indirect jobs created in related industries supported by the oil and gas sector measured in FTEs.	Ministry of Industry, Trade, and Investment, Ministry of Petroleum Resources, NBS
Local Community Development (SDG 10)	● Total funds allocated to community development projects from oil and gas revenues measured in USD per year. ● Percentage of procurement spending directed to local businesses and suppliers within host communities compared to total project expenditure. ● Total expenditure on social investment programs, including education, healthcare, infrastructure, and livelihood support, in local communities measured in USD per year. ● Total investment in community infrastructure projects, such as schools, hospitals, roads, and water supply systems, funded by energy companies, with the ability to disaggregate by energy source measured in USD per year. ● Percentage of workforce hired from local communities in oil and gas projects compared to total project workforce.	Ministry of Niger Delta Affairs, Ministry of Petroleum Resources, NBS

	● Percentage of workforce hired from communities for renewable energy projects	
Equality of Opportunity (SDG 10, SDG 5)	● The percentage of local community members, disaggregated by energy source type, gender, ethnicity, socio-economic background, etc., benefiting from economic opportunities generated by the energy sector ● Total investment in programs that promote equality of opportunity, including gender equality, minority inclusion, and social inclusion initiatives, measured in USD per year. ● Percentage of female representation in energy sectors, including technical and leadership positions, compared to the overall workforce composition, with the ability to disaggregate by energy source type.	Ministry of Women Affairs, Ministry of Youth and Sports, NBS
Social Impact		
Housing and Land Rights (SDG 11)	● Total funds allocated to community housing development projects from energy revenues per year, with the ability to disaggregate by energy source type. ● Total expenditure on land acquisition and compensation for energy projects per project, with the ability to disaggregate by energy source type. ● Total investment in infrastructure projects related to housing and land development, including roads, utilities, and community facilities, to support the resettlement and rehabilitation of affected populations measured in USD per year.	Ministry of Housing, Ministry of Lands and Urban Development, NBS
Inclusive Urbanization (SDG 11)	● Total annual investment in urban infrastructure development projects within oil and gas urban areas. ● Total value of urban infrastructure projects developed through public-private partnerships	Ministry of Urban Development, NBS
Access to clean water (SDG 6)	● Total investment in water infrastructure projects (water treatment plants, distribution networks, and sanitation facilities) within oil and gas operational areas – including production, refining, and pipeline network areas per year. ● Allocation of funds from oil and gas revenues to community water projects. ● Percentage of the population within oil and gas operational areas with access to clean drinking	Ministry of Water Resources, NBS

	water from improved water sources, such as piped water, boreholes, and protected wells.	
Air Quality (SDGs 11 and 12)	● Average concentration of PM2.5 and PM10 particles in micrograms per cubic meter (μg/m³) measured over a specified period (e.g., annually) across the country, ability to be disaggregated by geographical area in particular relation to oil and gas areas. ● Average concentration of sulphur dioxide in parts per billion (ppb) measured over a specified period (e.g., monthly) in all areas across Nigeria, , ability to be disaggregated by geographical areas concerning oil and gas areas. ● Average concentration of nitrogen dioxide in parts per billion (ppb) measured over a specified period (e.g., daily). ● Total volume of air pollutants emitted, including particulate matter, sulphur dioxide, nitrogen oxides, volatile organic compounds (VOCs), and other hazardous air pollutants, measured in tons per year, ability to be disaggregated by geographical area in particular relation to oil and gas areas.	Ministry of Environment, NBS
Community Health and Livelihoods (Maternal and Child mortality rates)	● Percentage of communities within oil and gas operational areas with access to primary healthcare facilities (maternal and child welfare) within a 5-kilometre radius ● Ratio of healthcare professionals (doctors, nurses, midwives) to population within oil and gas operational areas ● Percentage of children under five years old within oil and gas operational areas who have received full immunisation according to national vaccination schedules. ● Number of health literacy programs conducted annually in oil and gas operational areas, targeting at least four programs annually. ● Percentage of local people with health insurance plans in oil and gas communities and other rural locations where renewable energy technologies are installed.	NBS, NORSDA, Ministry of Health, Ministry of Women Affairs
Access to Electricity and Development (SDG 7)	● Percentage of households within oil and gas operational areas with access to electricity from the grid or off-grid sources, such as solar panels or mini-grids.	REA, Energy, Ministry of Power, NBS,

	• Percentage of households connected to the electricity grid or off-grid systems, measured annually, disaggregated by geographical area. • Average annual electricity consumption per capita, which can be disaggregated by geographical area in particular relation to oil and gas areas, measured in kilowatt-hours (kWh). • Average frequency and duration of power outages experienced by households and businesses within oil and gas and renewable energy operational areas, measured in hours per year. • Percentage of commercial and industrial establishments within oil and gas and renewable energy operational areas connected to reliable electricity supply, facilitating economic activities and job creation.	
Access to Basic Services (SDG 11)	• Percentage of school-age children within oil and gas and renewable energy operational areas enrolled in formal education programs, including primary, secondary, and vocational education. • Percentage of households within oil and gas and renewable energy operational areas living in adequate housing conditions, including access to durable shelter, basic amenities, and security of tenure. • Availability of public facilities and amenities, such as community centres, markets, recreational areas, and emergency services, to support social interaction, economic activities, and disaster resilience.	NBS, Ministry of Women Affairs
Gender Impact		
Poverty Eradication (SDG 1)	• Average annual income per capita of households within oil and gas operational areas. • Number of new job opportunities created in the renewable energy industries • Percentage of working-age population (15-64 years) employed within renewables and oil and gas operational areas, measured annually. • Percentage of eligible households receiving social assistance benefits, such as cash transfers, food aid, and subsidised healthcare.	NBS, Ministry of Labour, Ministry of Women Affairs
Equal Rights and	• Percentage of male and female employees transitioned to the new renewable energy	NBS, Ministry of Labour, Ministry of Women Affairs

Opportunities (SDG 5)	sectors, measured across different job categories and hierarchical levels. ● Representation of diverse ethnic groups in the workforce, measured as the percentage of employees from minority or indigenous communities. ● Numbers of people with disability employed in the new clean/renewable energy sectors	
End Discrimination and Violence (SDG 5)	● Percentage of employees and contractors participating in training sessions focused on preventing discrimination, harassment, and violence in the workplace across all industries and sectors. ● Annual count of reported incidents of discrimination, harassment, or violence within the workplace or project areas	NBS, Ministry of Labour, Ministry of Women Affairs

3.8 QA/QC Procedures

To ensure data accuracy and reliability for the Just and Gender Inclusive Transition (JGIT) MRV Framework, robust Quality Assurance (QA) and Quality Control (QC) procedures will be implemented, drawing on global best practices.

Quality Assurance (QA): QA procedures focus on preventing errors during data collection and processing. Each ministry will develop a detailed QA plan, including standardised data collection protocols and training for data collectors. The National Bureau of Statistics (NBS) will oversee the implementation of these protocols, ensuring consistency and adherence to international standards. Regular training sessions and capacity-building workshops will be conducted to keep data collection teams updated on best practices and emerging methodologies. QA also involves periodic audits by internal teams to ensure compliance with established procedures.

Quality Control (QC): QC detects and corrects errors post-data collection. The NBS will establish a dedicated QC unit to perform rigorous checks on incoming data. This unit will use advanced statistical tools and software to identify data anomalies, inconsistencies, and outliers. Cross-validation with external data sources and third-party verification will be integral to the QC process. Independent audit agencies will annually review and validate the data, providing additional layers of scrutiny and ensuring transparency.

Continuous Improvement: QA/QC procedures will be continuously refined based on feedback and evaluations. The NBS will facilitate regular inter-agency meetings to discuss QA/QC outcomes, share lessons learned, and update protocols as necessary. Stakeholders, including local communities, NGOs, and private sector partners, will be engaged to provide feedback on data quality. This iterative process ensures that the QA/QC framework remains dynamic and responsive, maintaining the highest data integrity standards throughout the JGIT implementation.

3.9 Data Analysis

The data analysis methodology for Nigeria's Just and Gender Inclusive Transition (JGIT) framework involves a structured approach to accommodate the different target indicators for the agriculture and oil and gas sectors, unified by the overall vision of sustainability, social equity, and economic resilience.

Sector-Specific Analysis:

- Agriculture Sector: Data analysis will focus on indicators such as crop yields, land use patterns, adoption rates of climate-smart agricultural practices, and GHG emissions from farming activities. Advanced statistical tools and Geographic Information Systems (GIS) will analyse spatial data, monitor deforestation rates, and assess soil health and water usage. Seasonal trends and the impact of agricultural interventions on productivity and sustainability will also be examined.
- Oil and Gas Sector: The analysis of the oil and gas sector will centre on GHG emissions, specifically methane and CO2 emissions from extraction, production, and flaring activities. Data on energy consumption, efficiency improvements, and the adoption of cleaner technologies will be scrutinised. Advanced analytics, including predictive modelling and machine learning, will help identify trends, forecast future emissions, and evaluate the effectiveness of mitigation measures.

Integrated Analysis Approach:

- Unified Data Platform: The National Bureau of Statistics (NBS) will utilise a unified data platform to integrate sector-specific data, ensuring a comprehensive view of the transition's progress. This platform will enable cross-sectoral analysis to identify synergies and trade-offs between agriculture and oil and gas interventions.
- Comparative Metrics: Key performance indicators (KPIs) will be compared across sectors to assess overall progress towards national targets. This includes comparing emission reductions, economic impacts, and social benefits derived from sectoral initiatives.

Outcome and Policy Alignment:

- Policy Impact Analysis: Data analysis will inform policy decisions by highlighting the effectiveness of current measures and identifying areas needing adjustment. The analysis will provide actionable insights to policymakers, ensuring alignment with the just transition vision.
- Stakeholder Reports: Regular reports will be generated, summarising findings in accessible formats for stakeholders, including government agencies, NGOs, and the

public. Visual tools like dashboards and infographics will be used to communicate complex data insights.

3.10 Frequency of data collection and reporting

Data collection for Nigeria's Just and Gender Inclusive Transition (JGIT) framework should be conducted monthly to ensure sustainability, bridge data gaps, and efficiently utilize resources. This frequent collection allows for the timely detection of trends and issues. Quarterly aggregation and validation will follow to ensure data consistency and accuracy, enabling preliminary analysis and quality checks.

Reporting will be done quarterly and annually. Quarterly reports will provide detailed summaries of collected data, highlighting progress and discrepancies, while annual reports will integrate these findings to offer a comprehensive view of the year's progress. This structured approach ensures a robust and responsive monitoring system that supports continuous advancement towards the JGIT framework's objectives.

3.11 Draft Budget

The following table provides a draft budget for implementing the JGIT MRV framework over two years representing the pilot stage (initial implementation), factoring in all roles, workshops, media, and third-party auditors' engagement. This budget is calculated based on average salary benchmarks and estimated costs for workshops, media campaigns, and technology infrastructure. Given its central role in data coordination and management, the National Bureau of Statistics (NBS) will primarily coordinate the funding for this initiative.

Table 4: Expense Category Breakdown

Expense Category	Description	Year 1 (USD)	Year 2 (USD)	Total (USD)
Personnel				
Data Coordination Lead	Salary and benefits	80,000	80,000	160,000
QC/QA Manager	Salary and benefits	70,000	70,000	140,000
Sector Data Analysts (5)	Salary and benefits	250,000	250,000	500,000
State Data Coordinators (10)	Salary and benefits	300,000	300,000	600,000
Local Data Collectors (20)	Salary and benefits	200,000	200,000	400,000
Training & Capacity Building Manager	Salary and benefits	70,000	70,000	140,000
Stakeholder Engagement Officer	Salary and benefits	60,000	60,000	120,000
Communication Specialist	Salary and benefits	60,000	60,000	120,000
Workshops and Training				
Initial Training Workshops	For data collectors and analysts	50,000	25,000	75,000
Ongoing Training and Capacity Building	Regular skill enhancement sessions	30,000	30,000	60,000

Third-Party Auditors	Periodic data verification	50,000	50,000	100,000
Media and Communication				
Public Awareness Campaigns	Media, print, and digital campaigns	40,000	40,000	80,000
Report Dissemination	Printing and distribution of reports	20,000	20,000	40,000
Technology and Infrastructure				
Unified Data Platform	Development and maintenance	100,000	50,000	150,000
Analytical Tools and Software	Purchase and licenses	40,000	20,000	60,000
Operational Costs				
Office Supplies and Logistics	General operational expenses	30,000	30,000	60,000
Contingency	Unexpected expenses	50,000	50,000	100,000
Total		**1,500,000**	**1,405,000**	**2,905,000**

Explanation of Cost Calculations

1. **Personnel Costs:** These were estimated based on typical salary and benefits packages for roles in similar projects. Data Coordination Lead, QC/QA Manager, Sector Data Analysts, State Data Coordinators, Local Data Collectors, and other roles were included to ensure comprehensive data management and reporting capabilities.
2. **Workshops and Training:** The cost of initial and ongoing training workshops was calculated to cover expenses related to organising and conducting these events, including venue hire, materials, and facilitator fees.
3. **Third-Party Auditors:** Annual costs for third-party auditors were included to ensure periodic data verification and maintain data integrity.
4. **Media and Communication:** The budget for public awareness campaigns and report dissemination was based on the costs of running multi-channel media campaigns and printing/distributing reports.
5. **Technology and Infrastructure:** The development and maintenance of a unified data platform and necessary analytical tools and software were budgeted based on market rates for such technology solutions.
6. **Operational Costs:** General operational expenses, including office supplies and logistics, were estimated based on the needs of similar projects.
7. **Contingency:** A contingency fund was included to cover unexpected expenses, ensuring the project can adapt to unforeseen challenges.

Funding and Coordination

Given its central role in the MRV framework, the National Bureau of Statistics (NBS) will coordinate the funding for this initiative. The NBS will collaborate with the Ministry of Finance

to secure the necessary funds, potentially leveraging international grants, government allocations, and private sector contributions.

4.0 Implementation plan

4.1 Key Milestones

The following implementation plan, derived from the roadmap, outlines the key milestones for the Just and Gender Inclusive Transition (JGIT) framework over an initial implementation (years 1 - 2) and scale-up (years 3 – 11) covering the national expansion.

Phase	Timeline	Key Milestones
Phase 1: Foundation Building	Year 1, Q1 - Q4	● Establishment of the MRV system ● Completion of baseline assessments ● Initial training workshops conducted. ● Data collection protocols standardised. ● Centralized data repository developed
Phase 2: Initial Implementation	Year 2, Q1 - Q4	● Pilot projects launched in key sectors. ● First quarterly data report published. ● Ongoing training sessions for data collectors and analysts ● Initial feedback from stakeholders after phase one foundation building was incorporated. ● First third-party audit conducted, and report validated
Phase 3: Scale-Up and Integration	Year 3, Q1 - Q4	● Expansion of pilot projects to national programs ● Comprehensive mid-term evaluation completed. ● Integration of just transition principles into national policies. ● Enhanced data systems for national coverage operational
Phase 4: Consolidation and Sustainability	Year 4, Q1 - Q4	● Consolidation of gains from initial implementation phases ● Annual reports indicating continuous improvement published. ● Ongoing stakeholder engagement and feedback mechanisms refined. ● Continuous capacity-building programs in place

Detailed Implementation Plan

Milestone	Quarter	Key Activities	Responsible Parties
Establish MRV System	Year 1, Q1	- Develop and implement the MRV system	NBS, Ministry of Labour and Employment

Baseline Assessments	Year 1, Q2	- Conduct comprehensive baseline assessments for all sectors	All relevant ministries
Initial Training Workshops	Year 1, Q2	- Conduct workshops to train data collectors and analysts	NBS, Ministry of Environment
Standardise Data Collection Protocols	Year 1, Q3	- Establish standardised data collection and reporting protocols	NBS, Ministry of Agriculture, Ministry of Power
Develop Centralized Data Repository	Year 1, Q4	- Develop and deploy a centralised data repository	NBS, IT departments of relevant ministries
Launch Pilot Projects	Year 2, Q1	- Implement pilot projects in key sectors such as agriculture and oil and gas	Relevant ministries, private sector partners
First Quarterly Data Report	Year 2, Q1	- Publish the first quarterly data report summarising initial findings	NBS
Ongoing Training Sessions	Year 2, Q2	- Continue training programs to build capacity for data collection and analysis	NBS, Ministry of Labour and Employment
Initial Stakeholder Feedback	Year 2, Q2	- Collect and incorporate feedback from stakeholders to refine processes	Ministry of Labour and Employment
First Third-Party Audit	Year 2, Q3	- Conduct the first third-party audit and validate the data	Independent Audit Agencies
Comprehensive Mid-Term Evaluation	Year 2, Q4	- Complete a comprehensive mid-term evaluation to assess the overall progress and make necessary adjustments	NBS, all relevant ministries
National Program Expansion	Year 3, Q1	- Scale up successful pilot projects to national programs	Relevant ministries, state governments
Integration into National Policies	Year 3, Q2	- Integrate just transition principles into broader national policies	Ministry of Labour and Employment, NBS
Enhanced Data Systems Operational	Year 3, Q3	- Ensure enhanced data systems are fully operational for comprehensive national coverage	NBS, IT departments of relevant ministries
Annual Reports on Continuous Improvement	Year 3, Q4	- Publish annual reports indicating progress and areas for continuous improvement	NBS, Ministry of Labour and Employment
Ongoing Stakeholder Engagement	Year 4, Ongoing	- Maintain regular engagement with stakeholders through meetings, workshops, and feedback sessions	Ministry of Labour and Employment
Continuous Capacity-Building Programs	Year 4, Ongoing	- Implement continuous capacity-building programs to keep stakeholders updated and trained on best practices	NBS, all relevant ministries

4.2 Financing the Implementation

Financing the Just and Gender Inclusive Transition (JGIT) MRV Framework in Nigeria will leverage national and international sources to ensure feasibility and sustainability.

Government Funding: Secure dedicated allocations from the national budget, prioritising JGIT projects in annual fiscal plans. Additionally, state governments will be encouraged to contribute funds from their budgets for localised initiatives that align with their development priorities.

International Support: Engage with international climate funds such as the Green Climate Fund (GCF) and the Global Environment Facility (GEF) and seek grants and concessional loans from multilateral institutions like the World Bank and the African Development Bank. These sources can provide significant financial backing for large-scale projects.

Private Sector and Innovative Financing: Develop public-private partnerships (PPPs) to attract private investments in renewable energy and sustainable agriculture. Issue green bonds to raise capital for environmentally sustainable projects, appealing to socially responsible investors. Additionally, it leverages carbon trading schemes to generate revenue by selling carbon credits from emission reduction projects.

4.3 Risk Identification and Mitigation Strategies

- **Financial Constraints:** One major risk is the potential for insufficient funding to support the implementation of the JGIT MRV Framework. This could result in delays or incomplete projects, undermining the initiative's overall effectiveness.
    - The first step is to ensure that tasks related to existing staff at the departments take over. Next would be to secure diversified funding sources which is crucial to addressing this. These include national budget allocations, international climate funds, and private-sector investments. Developing a robust fundraising strategy to engage donors and investors will also ensure sustained financial support.

- **Political Instability:** Political changes and instability could disrupt the implementation process, leading to interruptions or shifts in priorities that detract from the JGIT MRV Framework's goals.
    - Fostering bipartisan support for the JGIT MRV Framework is essential. Embedding it in long-term national policies and engaging stakeholders across the political spectrum will build consensus and resilience against political fluctuations.

- **Data Accuracy and Reliability:** Inaccurate or inconsistent data collection could undermine the Monitoring, Reporting, and Verification (MRV) system, leading to flawed assessments and decision-making.
    - Implementing rigorous QA/QC protocols, providing ongoing training for data collectors, and employing advanced technologies for real-time data verification will enhance data integrity. Regular audits by independent third parties will further ensure accuracy.

Stakeholder Resistance:

Stakeholder resistance can manifest in various forms, such as hesitation, mistrust, or opposition to participating in just transition (JT) efforts or supporting monitoring activities. It may stem from a lack of trust in government initiatives, cultural differences, concerns about economic impacts, or insufficient understanding of the JGIT MRV Framework's benefits. Addressing these concerns effectively is crucial to ensure the smooth implementation of the JGIT MRV Framework. Resistance from stakeholders, including local communities and private sector partners, may hinder the progress of the JGIT MRV Framework, leading to delays and reduced cooperation. This resistance can arise for several reasons: stakeholders may distrust government initiatives due to past experiences of unfulfilled promises or lack of transparency; local communities and businesses may fear economic disruptions or job losses resulting from the transition to more sustainable practices; there may be cultural resistance to adopting new technologies or practices perceived as foreign or disruptive to traditional ways of life; and a lack of awareness and understanding about the benefits and objectives of the JGIT framework can lead to reluctance in participating.

Mitigation Strategy:

To overcome stakeholder resistance, a comprehensive and continuous engagement strategy is essential. This involves multiple approaches to building trust, providing clear information, and actively involving stakeholders. Identifying champions among the stakeholders to increase the number of ‘like-minds’, organising regular community meetings and town halls to discuss the JGIT MRV Framework and its benefits and addressing any concerns can allow for open dialogue and direct interaction with stakeholders, helping to build trust and transparency. Conducting surveys and interviews to gather feedback from stakeholders about their concerns and suggestions can help tailor the engagement strategy to address specific issues and improve overall cooperation. Launching information campaigns through various media channels to educate stakeholders about the objectives, benefits, and implementation plans of the JGIT framework can help dispel myths and build a positive perception.

Creating feedback platforms, such as online portals or suggestion boxes, where stakeholders can voice their opinions, concerns, and suggestions and ensuring that this feedback is acknowledged and acted upon demonstrates a commitment to inclusivity and responsiveness. Actively incorporating stakeholder input into the implementation process shows stakeholders that their feedback has a tangible impact on decision-making, enhancing their sense of ownership and willingness to cooperate. Highlighting and demonstrating the tangible benefits of the JGIT framework, such as job creation, improved health outcomes, and economic opportunities through real-life examples and success stories, can motivate participation.

Investing in building local capacity through training and education programs that empower stakeholders to participate in the transition actively addresses skill gaps and fosters a sense of empowerment and involvement. The JGIT MRV Framework can effectively address and mitigate stakeholder resistance by implementing these strategies. Continuous and meaningful engagement fosters collaboration, builds trust, and ensures all stakeholders support the transition to a sustainable, equitable, and resilient economy.

- **Capacity Gaps: A** lack of technical expertise and capacity among implementing agencies could impede the effective execution of the JGIT MRV Framework, resulting in inefficiencies and suboptimal outcomes.
    - Investing in comprehensive capacity-building programs, including training workshops and technical assistance, will enhance skills and knowledge. Partnering with academics, research groups and international organisations to transfer best practices will strengthen capacity.
- **Environmental and Social Impacts:** Potential adverse environmental and social impacts of the transition could arise, affecting communities and ecosystems negatively.
    - Conducting thorough environmental and social impact assessments (ESIAs) before project implementation will identify risks. Developing and implementing mitigation plans to address these risks will ensure that projects are sustainable and inclusive.
- **Technological Challenges:** Technological barriers to data collection and reporting could affect the effectiveness of the MRV system, leading to inefficiencies and data inaccuracies.
    - Investing in modern data collection and management technologies and ensuring continuous maintenance and updates will overcome technological challenges. Keeping technological infrastructure up to date with advancements is essential for effective implementation.

5.0 Conclusion and Recommendations

5.1 Conclusion

In conclusion, the Implementation Roadmap for Nigeria's Just and Gender Inclusive Transition (JGIT) MRV Framework presents a strategic and structured approach to monitoring sustainable development, social equity, and economic resilience. The roadmap builds on comprehensive sectoral studies, impact assessments, and an existing national MRV framework to ensure data-driven decision-making and effective resource utilisation. This plan outlines key indicators to monitor, report, and verify to enable more sustainable practices in parallel to social inclusivity and economic growth during the transition of key sectors, such as oil and gas, agriculture, and renewable energy.

5.2 Recommendations

Strengthen Institutional Framework: Establish a centralised data repository managed by the NBS to integrate and standardise data collection across all levels. Clearly define roles and responsibilities for federal, state, and local agencies to enhance coordination and accountability. Engage third-party verifiers to ensure data accuracy and transparency.

Enhance Monitoring and Evaluation: Implement a comprehensive MRV system with standardised protocols and regular audits to ensure data accuracy and reliability. Utilise advanced technologies for real-time data collection and analysis to provide timely insights and support informed decision-making. Conduct continuous capacity-building programs to enhance stakeholder competencies in data management and reporting.

Diversify Funding Sources: To ensure financial sustainability, secure funding through national budget allocations, international climate funds, and private sector investments. Develop public-private partnerships (PPPs) to attract private investment in renewable energy and sustainable agriculture. Explore innovative financing mechanisms, such as green bonds and carbon credits, to generate additional revenue.

Effective Risk Management: Identify and mitigate potential risks, including financial constraints, political instability, and stakeholder resistance, to ensure smooth implementation. Implement rigorous QA/QC procedures to maintain high data quality and reliability.

Robust Data Analysis and Reporting: Establish a unified data platform for integrating sector-specific data and conducting cross-sectoral analysis to identify synergies and trade-offs. Generate quarterly and annual reports to inform stakeholders of progress and challenges, ensuring transparency and accountability. Use data-driven insights to inform policy adjustments and align with JGIT objectives, ensuring continuous improvement.

Active Stakeholder Engagement: Maintain continuous engagement with stakeholders through regular consultations, workshops, and feedback mechanisms to foster collaboration and support. Ensure transparent communication and public dissemination of reports in accessible formats and multiple languages to reach diverse audiences. To ensure an inclusive transition process, foster collaboration among government agencies, private sector partners, NGOs, and local communities.

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