ICAT Initiative for Climate Action Transparency

Validation Workshop on the Assessment of Policy Impacts on GHG Emissions and Sustainable Development in Namibia's Energy Sector

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Ministry of Environment, Forestry and Tourism (MEFT),

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Initiative for Climate Action Transparency - ICAT

Validation Workshop Report: Assessment of Policy Impacts on GHG Emissions and Sustainable Development in Namibia's Energy Sector.

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Executive Summary

This report presents the findings of Namibia's inaugural assessment of selected energy-sector policies using methodologies aligned with the Initiative for Climate Action Transparency (ICAT). The assessment evaluated the anticipated impacts of these policies on greenhouse gas (GHG) emissions and sustainable development (SD) outcomes. The process was undertaken in collaboration with stakeholders from government institutions, civil society organisations, and academic entities, employing ICAT's Renewable Energy and Sustainable Development methodological frameworks.

Purpose of the Assessment

The assessment aimed to quantify the ex-ante impacts of three selected renewable energy policies—[Insert Policy Names]—on projected GHG emissions reductions and associated sustainable development co-benefits. The analysis is intended to inform transparent and evidence-based policy planning under Namibia's Nationally Determined Contribution (NDC) and long-term climate strategies.

Key Findings: Greenhouse Gas Mitigation

Under the with-policy scenario, the analysed policies are projected to contribute to cumulative GHG emission reductions of approximately [X] $MtCO_2e$ by 2030. These reductions are primarily attributed to the displacement of grid-based and diesel-powered electricity generation.

Among the policies evaluated, [Insert Policy Name, e.g., the Solar Revolving Fund or Net Metering Scheme] is identified as the most significant contributor, accounting for an estimated [Y]% of total reductions.

Emissions were estimated using a bottom-up technology adoption modelling approach, incorporating nationally consistent grid emission factors.

Key Co-Benefits: Sustainable Development

- **Employment Creation:** The deployment of renewable energy technologies is projected to result in the creation of over [X] full-time-equivalent employment opportunities by 2030.
- **Public Health Improvements:** A reduction in diesel and biomass use is expected to improve both indoor and ambient air quality, thereby reducing respiratory health risks.
- **Gender Equality and Social Inclusion:** Several initiatives demonstrate the potential to promote gender-responsive outcomes, particularly in enhancing women's access to clean energy and employment.

- **Energy Access:** By 2028, an estimated [X] households are expected to benefit from new or improved access to clean electricity.

Policy Implications

The findings underscore the strategic importance of Namibia's renewable energy policies in advancing national climate and development objectives. The integration of monitoring, reporting, and verification (MRV) systems for SD indicators, in conjunction with GHG tracking frameworks, is both feasible and advisable. Such integration would enhance national reporting processes under the Enhanced Transparency Framework (ETF) of the Paris Agreement.

Furthermore, effective implementation of the identified policies will require strengthened institutional coordination among key stakeholders, including the Ministry of Mines and Energy (MME), the Ministry of Environment, Forestry and Tourism (MEFT), the Electricity Control Board (ECB), and NamPower.

Proposed Next Steps

- Finalise and adopt recommended indicators and MRV frameworks for both GHG mitigation and SD impacts.
- Institutionalise scenario modelling and impact assessment capacities within national development and planning entities.
- Prioritise the scaling of high-impact policies, particularly those demonstrating strong alignment with sustainable development priorities

1 Introduction

1.1 Background

The Ministry of Environment, Forestry and Tourism (MEFT), in partnership with the Environmental Investment Fund (EIF) and with technical and financial support from the Initiative for Climate Action Transparency (ICAT), convened a three-day national validation workshop from 1–3 October 2025 at the C'est Si Bon Hotel in Otjiwarongo. The workshop brought together a diverse range of stakeholders from government institutions, academia, the private sector, civil society, and development partners to review, discuss, and validate the results of the ongoing assessment of policy impacts on greenhouse gas (GHG) emissions and sustainable development (SD) in Namibia's energy sector.

This workshop represented a critical milestone in Namibia's ongoing efforts to strengthen evidence-based policymaking and to operationalize a robust transparency framework in line with international climate reporting obligations. Specifically, the workshop sought to ensure that the methodologies, data, assumptions, and results of the ICAT-supported assessment accurately reflect Namibia's national circumstances and priorities, while promoting inclusivity and institutional ownership of the findings.

The workshop was organized as part of the broader ICAT Namibia Project, which aims to enhance Namibia's capacity to measure, report, and verify (MRV) the impacts of policies and measures (PaMs) implemented to achieve the country's Nationally Determined Contributions (NDCs) under the Paris Agreement. This aligns directly with Article 13 of the Agreement, which establishes an Enhanced Transparency Framework (ETF) to provide a clear and reliable basis for tracking progress toward emission reduction commitments and sustainable development objectives.

Under this framework, the ICAT Namibia Project supports MEFT and key national institutions to:

- Develop and institutionalize methodologies and tools for assessing both the GHG and non-GHG impacts (including economic, social, and environmental co-benefits) of sectoral policies, particularly in the energy sector, which is central to Namibia's low-carbon transition.
- Strengthen institutional arrangements for systematic data collection, quality assurance, and data sharing between agencies such as MEFT, the Ministry of Mines and Energy (MME/MWERD), the Electricity Control Board (ECB),

NamPower, the Namibia Statistics Agency (NSA), and other relevant stakeholders.

- Build national capacity for applying the ICAT Renewable Energy and Sustainable Development Assessment methodologies, ensuring that future assessments are conducted domestically by trained technical experts.
- Facilitate the integration of ICAT-derived indicators and results into Namibia's NDC tracking system and future Biennial Transparency Reports (BTRs) under the UNFCCC.

By convening this workshop, MEFT and EIF aimed to validate the technical findings emerging from the assessment—covering policy screening, causal chains, GHG quantification, and sustainable development impact scoring and to ensure that these are aligned with Namibia's National Energy Policy (2017) and National Renewable Energy Policy (2017).

The deliberations also provided an opportunity for stakeholders to discuss:

- The assumptions underpinning the *with-policy* and *without-policy* scenarios.
- The data sources, methodologies, and uncertainty ranges used in the analysis.
- The relevance of identified indicators for NDC tracking and reporting.
- The institutional and capacity needs required to operationalize an MRV system that integrates both GHG mitigation and sustainable development metrics.

Ultimately, the validation workshop served not only as a technical review platform but also as a collaborative learning and consensus-building forum. It reinforced Namibia's commitment to transparent, participatory, and evidence-based climate action, ensuring that the outcomes of the ICAT assessment meaningfully inform national policy formulation, NDC implementation, and future reporting under the Enhanced Transparency Framework.

1.2 Objectives of the Validation Workshop

The The validation workshop was designed to achieve several interrelated objectives that together support the institutionalization of transparent, evidence-based policy assessment and reporting in Namibia's energy sector. The workshop formed a key step in finalizing the outcomes of the ICAT Namibia Project, ensuring that the assessment results are technically sound, nationally relevant, and fully endorsed by the stakeholders who will ultimately use them for decision-making and NDC tracking.

Specifically, the main objectives were to:

1.2.1 Present and validate results from the ICAT assessment of selected energy-sector policies

The workshop served as a platform to present the key findings from the ICAT-supported assessment of selected energy-sector policies and measures, focusing on their quantified and qualitative impacts on greenhouse gas (GHG) emissions and sustainable development (SD).
Participants reviewed:

- The results of the policy screening exercise, which prioritized high-impact policies such as the National Renewable Energy Policy (2017), National Energy Policy (2017), and complementary initiatives promoting solar, wind, biomass, and energy efficiency.
- The causal chain linkages between policy interventions and their expected environmental, economic, and social outcomes, as per the ICAT methodologies.
- The quantified emission reduction estimates under each scenario and the corresponding sustainable development co-benefits and trade-offs.

This session ensured that technical experts, data providers, and policy implementers had a shared understanding of how the results were derived, and that the findings accurately reflect Namibia's current energy and climate context.

1.2.2 Review with/without-policy scenarios, methodologies, and data sources

Participants were invited to critically review the analytical framework, datasets, and methodological approaches used to construct the "with-policy" and "without-policy" (baseline) scenarios covering the period 2024–2040.
This objective aimed to:

- Verify the assumptions applied in the energy demand, technology adoption, and emission factor projections.
- Assess the robustness and credibility of the data sources used, including national statistics, utility data (e.g., from NamPower), and international reference factors.
- Ensure that the modeling and quantification approaches used in the ICAT Renewable Energy Assessment were aligned with IPCC inventory principles and ICAT methodological guidance.
- Identify areas where data gaps or uncertainties may affect the confidence of the results and propose corrective or improvement measures.

Through this review, stakeholders provided inputs to refine model parameters and improve the transparency and replicability of future assessments.

1.2.3 Discuss implications for NDC tracking, MRV systems, and energy-sector policy design

A major objective was to link the technical findings of the assessment to broader national processes related to climate governance and policy implementation.
Discussions focused on how the validated results could inform:

- The design of an integrated MRV and data management system capable of tracking both GHG and non-GHG indicators.
- The alignment of ICAT indicators with Namibia's NDC tracking framework and the forthcoming Biennial Transparency Report (BTR).
- The identification of institutional roles, responsibilities, and reporting lines between MEFT, the Ministry of Mines and Energy (MME/MWERD), the Electricity Control Board (ECB), NamPower, and the Namibia Statistics Agency (NSA).
- Policy refinements and updates to strengthen renewable energy deployment, energy efficiency, and low-carbon technology investments in line with national development goals.

This objective underscored the value of the ICAT assessment not just as an academic exercise but as a practical tool for improving national policy coherence and international reporting readiness.

1.2.4 Capture feedback for refining assumptions, indicators, and recommendations

Finally, the workshop aimed to gather technical and policy feedback from a wide range of stakeholders to improve the quality, ownership, and usability of the assessment results.
Specifically, the discussions sought to:

- Refine key modelling assumptions, such as technology costs, capacity factors, and future adoption rates.
- Validate and prioritize sustainable development indicators for long-term monitoring, consistent with ICAT's SD Assessment Guide.
- Identify opportunities for capacity building, data improvement, and enhanced stakeholder collaboration.

- Strengthen the final recommendations to ensure that they are actionable, evidence-based, and aligned with both Namibia's Vision 2030 and Sustainable Development Goal 7 (Affordable and Clean Energy).

The feedback captured during the workshop will be integrated into the final ICAT Namibia Technical Report, which will serve as a reference for national decision-makers, sector planners, and international partners supporting Namibia's transition toward a low-carbon, inclusive, and sustainable energy future.

2 Methodology of Validation

The validation process followed a structured, participatory, and evidence-based approach consistent with the principles of transparency, inclusiveness, and technical rigor promoted under the Initiative for Climate Action Transparency (ICAT) framework. The process was designed to ensure that the findings of the assessment on policy impacts on greenhouse gas (GHG) emissions and sustainable development (SD) in Namibia's energy sector were robust, credible, and nationally endorsed.

The validation approach combined technical review, stakeholder engagement, and consensus-building across multiple levels of expertise and institutional mandates. The steps below describe the process in detail.

2.1 Step 1 – Preparation and Pre-Validation Review

Prior to the workshop, MEFT, with support from EIF and ICAT technical experts, conducted a comprehensive pre-validation review of the draft assessment reports and related technical outputs.
This step included:

- **Internal technical review** of deliverables such as:
    - *Diagnostic Study on Namibia's Energy and AFOLU Sectors* (Deliverable 1.1)
    - *New Energy Scenarios and Emissions Projections* (Deliverable 1.2.2)
    - *Data Quality and Management Report* (Deliverable 1.2.3)
- Circulation of an **executive summary and draft findings** to invited participants in advance to allow for informed feedback.
- Preparation of **validation tools**, including structured feedback forms, a list of key validation questions, and a participant guide based on ICAT's *Technical Review* guidance (ICAT, 2020).

This preparatory phase ensured that participants entered the workshop with a clear understanding of the objectives, scope, and content of the assessment to be validated.

2.2 Step 2 – Presentation of Assessment Results

During the workshop, the ICAT technical team and lead consultant presented the assessment findings through a series of structured sessions covering:

1. **Policy screening results** – identification and prioritization of energy-sector policies with high mitigation and SD impact potential.
2. **Causal chain analysis** – mapping of linkages between policy instruments, outputs, outcomes, and impacts based on ICAT Renewable Energy and Sustainable Development methodologies.
3. **Scenario modeling** – comparison of *with-policy* and *without-policy* GHG emission trajectories from 2024–2040, including underlying assumptions.
4. **Sustainable development co-impact analysis** – presentation of qualitative and quantitative results using the -2 to +2 scoring framework for key indicators (e.g., jobs, air quality, gender inclusion, land use).

Each session was accompanied by a Q&A and plenary discussion, enabling participants to clarify assumptions, review data sources, and provide technical and contextual feedback.

2.3 Step 3 – Stakeholder Group Discussions

To promote inclusivity and ensure comprehensive input, participants were divided into **thematic working groups**, each focusing on a specific aspect of the assessment:

- **Group A:** GHG quantification and scenario assumptions
- **Group B:** Sustainable development indicators and scoring justification
- **Group C:** Data quality, uncertainty, and institutional roles in MRV systems
- **Group D:** Policy implications, NDC tracking, and recommendations

Each group used a structured **validation checklist**, guided by the following questions:

- Are the data sources and assumptions credible and transparent?
- Do the causal chains accurately represent Namibia's policy context?
- Are the indicators relevant, measurable, and aligned with national development goals?
- Are the estimated impacts (GHG and SD) plausible and supported by evidence?
- What gaps or refinements are needed before finalization?

Group rapporteurs presented summaries of discussions to the plenary, ensuring that all feedback was recorded and synthesized into actionable recommendations.

2.4 Step 4 – Synthesis and Consensus Building

Following group deliberations, MEFT and the ICAT technical team facilitated a plenary validation session aimed at consolidating feedback and achieving consensus on key points.
This session focused on:

- Confirming the accuracy and relevance of results presented in the assessment reports.
- Reaching agreement on scenario parameters and indicator selection.
- Identifying priority areas for data improvement and institutional strengthening.
- Agreeing on follow-up actions for finalizing the technical reports.

Consensus was achieved through open dialogue, transparent documentation of feedback, and adoption of revisions based on collective agreement among participants.

2.5 Step 5 – Documentation and Integration of Feedback

All comments and recommendations from the validation process were systematically documented using standardized feedback forms and workshop summary notes.
The MEFT technical team, in collaboration with the lead consultant, committed to:

- Integrating validated feedback into the final ICAT technical deliverables (GHG, SD, and data management reports).
- Preparing a validation summary matrix, linking stakeholder inputs to corresponding revisions made in the reports.
- Submitting the revised final reports for endorsement by MEFT, EIF, and ICAT.

This transparent documentation process ensures an auditable trail of how stakeholder input influenced the final outputs consistent with ICAT's principles of accountability and replicability.

2.6 Step 6 – Quality Assurance and Endorsement

The final step of the validation process involved quality assurance (QA) and institutional endorsement:

- The revised reports underwent a final internal quality check by MEFT and EIF to ensure technical coherence and adherence to ICAT methodological requirements.
- The validated outputs will form the basis for Namibia's NDC tracking indicators and be incorporated into the national MRV framework.

- A formal endorsement statement will be issued by MEFT summarizing stakeholder consensus and confirming the validated results for dissemination and integration into national systems.

2.7 Key Validation Principles

The validation process adhered to the following guiding principles, consistent with ICAT's *Stakeholder Participation* and *Technical Review* guidance:

Principle	Description
Transparency	All assumptions, data sources, and methodological steps were openly discussed and documented.
Inclusiveness	Representation from all key stakeholder groups ensured diverse inputs and ownership.
Technical rigor	Review based on ICAT methodologies and IPCC good practice guidelines.
Reproducibility	Clear documentation of data sources and calculations to enable replication.
Consensus-building	Validation achieved through open dialogue and shared agreement.

The structured validation process thus ensured that the assessment findings are technically robust, contextually accurate, and broadly endorsed by Namibia's climate and energy community forming a credible foundation for the final ICAT Namibia Assessment Report and future NDC transparency submissions.

3 Summary of Proceedings

3.1 Day 1 – Policy and Scenario Review

The first day of the validation workshop focused on reviewing the policy context, analytical approach, and scenario framework used in the ICAT assessment of policy impacts on greenhouse gas (GHG) emissions and sustainable development (SD) within Namibia's energy sector. The sessions combined high-level opening remarks, methodological presentations, and interactive discussions aimed at ensuring collective understanding and endorsement of the technical foundation underpinning the assessment.

3.1.1 Opening Session

The workshop opened with welcoming remarks from representatives of the Ministry of Environment, Forestry and Tourism (MEFT) and the Initiative for Climate Action Transparency (ICAT).

In his opening address, Mr Reagan Chunga,(MEFT), commended stakeholders for their continued collaboration and emphasized Namibia's commitment to developing robust transparency systems in line with the Enhanced Transparency Framework (ETF) of the Paris Agreement. He underscored that the ICAT-supported work represents a critical step in operationalizing Namibia's Monitoring, Reporting and Verification (MRV) framework and ensuring that the country's Nationally Determined Contribution (NDC) implementation remains evidence-based, transparent, and inclusive.

Mr Chunga recognized the country's proactive integration of ICAT tools into national processes, noting that the outputs of this assessment will directly contribute to NDC tracking, MRV system design, and future Biennial Transparency Reports (BTRs) under the UNFCCC.

EIF's representative, Mr. Johannes Munango reaffirmed EIF's commitment to supporting MEFT in mobilizing resources and strengthening national capacity to sustain transparent climate action and investment readiness in the energy sector.

These remarks collectively set the tone for a results-oriented and participatory validation process, emphasizing collaboration, ownership, and technical integrity.

3.1.2 Presentation of the ICAT Methodology

The second session featured a presentation by the ICAT technical experts outlining the methodological framework used for the assessment. The presentation covered:

- The application of the ICAT Renewable Energy Assessment Guide (ICAT, 2020) for quantifying GHG emission reductions attributable to specific policy interventions.
- The use of the ICAT Sustainable Development Assessment Methodology to identify and evaluate co-benefits and trade-offs across social, economic, and environmental dimensions.
- The five-step causal chain approach, tracing the logical sequence from policy inputs and activities to outcomes and final impacts.
- The integration of indicator-based assessment to ensure alignment with Namibia's SDG commitments and NDC tracking requirements.

The session emphasized that the methodology is designed to be replicable, transparent, and adaptable to Namibia's data environment, supporting future domestic assessments led by national institutions.

3.1.3 Presentation of Policy Screening Results and Scenario Development

Dr. Tendai Nzuma, Lead Technical Consultant, presented the results of the policy screening process and the scenario framework developed for the assessment.

The policy screening exercise identified and prioritized energy-sector policies and measures with significant potential for GHG mitigation and SD co-benefits. Among these were:

- The National Renewable Energy Policy (2017), focusing on increased renewable generation and energy access.
- The National Energy Policy (2017), providing overarching direction for energy security and sustainability.
- Emerging initiatives under the Green Hydrogen Strategy (2022), highlighting Namibia's ambition to become a global hub for clean fuels.

Dr. Nzuma explained the scenario design used in the analysis, consisting of three primary trajectories:

1. **Business-as-Usual (BAU) Scenario:** Continuation of existing policies and trends without additional interventions.

2. **Low-Carbon Scenario:** Implementation of current renewable energy and energy efficiency policies to their full extent.
3. **Net-Zero Scenario:** Ambitious pathway aligned with Namibia's long-term decarbonization goals and Vision 2030, incorporating large-scale deployment of solar, wind, and green hydrogen technologies.

Each scenario incorporated assumptions on demand growth, technology costs, grid emission factors, and investment dynamics, supported by data from NamPower, the Electricity Control Board (ECB), and the Namibia Statistics Agency (NSA).

3.1.4 Plenary Discussion and Stakeholder Inputs

Following the presentations, an open plenary discussion was held to gather feedback from participants on the policy coverage, data inputs, and scenario assumptions. The discussion was facilitated by MEFT and ICAT experts and was notably interactive, reflecting a strong level of stakeholder engagement.

Participants raised several key points, including:

- **Policy Integration:** The need to ensure consistency between the assessed policies and the National Integrated Resource Plan (NIRP) and to explicitly link outcomes to Sustainable Development Goal 7 (Affordable and Clean Energy).
- **Scope of Assessment:** Stakeholders emphasized the importance of including off-grid solar systems, mini-grids, and clean cooking solutions as distinct sub-sectors within the modelling framework, given their growing role in improving rural energy access.
- **Private Sector Perspective:** Participants highlighted the need to incorporate insights from local studies, which have identified investment barriers, such as high financing costs and regulatory uncertainty, that may affect policy effectiveness and implementation timelines.
- **Data Harmonization:** Several agencies underscored the importance of aligning emission factors, technology costs, and capacity data with national statistics to enhance consistency across MRV systems.
- **Policy Interactions:** Participants noted potential overlaps between renewable energy policies and fiscal measures (e.g., feed-in tariffs and auction schemes) and requested clarity on how these interactions were treated within the causal chain framework.

The discussion resulted in agreement that additional refinements would be made to ensure the policy scope and assumptions accurately represent Namibia's evolving

energy landscape and that cross-sectoral linkages particularly with industry, transport, and agriculture be further explored in future updates.

3.1.5 Summary of Key Feedback and Action Points

Issue/Feedback Area	Key Recommendations from Participants	Agreed Follow-Up Action
Policy alignment	Strengthen linkage with NIRP and SDG7 targets	Update scenario documentation to reflect alignment
Sub-sector coverage	Include off-grid solar and clean cooking as separate categories	Revise energy sub-sector structure accordingly
Investment barriers	Incorporate findings from Amesho & Edoun (2019)	Reflect in discussion of enabling environment and sensitivity analysis
Data harmonization	Ensure consistency of grid emission factors and adoption rates	MEFT and NSA to coordinate data standardization
Policy interactions	Clarify treatment of overlapping instruments	Provide methodological note in annex

Day 1 concluded with a collective understanding of the policy and scenario framework that underpins the ICAT assessment. Participants expressed appreciation for the methodological transparency and reaffirmed their commitment to contributing data and expertise toward the completion of the validation process.

3.2 Day 2 – GHG and Sustainable Development (SD) Impact Results

The second day of the validation workshop was devoted to the review and endorsement of quantified greenhouse gas (GHG) mitigation and sustainable development (SD) results presented in the *Assessment Report on Namibia's National Energy Renewable Energy Feed-in Tariff (REFIT)*. The sessions allowed participants to interrogate data sources, methodological assumptions, and policy implications of the analysis prepared under the Initiative for Climate Action Transparency (ICAT) Renewable Energy and Sustainable Development methodologies.

3.2.1 Presentation of GHG Impact Assessment Results

Dr Tendai Nzuma presented the ex-ante GHG impact assessment undertaken for the National Energy Renewable Energy Feed-in Tariff (REFIT) using a bottom-up, technology-based approach consistent with ICAT guidance (2020). The analysis compared a *without-policy* (Business-as-Usual – BAU) scenario to a *with-policy* (NEC implementation) scenario for the period 2024 – 2040.

Under the with-policy case, Namibia's planned addition of 454 MW of new renewable energy capacity by 2030 (70 % solar PV, 20 % wind, 10 % biomass/hydro) yields approximately 993 GWh of renewable electricity annually, displacing carbon-intensive imports and diesel generation. Using a conservative grid emission-factor differential (ΔEF = 0.3 tCO_2/MWh), the analysis estimates annual GHG reductions of ≈ 298 000 tCO_2e by 2030 and cumulative abatement of 2.8 – 3.2 $MtCO_2e$ by 2040.

A sensitivity analysis (± 20 %) confirmed the robustness of results across plausible ranges of capacity factors and emission factors, with mitigation potential varying between 238 000 and 358 000 tCO_2e/year. Figure 4 of the assessment illustrated that, by 2040, the NEC Policy Impact scenario delivers about 30 % lower energy-sector emissions than BAU, fully consistent with Namibia's NDC pathway.

Participants validated these findings and acknowledged that the NEC qualifies as a "high-priority mitigation policy", providing a measurable, low-cost contribution to national decarbonization.

3.2.2 Discussion on Data Quality, Uncertainty and Institutional Arrangements

Drawing on the Data Quality and Institutional Arrangements Report, discussions centred on the transparency, reliability, and ownership of input data used for the modelling.

Key reflections included:

- **Data reliability:** The Namibia Statistics Agency (NSA) confirmed ongoing work to standardize household and energy datasets.
- **Uncertainty ranges:** Participants endorsed adoption of a ± 20 % uncertainty range for key parameters (capacity factors, grid EFs, technology lifetimes).
- **Institutional coordination:** MEFT will retain custodianship for policy-impact reporting, with NSA and the Electricity Control Board (ECB) providing data verification under a quality-assurance (QA/QC) protocol.

- **Integrated Energy Data System (IEDS):** The workshop supported the proposal in the assessment to establish an IEDS under MIME/NSA to institutionalize data sharing for MRV and NDC tracking.

3.2.3 Sustainable Development (SD) Assessment Session

In the afternoon, the experts presented results of the Sustainable Development Assessment, which applied the ICAT SD Methodology's qualitative scoring scale (−2 to +2) across seven dimensions: Jobs & Economy, Health, Energy Access, Gender Equality, Land & Ecosystems, Water, and Governance & Capacity.

Validated SD Impact Scores (from Assessment Report Table 5):

Dimension	Indicator	Score	Key Rationale
Jobs & Economy	RE employment creation	**+2**	≈ 9 000 short-term & 1 000 long-term jobs from 454 MW RE rollout
Health	Reduced air pollution	**+1**	Decline in diesel & biomass emissions improving respiratory health
Energy Access	Electrification & modern energy	**+2**	Access increase to 70 % by 2030 benefiting ~ 200 000 households
Gender Equality	Women's empowerment	**+1**	Time-saving, participation in RE training; need for gender data
Land & Ecosystems	Land-use conflicts	**−1**	Siting risks mitigable through SEA & EIA processes
Water	Water resource use	**0**	Solar & wind largely water-neutral
Governance & Capacity	Institutional readiness	**+1**	Strengthened MRV systems, NEI/ECB training

The aggregate SD score of +6 indicates a strong net-positive development profile. Figure 12 of the assessment (radar chart) visualized broad benefits across economic, social, and governance axes, with only minor land-use trade-offs.

3.2.4 Stakeholder Discussion and Key Recommendations

Workshop dialogue confirmed that the ICAT results provide a realistic and evidence-based picture of Namibia's renewable-energy transition. Main recommendations included:

1. **Integrate gender-disaggregated data** into the emerging national MRV system and align with the National Gender Policy (2021 – 2030).

2. **Link ICAT SD indicators** directly with NDC and SDG7/13 tracking frameworks to enable consistent reporting in Biennial Transparency Reports (BTRs).
3. **Maintain data consistency** through NSA-led QA/QC and metadata documentation for all energy and SD indicators.
4. **Institutionalize a dynamic MRV platform** under MEFT/MIME using ICAT templates to capture GHG and SD outcomes annually.
5. **Strengthen financing mechanisms**—participants endorsed the creation of a Green Investment Facility under EIF to address the financing delays highlighted in the Assessment Report's risk analysis.

3.2.5 Integrative Linkages Between GHG Mitigation and Sustainable Development Co-Benefits

While the assessment presents greenhouse gas (GHG) emission reductions and sustainable development (SD) impacts as distinct analytical components, there are important interdependencies that reinforce the strategic value of integrated climate and development planning.

The implementation of renewable energy policies not only reduces GHG emissions through the displacement of carbon-intensive energy sources but simultaneously generates measurable co-benefits across multiple SD dimensions. For example, the reduction of diesel-based electricity generation leads to improved ambient air quality and associated health gains. Likewise, expanded access to clean and reliable electricity under the with-policy scenario contributes to employment creation, gender inclusion, and broader economic resilience.

The table below summarises the validated causal linkages between GHG mitigation outcomes and SD indicators, as reflected in the ICAT causal chain methodology and stakeholder feedback gathered during the national validation workshop. This integrated framing underscores the potential for Namibia's low-carbon transition to deliver both environmental and socio-economic dividends.

GHG Mitigation–SD Co-Benefit Linkages

GHG Mitigation Outcome	Linked SD Dimension(s)	Causal Pathway / Description
Displacement of diesel and grid electricity	**Health**	Reduction in particulate matter and NO_x emissions improves indoor and ambient air quality.
Deployment of 454 MW RE capacity	**Jobs & Economy**	Construction and operation of renewable energy projects generate skilled and unskilled jobs.

Increased electricity access (≈200,000 HHs)	**Energy Access**, **Gender Equality**	Enhances household welfare; reduces time poverty, particularly for women and girls.
Reduced fossil fuel imports	**Economic Resilience**	Frees public funds for social services; lowers macroeconomic exposure to fuel price volatility.
Strengthened MRV and data systems	**Governance & Capacity**	Improves institutional transparency, data reliability, and NDC tracking capacity.
Use of land for RE infrastructure	**Land Use & Ecosystems**	Potential trade-offs mitigated through EIA/SEA; planning improves land-use governance.

3.2.6 Summary of Day 2 Outcomes

Thematic Area	Validated Outcome / Agreement
GHG Impact	Annual abatement ≈ 298 000 tCO_2e by 2030; 2.8 – 3.2 $MtCO_2e$ by 2040
Data Quality	± 20 % uncertainty range adopted; NSA & ECB to lead QA/QC
Sustainable Development	Net positive (+6 aggregate score); major benefits in jobs, energy access, health
Gender Integration	Future MRV reports to include gender-disaggregated indicators
Institutional Arrangements	Endorsement of Integrated Energy Data System (IEDS) under MIME/NSA
Policy Implication	NEC recognized as a “transformational low-carbon policy package” under ICAT criteria

Day 2 concluded with participants unanimously validating the technical soundness and national relevance of the GHG and SD results. The workshop endorsed the ICAT assessment as the official analytical basis for integrating renewable-energy impacts into Namibia’s NDC tracking and MRV systems, while highlighting the need for continued data harmonization, financing innovation, and inclusivity in implementation.

3.3 Day 3 – NDC Tracking, Policy Integration, and Way Forward

The third and final day of the workshop was devoted to translating the validated technical results into practical applications for Namibia's NDC tracking, MRV system strengthening, and policy integration. The day combined plenary sessions, group exercises, and consensus-building discussions designed to chart a clear roadmap for institutionalizing the ICAT methodologies and results within Namibia's climate transparency framework.

3.3.1 Plenary Session: Integration of ICAT Indicators into NDC Tracking

The morning plenary, facilitated by MEFT's Department of Environmental Affairs, opened with a presentation summarizing the linkages between ICAT indicators and Namibia's Nationally Determined Contribution (NDC) framework. The presentation emphasized that the validated outputs of the ICAT Renewable Energy and Sustainable Development assessment directly support Article 13 of the Paris Agreement, which calls for an Enhanced Transparency Framework (ETF) to track progress in implementing and achieving NDCs.

Key highlights of the plenary session included:

- The alignment of ICAT indicators with Namibia's updated NDC (2023), particularly under Mitigation Objective 2: "Expand renewable energy generation and improve energy efficiency."
- The potential to integrate ICAT-derived GHG reduction metrics (tCO_2e avoided) and sustainable development indicators (e.g., jobs created, energy access, gender inclusion) into the national MRV architecture coordinated by MEFT.
- Recognition of the ICAT Namibia assessment as a foundational tool for developing the NDC tracking and Biennial Transparency Report (BTR) templates to be submitted to the UNFCCC from 2026 onwards.

The Assessment Report on the REFIT had already outlined a set of core indicators for NDC tracking, which the plenary reaffirmed as a practical starting point. These include:

Category	Indicator	Unit / Metric	Responsible Agency
GHG Mitigation	Emission reductions from renewable generation	tCO_2e/year	MEFT / NamPower
Energy Transition	Installed renewable capacity	MW	MME / ECB

Energy Access	Electrification rate	% of households	NSA / MWERD
Economic Impact	Jobs created	Number of jobs	NEI / NSA
Gender Equality	Women employed in RE projects	% of workforce	MEFT / Ministry of Gender
Environmental Safeguards	Land under EIA/SEA management	ha	MEFT / MLR

These indicators were endorsed as **"ICAT-compatible metrics"** to be harmonized with Namibia's NDC implementation monitoring plan.

3.3.2 Group Work: Data Custodianship and Reporting Pathways

Participants were divided into three thematic working groups to identify institutional roles, data custodianship, and reporting pathways for both GHG and SD indicators. Each group focused on one of the following thematic areas:

1. **GHG Data and MRV Processes** – Led by MEFT and NSA
    - Reviewed existing data collection pipelines for emissions from electricity generation, off-grid systems, and biomass projects.
    - Agreed that MEFT will serve as lead compiler for GHG impact data, supported by NamPower, ECB, and NSA as data providers.
    - Recommended developing a centralized MRV database under MEFT's Climate Change Unit using ICAT templates and metadata standards.
2. **Sustainable Development Indicators** – Led by NSA and MEFT/MAWLR
    - Mapped SD indicators to SDG targets and NDC co-benefit categories.
    - Agreed that NSA will integrate energy-related SD indicators into its National Indicator Framework (NIF), ensuring consistent measurement across time.
    - Proposed that EIF and MEFT jointly lead periodic SD monitoring reports to capture co-benefits of renewable energy policies.
3. **Policy Integration and Communication** – Led by NPC and EIF
    - Discussed strategies for embedding validated ICAT findings into national energy and climate planning instruments (e.g., National Energy Policy 2017, REFIT 2015, NDP7 Framework 2026–2030).

- Recommended preparation of a policy brief and dashboard visualization for high-level decision-makers summarizing GHG and SD progress.

The group work underscored the importance of institutionalized data-sharing protocols and regular technical coordination between ministries to sustain transparent reporting.

3.3.3 Validation and Endorsement Session

The afternoon session was dedicated to the formal validation and endorsement of the workshop outcomes and proposed refinements.

During the plenary validation session, participants reviewed the revised results, discussed final adjustments, and reached consensus on the following key outcomes:

Validation Focus Area	**Endorsed Outcome**
GHG Assessment	Confirmed total abatement potential of 2.8 – 3.2 $MtCO_2e$ by 2040, with annual reductions of ≈ 298 000 tCO_2e by 2030.
SD Assessment	Validated net-positive SD impacts (+6) with clear benefits in employment, energy access, and gender inclusion.
NDC Tracking Integration	Endorsed integration of ICAT indicators into MEFT's MRV system and NSA's National Indicator Framework.
Institutional Roles	Confirmed MEFT as MRV custodian, with NSA, ECB, NamPower, and EIF as key data partners.
Capacity Development	Agreed to establish a Knowledge Hub for ongoing capacity-building, led by MEFT and supported by ICAT Secretariat.

4 Way Forward and Next Steps

Participants concluded by identifying immediate actions required to translate workshop outcomes into sustained implementation:

1. **Finalize and Publish the Validated Reports**
    - Incorporate stakeholder feedback into the final ICAT Technical Reports (GHG, SD, and Data Quality).
    - Prepare an executive policy summary for Cabinet submission and public dissemination.
2. **Operationalize NDC Tracking and MRV System**
    - Develop a comprehensive MRV roadmap integrating ICAT methodologies, to be piloted in the 2026 NDC progress report.
    - Embed ICAT indicators within the National GHG Inventory System (NGHGI).
3. **Capacity Building and Knowledge Exchange**
    - Conduct targeted training on ICAT methodologies, energy modelling, and SD indicator monitoring for MEFT, NSA, and sectoral institutions.
    - Establish the Namibia Transparency and Data Forum (NTDF) as a national platform for MRV coordination.
4. **Resource Mobilization**
    - EIF and MEFT to develop a Green Data & Transparency Fund proposal to mobilize technical and financial support for MRV and NDC tracking activities.

4.1 Action-Oriented Implementation Matrix

To translate the above actions into a practical roadmap, the following matrix prioritizes next steps by timeline, assigns lead responsibilities, and specifies measurable outputs. This structured approach reflects ICAT best practices for operationalizing validated results.

Priority Area	Action / Deliverable	Timeline	Lead / Supporting Institution(s)	Measurable Indicator / Output
Finalise and Disseminate Reports	Incorporate stakeholder feedback and publish final ICAT Technical Reports and policy summary	Q4 2025 – Q1 2026	MEFT (lead), EIF	Final reports online; Cabinet policy brief
Operationalise MRV System	Develop MRV roadmap integrating ICAT methodologies, linked to 2026 NDC Progress Report	2026	MEFT, NSA, ECB	MRV roadmap validated; linked to BTR
Data Custodianship	Sign MoU for QA/QC protocols and data-sharing among MEFT, NSA, ECB, MME	Continuous	NSA (lead), MEFT	Signed protocols; periodic QA/QC reports
Capacity Building	Deliver ICAT trainings on MRV and SD monitoring to national institutions	2025–2026	NEI, ICAT Secretariat	≥60 technical staff trained
Institutional Coordination	Establish Namibia Transparency and Data Forum (NTDF) as MRV platform	By Q2 2026	MEFT, EIF, NSA	Forum charter adopted; annual meetings held
Resource Mobilization	Launch Green Data & Transparency Fund for MRV/NDC tracking support	2026–2027	EIF, MEFT	Fund proposal submitted; donor commitments
Communication & Uptake	Develop REFIT Policy Brief and indicator dashboard	Q2 2026	EIF, NPC, MEFT	Brief published; dashboard online

4.2 Summary of Key Agreements

Priority Area	Action / Responsibility	Timeline
MRV Integration	Incorporate ICAT indicators into MEFT MRV system	Q1 2026
Data Custodianship	NSA to coordinate QA/QC protocols for GHG and SD data	Continuous
Capacity Development	NEI and ICAT Secretariat to roll out national training	2025–2026
NDC Reporting	Include ICAT indicators in next Biennial Transparency Report (BTR1)	2026
Communication	Develop REFIT Policy Brief and indicator dashboard	Q2 2026

Day 3 concluded with closing remarks from MEFT and ICAT representatives, who congratulated participants for their technical engagement and collaboration. MEFT reaffirmed its commitment to institutionalizing the ICAT approaches within the national MRV system, while EIF pledged continued support for mobilizing climate finance aligned with transparency and sustainable development priorities.

The validation workshop successfully marked the transition from technical assessment to institutional adoption, positioning Namibia as a regional leader in transparent and integrated climate action tracking under the Paris Agreement.

4.3 Reflections and Lessons Learned

The implementation of the ICAT methodologies and the validation process provided Namibia with strategic insights for enhancing its national climate transparency systems. The following lessons emerged:

- Institutional Strengthening - The inclusive, multi-stakeholder engagement process improved inter-agency coordination. Key institutions—including MEFT, the Namibia Statistics Agency (NSA), and the Environmental Investment Fund (EIF)—are now more effectively aligned in their respective roles regarding MRV functions and data-sharing protocols.
- Methodological Relevance and Adaptability - The ICAT tools demonstrated a high degree of flexibility and contextual relevance, enabling the application of internationally recognised methodologies to Namibia's specific policy and data landscape. This facilitated more transparent, consistent, and evidence-based assessments of both GHG mitigation and sustainable development impacts.
- National Capacity Development - The project contributed significantly to enhancing domestic technical capacity in areas such as scenario modelling, causal chain analysis, and the formulation of impact indicators, consistent with good international practice standards.
- Potential for Replication Across Sectors - The validated approach offers a replicable model that can be extended to other sectors including transport, agriculture, and industry—for assessing and tracking the impacts of sectoral policies and measures.
- Policy Integration and Influence - The incorporation of ICAT-derived indicators into Namibia's NDC tracking and MRV systems illustrates the value of international methodologies in informing national climate policy processes and strengthening governance structures under the Enhanced Transparency Framework.

Annexes

Annexure 1: Workshop Agenda

Purpose:
To provide the official three-day agenda followed during the validation workshop, highlighting session themes, facilitators, and objectives.

Workshop Title: *Validation Workshop on the Assessment of Policy Impacts on GHG Emissions and Sustainable Development in Namibia's Energy Sector*

Dates: 1–3 October 2025
Venue: C'est Si Bon Hotel, Otjiwarongo
Organized by: MEFT, EIF, and ICAT Secretariat (UNOPS)

Day / Time	Session	Facilitator / Lead	Objective / Output
Day 1 (1 Oct)			
08:30 – 09:00	Opening Remarks (MEFT, ICAT, EIF)	MEFT; Mr. R. Chunga	Set context, objectives, and expectations
09:00 – 10:30	Presentation: ICAT Methodology Overview	Technical Team	Present GHG & SD assessment methods
11:00 – 13:00	Policy Screening & Scenario Presentation	Dr. T. Nzuma	Review policy scope and BAU/LC/NZ scenarios
14:00 – 16:30	Plenary Discussion	All participants	Validate scenario assumptions and policy linkages
Day 2 (2 Oct)			
08:30 – 10:30	Presentation: GHG Impact Results	ICAT Consultant	Present quantified emission reductions
11:00 – 13:00	Discussion: Data Quality & Uncertainty	MEFT / NSA	Review data QA/QC and uncertainty
14:00 – 16:30	SD Impact Assessment Session	NSA / MEFT/MAWFLR	Validate SD indicators and scoring
Day 3 (3 Oct)			
08:30 – 10:30	NDC Tracking & MRV Integration	MEFT / NSA	Identify data custodians and tracking pathways

11:00 – 13:00	Group Work and Plenary Validation	All participants	Confirm indicator framework and feedback
14:00 – 15:30	Endorsement & Closing Session	MEFT / Lead Consultant	Adoption of validated results and next steps

Annex 2: Summary of Group Discussions

Purpose:
To summarize key points, feedback, and recommendations arising from the thematic group discussions conducted during Days 2 and 3.

Group A: GHG Quantification and Data Quality

- Validated key assumptions for emission factor values, renewable energy generation, and adoption rates.
- Recommended adoption of ±20% uncertainty margins for scenario modelling.
- Proposed NSA-ECB joint review of grid EF updates every two years.

Group B: Sustainable Development Indicators

- Endorsed 12 SD indicators aligned with ICAT methodology and Namibia's National Indicator Framework.
- Recommended inclusion of gender-disaggregated and regional employment data.
- Proposed establishing an annual SD monitoring dashboard under EIF/NEI.

Group C: Institutional Arrangements and MRV

- Identified MEFT as the lead MRV coordinator, with NSA as data custodian for GHG and SD metrics.
- Proposed quarterly inter-agency meetings and development of a shared digital MRV platform.
- Emphasized capacity building for sectoral data officers using ICAT tools.

Group D: Policy Integration and NDC Tracking

- Confirmed alignment of ICAT indicators with NDC mitigation targets and BTR reporting templates.
- Recommended embedding results into the REFIT implementation plan.
- Agreed on the development of a policy brief and communication toolkit.

Each group's report was presented and discussed in plenary, forming the basis for the final validation consensus.

Annex 3: Sustainable Development (SD) Indicator Scoring Table

Purpose:
To document the validated sustainable development (SD) indicator scores discussed and endorsed by participants during the workshop, based on the ICAT Sustainable Development Methodology.

Dimension	Indicator	Score (-2 to +2)	Justification
Economic	Employment generation	+2	New RE projects create short- and long-term jobs in rural areas.
	Investment and private-sector participation	+1	Improved investor confidence due to clear policy direction.
Social	Energy access	+2	Expansion of off-grid solar and mini-grids increases rural access.
	Gender inclusion	+1	Greater female participation in RE training and entrepreneurship.
	Air quality and health	+1	Reduction in fossil fuel combustion lowers air pollutant exposure.
Environmental	Land use	-1	Solar and biomass projects require mitigation of land-use conflicts.
	Biodiversity	-1	Potential site-level impacts mitigated via EIA processes.
	Water use	0	Neutral effect; solar/wind are water-efficient technologies.
Institutional & Governance	Data management and transparency	+1	Strengthened data governance through MRV system integration.
	Policy coherence	+1	Improved coordination across energy, environment, and planning ministries.

	Capacity development	+1	ICAT training enhances institutional readiness for MRV.
Aggregate Score:		**+6 (Net Positive Impact)**	Overall net benefits with manageable environmental trade-offs.

Annexure 4: Data forms

Workshop Poll: Select the Main Objective for ICAT Energy Policy Assessment:

https://forms.gle/HMJxYp7p6SuwFqCm9

Workshop Poll: Selection of Energy Policy for ICAT Assessment:

https://forms.gle/e554UoCZWzadh3Uh6