A. Project Rationale

The Paris Agreement and the Enhanced Transparency Framework

As part of the United Nations Framework Convention on Climate Change (UNFCCC), the Paris Agreement was adopted in 2015 to strengthen the global response to climate change. Article 13 of the Paris Agreement established the ETF, which aims to increase ambition and reporting requirements for all signatory Parties to the Agreement. At the 24th Conference of the Parties held in Katowice in 2018, countries agreed on the Modalities, Procedures, and Guidelines (MPGs) for ETF, which entered into force in 2024. Under the Paris Agreement and the MPGs, all Parties are required to prepare and submit Biennial Transparency Reports (BTRs), which must include an updated national inventory of GHG emissions by sources and removals by sinks, information on progress towards achieving their Nationally Determined Contribution (NDC), and information on support needed and received for climate action. Furthermore, according to Article 7 of the Paris Agreement, each Party must, as appropriate, submit and regularly update an adaptation communication as a component of, or alongside with, other communications or documents. BTRs must be submitted every two years, while NDCs must be reviewed every five years to enhance the ambition of those previously submitted. Likewise, Parties to the Paris Agreement must submit their National Communications (NCs) every four years, and all Parties are encouraged to submit long-term low-carbon strategies to define their national vision for achieving the agreement's goals. These reporting requirements represent a challenge for all countries, especially those that, due to their geographical or economic circumstances, are already facing the greatest impacts of climate change.

Climate Transparency in Cuba

With a strategic location as an island in the Caribbean and 5,746 km of coastline—70% of which is covered by mangroves, 20% by sandy beaches, and 10% by rocky cliffs— Cuba is highly vulnerable to climate change. The country faces increasing threats from high-intensity hurricanes, prolonged droughts, recurring floods, and coastal erosion aggravated by mean sea level rise. In 2024, its population was estimated at 9,748,007 inhabitants[1], with an average age of 42.1 years, a ratio of 970 men per 1000 women, and an urbanization rate of 75.1%, increasing the exposure of coastal and urban communities to these climate risks. As a strategic response, Cuba has adopted the National Strategy for Confronting Climate Change and submitted its Nationally Determined Contribution (NDC) under the Paris Agreement, which establishes goals and commitments to reduce emissions and strengthen the resilience of its ecosystems and communities. These actions are complemented by sectoral policies and programs aimed at adaptation, sustainable management of natural resources, and the protection of vulnerable coastal areas.

In the field of climate transparency, the country has made notable progress in developing its national framework. It has submitted three National Communications (2001, 2015, and 2020) and its First Biennial Update Report (BUR) in 2020, which included data from 1990 to 2016 and incorporated the 2006 IPCC Guidelines for the first time, covering sectors such as Energy, Industrial Processes and Product Use (IPPU); Agriculture; Land Use, Land-Use Change and Forestry (LULUCF), and Waste. Mitigation actions have also been identified in different design and implementation phases in the main emitting sectors, although a fully operational Measurement, Reporting, and Verification (MRV) system is not yet in place. Therefore, its establishment is a priority supported in the General Bases for the Establishment of an MRV System in Cuba.

In 2024, Cuba approved its National Strategy for Energy Transition, which sets the goal of achieving 100% renewable electricity generation by 2050. According to the National Greenhouse Gas Inventory (INGEI 2022), CO_2 continues to be the main gas emitted, followed by CH_4 and N_2O. In 2022, gross emissions reached 49,396 kt CO_2-eq, representing a 19.9% reduction compared to 1990 and a 14.3% reduction compared to 2016. Net emissions decreased by 55.9% since 1990, due to a 120.8% increase in removals, owing to the expansion of forest areas. The energy sector was the largest emitter (65%), followed by agriculture (21.5%), while IPPU and Waste sectors accounted for the remainder. The downward trend in GHG emissions is largely due not to planned measures, but to national circumstances; economic recovery should lead to an increase in emissions, thus reinforcing the need to strengthen planning and monitoring. Cuba is moving toward greater climate transparency, but still faces challenges related to technical capacity, financial

[1] ONEI, 2025. https://www.onei.gob.cu/node/2586

sustainability, and the improvement of measurement, reporting, and verification (MRV) systems, which are essential to fulfilling the commitments made under the Paris Agreement.

Baseline

1. National transparency framework

Cuba signed the United Nations Framework Convention on Climate Change on 12 June 1992 and ratified it on 5 January 1994. It also ratified the Kyoto Protocol on 30 April 2002 (although it had no emission reduction obligations as a developing country) and the Paris Agreement on 12 December 2016, following its adoption in 2015. The following sections describe Cuba's institutional framework for climate action, key legislation and policies, relevant stakeholders, and ongoing transparency projects and initiatives.

i. Institutional framework for climate action

Cuba's institutional system for climate transparency, created by Law No. 150 of 2023 on Natural Resources and the Environment, is led by the Ministry of Science, Technology and Environment (**CITMA**), the governing body that coordinates the preparation and presentation of National Communications on Climate Change, Biennial Update Reports, Biennial Transparency Reports, and all other reports agreed upon within the framework of the United Nations Framework Convention on Climate Change and the Paris Agreement, and ensures that they contain up-to-date and timely information and that requirements relating to these reports are met. In addition, it is the body in charge of proposing and directing the State Plan for Confronting Climate Change, "Tarea Vida".

To fulfill these obligations, national and territorial institutions provide data for the preparation of sectoral reports and contribute to technical processes. Among them, the National Office of Statistics and Information (ONEI) compiles information from the National Statistical Information System and ensures quality control of data provided by other entities. Additionally, other institutions affiliated with CITMA support the provision of climate-related data. These include: CUBAENERGIA, which coordinates the technical aspects of the Biennial Transparency Report (IBT); the Institute of Meteorology (INSMET), which leads the technical preparation of the National Greenhouse Gas Emissions Inventory (NGHGEI); and the Agency of Social and Human Sciences (AXIS), which guides data disaggregation according to socio-demographic variables.

The Central State Administration Bodies (ministries and agencies), national entities, higher business management organizations, governors and municipal Administration Councils and institutions provide data and information on climate change consistent with the parameters established by CITMA and in accordance with the international standards agreed upon in the ETF of the Paris Agreement.

The following institutions stand out with key roles in this process:

Institution	Role
Ministerio de Agricultura (MINAG) [Ministry of Agriculture]	Coordinates the process of collecting, preparing, and analyzing information from Agriculture and LULUCF sectors, including activity data (AD) and other inputs for the inventory, monitoring of national contributions, climate change impact assessment, and management of the support needed and received. It also prepares the corresponding sectoral report.
Ministerio de Energía y Minas (MINEM) [Ministry of Energy and Mines]	Data and information collection and reporting. Analysis and monitoring of contributions.
Ministerio de Transporte (MITRANS) [Ministry of Transportation]	Data and information collection and reporting. Analysis and monitoring of contributions.
Ministerio de Industrias (MINDUS) [Ministry of Industries]	Data and information collection and reporting. Analysis and monitoring of contributions.
Instituto Nacional de Recursos Hidráulicos (INRH) [National Institute of Hydraulic Resources]	Data and information collection and reporting. Analysis and monitoring of contributions.
Ministerio de Finanzas y precios	Provide specialized information relevant to national climate reports.

Ministry of Finance and Prices	
Ministerio de Salud Pública (MINSAP) [Ministry of Public Health]	
[Ministry of Construction]	
Ministerios de Educación y de Educación Superior (MINED/MES) [Ministries of Education and of Higher Education]	Contribute technical capacity, knowledge, and research results. Promote environmental education and climate change awareness at all school levels.
Ministerio de Comercio Exterior e Inversión Extranjera (MINCEX) [Ministry of Foreign Trade and Foreign Investment]	Reports part of the result of the financing included in the support needed and received.
Banco Central de Cuba (BCC) [Central Bank of Cuba]	Manages financial aspects related to implementation of climate policies and mobilization of resources, both national and international, to finance climate projects.
Ministerio de Economía y Planificación (MEP) [Ministry of Economy and Planning]	Provides key economic information for national climate reports. Coordinates with other government stakeholders to ensure the integration of climate change policies into national economic planning.
Ministerio de Turismo (MINTUR) [Ministry of Tourism]	Develops climate change adaptation policies in the tourism sector, promoting the resilience of tourist destinations to extreme weather events and to the impact of climate variability on the sector. Facilitates the integration of climate change into sustainable tourism management.

There are other state institutions that contribute to climate action through their activities, corporate purpose or state mandate. The following are among them:

Instituto de Geofísica y Astronomía (IGA) [Institute of Geophysics and Astronomy]	It conducts research and provides services in the fields of geophysics, astronomy, environmental geology, and disaster risk assessment for current and future scenarios, in the interest of the country's sustainable development. Projects: ● Havana Coastal Zone Adaptation Plan (AdaptHabana). ● Hazard and Vulnerability Scenarios for Cuban Coastal Zone associated with sea level rise for the years 2050-2100 (Macroproject). ● Disaster Hazard, Vulnerability and Risk (HVR) Studies: the basis for climate change adaptation in Cuba. 2024-2026 Period. ● Early Warning System and Disaster Vulnerability and Risk Studies associated with thunderstorms in Cuba. ● Network of capacity-building and knowledge management centers for disaster risk reduction (DRR) and Climate Change Adaptation (CCA). ● Geological hazard, vulnerability, and risks from karst development associated with mean sea level rise and groundwater levels in Ciego de Avila province. Regional exchange for climate adaptation through sustainable entrepreneurship and resilient coasts (INNOVACUBA).
Instituto de Investigaciones Agroforestales (INAF) [Institute of Agroforestry Research]	For over 20 years, it has developed a research line oriented to climate change, which includes reducing uncertainties in the calculation of the national emissions balance (NEB) of the forestry sector and the environmental, economic, and financial assessment of local mitigation actions. It is responsible for the initial preparation of reports to the United Nations Framework Convention on Climate Change. Project: Sustainable Agro-landscapes. National Institute of Agroforestry Research (INAF), Fundación “Antonio Núñez Jiménez” /MINAG.
Centro de Investigación y Manejo Ambiental del Transporte (CIMAB) [Center for Research and Environmental Management of Transportation]	It carries out scientific and technical research projects in environmental management activities in bays, ports and coastal areas.
Instituto de Suelos (IS) [Institute of Soils]	Institution that provides the scientific and technical basis for the correct use, management, conservation and improvement of the soils resource.

Instituto de Investigaciones Ganaderas Tropicales (CIMAGT) [Institute of Tropical Livestock Research]	Responsible for the study of greenhouse gas (GHG) emissions in the livestock sector, as well as the research and development of mitigation strategies, with a focus on animal nutrition and sustainable waste management.
Instituto de Investigaciones Porcinas (IIP) [Institute of Pig-Farming Research]	It conducts research and proposes strategies to reduce methane emissions in pig-farming biodigesters through monitoring and data analysis.
Instituto Nacional de Ciencias Agrícolas (INCA) [National Institute of Agricultural Sciences]	It develops sustainable agricultural technologies, with an emphasis on climate change adaptation and resource efficiency in key crops for Cuba. Project: Research cooperation and development of legumes (black beans, kidney beans, and peanuts) adapting to climate change in Vietnam and Cuba.
Instituto de Ciencia Animal (ICA) [Institute of Animal Science]	It conducts research and promotes sustainable animal production systems, including nutrition, genetics, and waste management, to reduce the sector's environmental impact.
Centro de Estudios de Tecnologías Energéticas Renovables (CETER) [Center for the Study of Renewable Energy Technologies]	Responsible for research and development in renewable energy technologies, key to mitigation in the energy sector and emissions reduction.

ii. National policy framework

Cuba has established a robust policy framework to guide its response to climate change, in accordance with its international commitments. The following key instruments stand out:

Constitution of the Republic of Cuba (2019): In its Chapter II on international affairs, it establishes the State's commitment to environmental protection and conservation, as well as to confronting climate change. It recognizes the principle of common but differentiated responsibilities, promotes a fair international economic order, and advocates for the eradication of unsustainable production and consumption patterns.

- **Law No. 150** On the System of Natural Resources and the Environment establishes the regulatory foundations for the country's environmental management. Article 3 proposes the promotion of resilient, low-GHG-emission development through integrated planning for climate change adaptation and mitigation in the short, medium, and long term. Chapter IV, in Articles 108 and 109, specifies the National MRV System and the NGHGEI, respectively, under the responsibility of CITMA. Chapter II, Article 11.1 assigns CITMA the responsibility of coordinating, monitoring, and evaluating policies and regulatory instruments related to adaptation and mitigation, the sustainable use of natural resources, ecosystem protection, and pollution.
- **Decree 86 (2023) On Confronting Climate Change:** establishes the objectives, scope, subjects of application and its institutional framework.
- **State Plan for Confronting Climate Change, "Tarea Vida" (2017):** a long-term, cross-cutting public policy with a territorial focus that guides specific actions to reduce climate vulnerability in coastal areas, protect water resources, and ensure food security. It therefore constitutes a comprehensive action plan comprised of five strategic actions and eleven tasks. This Plan, aligned with the Paris Agreement, is recognized as a planning tool in the National Communications and the Biennial Update Report (BUR) submitted to the UNFCCC.
- **Nationally Determined Contributions 3.0 (2025):** implies an increase in emissions reductions, above those to be achieved by 2030, as a result of the implementation of the NDC-2020.
- **National Strategy for Energy Transition (2024)**: with support from the NDCs, it updates and establishes a roadmap towards the decarbonization of the national power system, with the goal of achieving 100% power generation from renewable sources by 2050.

This legal and programmatic framework reflects the Cuban State's commitment to environmental sustainability, climate resilience, and compliance with ETF. However, national reports also recognize pending challenges, such as the need to strengthen technical capacities, improve the MRV system, and secure financing for the implementation and scaling of climate actions effectively and inclusively. Furthermore, updates are required to align instruments such as Decree 86/2023 with the NDCs, incorporate carbon market mechanisms, and adapt sectoral regulations to updated climate goals, thus ensuring their consistency with international commitments.

iii. Other key actors for climate action

Table 1 lists other key actors for climate action in Cuba, including public and budgeted academic and research institutions that, under the Cuban development model, interact with all the country's economic actors (public and private) in the

implementation of national policies, manage knowledge aligned with the country's interests, and support strategic decision-making. Public institutions (universities, institutes, and research centers) play a fundamental role in developing innovative and adapted solutions to climate challenges, thereby strengthening the national capacity to address climate change effects.

Table 1. Main actors interested in climate action

Type	Existing stakeholder activities/projects with potential to be leveraged
Civil Society (CSOs and NGOs)	
Fundación Antonio Núñez Jiménez de la Naturaleza y el Hombre (FANJ) [Antonio Núñez Jiménez Foundation for Nature and Humankind]	- Promotes citizen participation in the protection of fragile ecosystems. - Implements demonstration projects on permaculture and community resilience. - Encourages responsible consumption and educates about environmental impacts.
Sociedad Civil Patrimonio, Comunidad y Medio Ambiente (SCPCMA) [Civil Society Heritage, Community and Environment]	- Works on heritage preservation and environmental sustainability. - Develops sociocultural projects that integrate urban rehabilitation, social inclusion, and environmental education. Ongoing Projects: • Educational butterfly house • Solid waste management • Energy efficiency.
Red Placemaking-Cuba (Placemaking Network-Cuba)	- Focuses on the transformation of public spaces for community development. - Promotes inclusive, resilient, and sustainable communities through local projects. Ongoing project: • Nature4Cities Project: Public-private partnerships for nature-based solutions in Camagüey and Manzanillo.
CUBASOLAR	- Promotes the use and awareness of renewable energy sources in secondary education within the national education system. - Coordinates demonstration projects in the field of renewable energy and environmental preservation. Project: • Strengthening the capacities of the Finlay Institute for Vaccines (IFV) with renewable energy during the COVID-19 pandemic.
Private sector	
GuajiTech (Guajiritos)	- Development of digital solutions for energy efficiency and environmental traceability. - Development of digital climate data platforms.
Representatives of new economic forms and actors (MSMEs, cooperatives, etc.)	- Provide information on vulnerability in different economic sectors.
Academia and research organizations	
Centro de Investigaciones de la Economía Mundial (CIEM) [World Economy Research Center]	- Analyzes the economic impacts of climate change and proposes carbon market mechanisms for Cuba.
Universidad de La Habana (UH) [University of Havana]	- Inter-college group that develops climate scenario simulations and evaluates urban mitigation strategies.
Universidad Agraria de La Habana (UNAH) [Agrarian University of Havana]	- Experiments with water stress-tolerant crops and designs sustainable irrigation technologies for family farmers.
Centro de Estudios Demográficos (CEDEM) [Center for Demographic Studies]	- Generates gender-sensitive demographic vulnerability indicators in coastal settlements with support from UNFPA.
Facultad Latinoamericana de Ciencias Sociales (FLACSO) [Latin American Faculty of Social Sciences]	The Latin American Faculty of Social Sciences (FLACSO-Cuba) is an academic institution for research and postgraduate teaching.
Instituto de Planificación Física (IPF) [Institute of Physical Planning]	- Develops territorial planning projects to reduce climate change impacts. - Implements urban planning strategies that integrate climate change and environmental sustainability.
Universidad de Oriente (UO) [University of Eastern Cuba]	- Conducts research on climate change adaptation, especially in coastal and rural regions. - Has programs focused on environmental management, sustainability, and climate impact assessment in eastern Cuba.

Universidad de Pinar del Río (UPR) [University of Pinar del Río]	- Develops research projects on the restoration of degraded ecosystems and crop adaptation to climate change. - Studies the impact of extreme weather events on local agriculture.
Universidad Central "Marta Abreu" de Las Villas (UCLV) [“Marta Abreu” Central University of Las Villas]	- Conducts research in the field of renewable energy, with an emphasis on solar, wind, and biomass energy. - Develops training projects on sustainable natural resource management and climate change.
Universidad Tecnológica de La Habana "José Antonio Echeverría" (CUJAE) [“José Antonio Echeverría” Technological University of Havana]	- Carries out projects focused on sustainable urbanization and urban resilience to climate change. - Develops technological solutions for water, energy, and waste management.

iv. Official reports to the UNFCCC

To meet its obligations under the UNFCCC, the country has submitted several documents related to its socio-economic development objectives (see Table 2).

Table 2. Official reports to the UNFCCC

Year	Report	Comments
2001	NC – First National Communication	1990-1994 IPCC 1996 Series (Level 1). First Baseline Report
2015	NC – Second National Communication	1990-2002 Series (1990, 1994 updates) Consolidation of the institutional system.
2016	Nationally Determined Contribution NDC	Cuba's first NDC, submitted after signing the Paris Agreement. It identifies key mitigation sectors and initial commitments.
2020	NC-Third National Communication	It expands vulnerability and adaptation analysis, incorporates “Tarea Vida” measures, and includes the use of the 2006 IPCC guidelines in inventories.
2020	Nationally Determined Contribution (NDC 2.0)	NDC update with five mitigation actions in priority sectors such as energy, transportation, forestry, and agriculture.
2020	BUR – First Biennial Update Report	1990-2000-2016 series. It includes annual national emissions and removals for the four sectors considered in the 2006 IPCC Guidelines for the preparation of national GHG inventories: Energy, AFOLU, IPPU, and Waste. Three GHGs were included in the NGHGEI: carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O). For the first time, the 2006 IPCC Guidelines were used in the country for the preparation of inventories.
2021	ICA-International Analysis and Consultation	Technical review process of the BUR and NGHGEI by international experts; Cuba actively participated in this Transparency Framework mechanism.
2024	Biennial Transparency Report (BTR)	Cuba's first BTR under the Enhanced Transparency Framework (ETF); it includes progress on mitigation, adaptation, support received, and inventory updates. 1990-2022 Series. It includes emissions and removals of three GHGs: carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O). Estimates were made following the 2006 IPCC Guidelines and the principles of transparency, comprehensiveness, consistency, comparability, and accuracy.
2024	NIR	Updated report with inventories through 2022, as part of compliance with obligations under the Paris Agreement.
2025	Nationally Determined Contribution NDC 3.0	Review and update of the NDC with new commitments, goals, and actions toward sustainability and climate resilience.

Cuba recognizes the need to strengthen transparency in the information it reports and in the application of the IPCC Methodological Guidelines. Although the country had planned to implement an MRV system by 2025, financial constraints forced it to postpone this goal until 2028. The Biennial Update Report (BUR) demonstrated progress, but critical challenges remain: (i) predominant use of Tier 1 methodologies (except in Agriculture, where Tier 2 was applied for enteric fermentation and manure management); (ii) omission of disaggregated data on HFCs, PFCs, and precursor gases without technical justification; (iii) use of notation keys (“NE”) in sectors such as LULUCF, except for forest lands; and (iv) limited

monitoring of mitigation actions, which began in 2015. These gaps affect the clarity, consistency, and comparability of the reports, as noted by the Team of Technical Experts (TTE).

Priority recommendations:

1. **Strengthening MRV**: Adopt Tier 2+ methodologies in Energy, Agriculture, and LULUCF, and fully migrate to the 2006 IPCC Guidelines and their 2019 Refinements.
2. **Data completion**: Include HFC/PFC emissions (for each gas separately) and reduce the use of "NE" through improved data collection.
3. **Regulatory harmonization**: Align NDCs with quantifiable sectoral targets (e.g., a 30% reduction in energy emissions by 2030) and carbon market criteria.
4. **Technical training**: Request UNFCCC assistance for LULUCF and implement standardized uncertainty reporting protocols.
5. **Cross-cutting approaches**: Integrate gender and equity perspectives into climate policy design.

These actions require international financial and technical support, particularly to modernize monitoring systems and meet ETF deadlines.

2. Progress in the four modules of the Enhanced Transparency Framework

Cuba has made notable strides in climate transparency through its Greenhouse Gas Inventory (INGEI), adaptation planning, and NDC tracking systems. However, the economic, commercial, and financial blockade imposed by the United States represents an obstacle to the country's access to international climate financing sources, negatively impacting not only Cuba's sustainable development, but also the effective implementation of mitigation and adaptation actions.

The INGEI, coordinated by INSMET since the 1990s, covers all IPCC sectors and aligns with international guidelines, though it still relies heavily on Tier 1 methodologies and faces institutional challenges such as fragmented data collection and limited technical capacity. The Climate Change Information System for Agriculture (SICCA) has helped improve MRV systems in agriculture, but broader replication is needed. In adaptation, Cuba's vulnerability to climate change is addressed through "Tarea Vida" and decades of research, yet gaps persist in scenario modeling, tracking methodologies, and local data generation.

The NDC Tracking Module outlines mitigation and adaptation priorities and has launched MRV systems for select sectors, but lacks integration, automation, and consistent data updates. Strengthening institutional coordination, technical capacity, and digital infrastructure is essential to ensure sustainable, transparent, and effective climate action aligned with the Paris Agreement and national development goals. Cuba's MRV system for tracking climate support is still in the design phase, with foundational work done under a GCF-supported project, but it lacks the capacity for continuous and systematic accounting of received support and financing methodologies.

The sections below describe the country's current status, progress, and challenges in ETF four core modules.

i. GHG Inventory Module

Cuba has made substantial progress in establishing a national framework for climate transparency, particularly through the development and reporting of its National Greenhouse Gas Inventories (INGEI). This process, coordinated by INSMET's GHG Technical Team (ETGEI) since the 1990s, integrates sectoral ministries, the National Office of Statistics and Information (ONEI), academic institutions, and environmental authorities in data collection, validation, and reporting.

Table 3. Greenhouse gas inventory milestones

Year	Instance	Published data
2001	NC – First National Communication	1990-1994 Series
2015	NC – Second National Communication	1990-2002 Series
2020	BUR – First Biennial Update Report	1990-2016 Series
2024	NIR	1990-2022 Series

The INGEIs cover all IPCC sectors (Energy, Industrial Processes and Product Use [IPPU], Agriculture, LULUCF, and Waste) and have been regularly submitted to the UNFCCC via National Communications and Biennial Update Reports, fulfilling commitments under Articles 4 and 12 of the Convention.

The Fourth INGEI (1990–2022), submitted in 2024, marks a significant achievement by fully aligning with the 2006 IPCC Guidelines and the transparency framework of the Paris Agreement. Nevertheless, critical limitations persist: 78% of inventory categories rely on Tier 1 methodologies with default emission factors, except in priority areas such as forestry and livestock (Tier 2). In accordance with MPG Provisions 48 and 92, industrial gases (HFCs/PFCs) and indirect emissions remain excluded due to technical constraints, though plans are underway to incorporate them by 2028.

The institutional system for the INGEI faces three major challenges that jeopardize its sustainability:

1. Fragmented and non-institutionalized data collection processes.
2. Technical capacity gaps, including high staff turnover, reliance on external consultants, and a lack of local emission factors.
3. Insufficient integration of GHG projections into national planning processes.

The CBIT I project (2021) made significant strides by strengthening technical capacities and developing the Climate Change Information System for Agriculture (SICCA). However, the aforementioned challenges continue to threaten the long-term sustainability and consistent application of these systems.

The SICCA platform has demonstrated success by integrating multiple stakeholders for data systematization, climate target monitoring, and hosting the INGEI Management System for the Agriculture and LULUCF sector, along with an MRV system for climate finance. This model highlights the urgency of replicating and scaling an integrated approach across all sectors to address structural weaknesses.

Cuba can further strengthen its transparency system by incorporating recommendations from Technical Analyses of its BURs and lessons from international reviews of future Biennial Transparency Reports (BTRs). These processes consistently identify gaps in QA/QC procedures, methodological consistency, and sectoral data integration.

To tackle these challenges, the following strategic actions are required:

- **Specialized technical training** in advanced methodologies (Level 2/3)
- **Institutionalization** of MRV protocols and periodic data updating
- **Inter-institutional coordination** to link inventories with sectoral policies

These actions are necessary to address priority sectoral gaps, particularly in:

- **Energy**: Developing country-specific emission factors and improving disaggregated energy statistics.
- **Agriculture and LULUCF**: Strengthening MRV systems for land-use change and agricultural activity data.
- **Waste**: Enhancing national statistics on solid waste and wastewater management.
- **IPPU**: Expanding data collection on cement, chemicals, and refrigerant production.

Implementing a comprehensive capacity-building framework is essential for enhancing the accuracy of Cuba’s greenhouse gas inventory, fulfilling its obligations under the Enhanced Transparency Framework of the Paris Agreement, facilitating access to climate finance, and supporting the implementation of its Nationally Determined Contribution (NDC) and the “Tarea Vida” State Plan.

ii. Adaptation and Vulnerability Module

Cuba's insularity, coastal morphology, and tropical climate increase its vulnerability to climate change. Seventy percent of its more than 5,700 km of coastline is protected by mangrove forests, key ecosystems for mitigating sea level rise, storm surges, and flooding. These formations are essential for socioeconomic sustainability and risk reduction. Cuba's climate is characterized by two distinct seasons: rainy (May–October) and dry (November–April), with average annual temperatures of 24–26°C. Between 1951 and 2022, temperatures increased by 1.0°C, and projections indicate an increase of more than 3.5°C by 2070, along with a 10% reduction in seasonal rainfall. These changes will exacerbate droughts and the intensity of extreme events such as tropical cyclones, whose surveillance remains a priority.

For all these reasons, climate change adaptation is a national priority in Cuba. Although a formal National Adaptation Plan (NAP) has not been developed, this priority is integrated into its political and programmatic framework. This is particularly true in “Tarea Vida”, which identifies 17 priority areas. Likewise, the need to strengthen Hazard, Vulnerability, and Risk studies and their link to municipal development strategies also stands out.

The country has accumulated more than three decades of research on climate scenarios, sectoral impacts, and adaptation measures. However, it lacks a consolidated document that systematizes these advances. In this context, Cuba has partially complied with ETF—particularly paragraphs 104–117 of Decision 18/CMA.1—through its national communications; and a Monitoring and Evaluation System for adaptation actions. By the end of the project, the agricultural, forestry, and other land use sectors also have an Agrarian Climate Action Plan, a strategic framework that integrates adaptation and mitigation measures into the development programs of the agricultural, livestock, and forestry sectors within the context of “Tarea Vida”.

Despite these advances, significant gaps remain in the adaptation module. Notably, there are no established methodologies for tracking adaptation initiatives, and key indicators for measuring progress are lacking. Additionally, there is a lack of comprehensive studies and tools for generating climate change scenarios, as well as for vulnerability and risk assessments. These gaps hinder the design of targeted, data-driven adaptation strategies and the integration of climate resilience into national and sectoral planning. Moreover, the information currently available is largely drawn from international cooperation programs, which limits the ability to conduct in-depth local analysis and impedes the planning and mobilization of resources for sustainable and effective adaptation.

iii. NDC Tracking Module

Cuba's NDC submitted in February 2025, establishes six mitigation actions and 17 priority areas for adaptation in key sectors such as energy, transport, agriculture, water, and forestry, with quantified emission reduction targets. The country has implemented a Measurement, Reporting, and Verification (MRV) system to follow up on the mitigation measures included in its NDC. Current institutional arrangements define clear roles and responsibilities that ensure follow-up in the Energy, Industry (IPPU), Agriculture, LULUCF, and Waste sectors, with multi-stakeholder participation favoring a comprehensive approach.

The State Plan for Confronting Climate Change serves as the primary tool for monitoring progress in NDC implementation. The NDC commitments are aligned with national development goals, and Cuba has incorporated a broader set of mitigation actions beyond those expressed in the NDC, prioritizing those with the greatest relevance and impact for their national design and implementation.

The CBIT I Project marked an important step forward by launching the MRV system for Agriculture and LULUCF, supporting the creation of specific templates for monitoring mitigation measures in this sector. However, to date, no similar MRV subsystem has been developed for other priority sectors, thus limiting the scope and effectiveness of the comprehensive monitoring system.

Although progress indicators for each mitigation action and priority areas for adaptation are periodically used to report on progress, they are not centralized in an integrated digital platform. Current monitoring relies heavily on manual processes, creating a high level of dependence on responsible individuals and limiting the system’s institutionalization. Insufficient technical, human, and financial resources across sectors affect the capacity to systematically monitor NDCs, and the templates developed during CBIT I still have gaps that hinder comprehensive and consistent coverage. As a result, data on the progress of NDC actions are not systematically and regularly updated or verified. Reports continue to be based on *ad hoc* input, negatively impacting on the accuracy, consistency, and usefulness of the reports presented in the BTR (Biennial Transparency Report).

To overcome these limitations, it is essential to improve institutional arrangements, strengthen the technical and financial capacity of the sectors involved, and move toward automating the monitoring system through the development and implementation of an integrated digital platform. Likewise, the regularization and standardization of sectoral reporting must be promoted, improving the use and quality of indicators to ensure transparent, rigorous, and reliable monitoring.

Finally, it is essential to align the MRV system with national development planning, thus facilitating the effective integration of climate goals into the National Development Plan (NDP). This will ensure that monitoring, reporting, and evaluation

processes are sustainable, efficient, and allow for evidence-based adjustments to meet national and international climate commitments.

iv. Support Needed and Received Module

Cuba, as an island developing country vulnerable to climate change, requires international support to fulfill its national climate agenda and its commitments to the UNFCCC. However, the economic, commercial, and financial blockade imposed by the United States represents an obstacle to the country's access to international climate financing sources, negatively impacting not only Cuba's sustainable development, but also the effective implementation of mitigation and adaptation actions. A concrete example of this situation is the impossibility of accrediting a Direct Access Entity with the Green Climate Fund (GCF) due to the GCF's link to the World Bank, which prevents the direct transfer of funds to Cuban institutions.

The MRV system for tracking support needs and received is currently in the design phase. While a proposed platform for monitoring climate action and support was developed with GCF support, there are still significant gaps. Specifically, the system does not yet allow for continuous, systematic accounting of information on the support received, and methodologies for tracking adaptation and mitigation financing are not fully developed. A major step forward, however, is the work done under the GCF project, which laid the groundwork for the design of this platform, setting the foundation for future progress.
Despite these advances, Cuba currently lacks a comprehensive system for aggregating climate-related financial flows, and a structured methodology for recording financial support, technical assistance, or capacity development is still missing. Sector-specific support needs assessments are also absent, making it difficult to define a coherent, evidence-based strategy for resource mobilization.

In terms of financing, Cuba received USD 59.6 million through 20 projects in the 2021-2022 period, with most of these funds allocated to adaptation (17 projects), one for mitigation, and one for cross-cutting issues. However, financial support for the implementation of the 2020 NDC remains limited, with a large portion of the required investments for mitigation, estimated at approximately USD 14 billion, still unmet. A substantial share of this financing is expected to come from concessional climate funds such as the Green Climate Fund, particularly for technology imports, and the country’s energy transition and forestry programs.

Moving forward, the work to finalize the climate finance MRV system is essential to track disbursements effectively, enhance financial flow monitoring, and ensure alignment with NDC goals. As Cuba continues to improve its climate finance MRV, it will better integrate climate finance into the national strategy for achieving long-term climate resilience.

Other baseline initiatives

This CBIT project is aligned with and complements other initiatives supported by GEF and development partners in Cuba, as described in Table 4.

Table 4. Transparency initiatives in Cuba

Program / Project	Leading Ministry and Supporting Entities	Brief description	Duration (start and end year)	Value (USD)	Relationship with ETF and the transparency system
Preparation of the First and Second Biennial Transparency Reports and the Fourth National Communication (1BTR + 2BTR & 4NC)	CITMA; UNDP (implementation); Center for Energy Information Management and Development (CUBAENERGIA) and GEF	Technical assistance and strengthening capacities for the preparation and submission of the Biennial Transparency Reports and the Fourth National Communication to the UNFCCC	2023 – 2025	$1,233,000	It ensures the development of BTRs in accordance with ETF, strengthening MRV systems and biennial reporting within the framework of the Paris Agreement
Capacity building to address	Ministry of Agriculture	CBIT strengthened national technical	2021-2025	$863,242	As a result, for the first time the country has an

climate change (CBIT-AFOLU)	(MINAG); Pasture and Forage Research Institute; and FAO	capacities to measure, assess, and report on greenhouse gas (GHG) emissions and removals in the AFOLU sector. This system will serve as a recording and reporting tool to systematize climate change mitigation and adaptation actions in agriculture and will also be essential for reporting at the sectoral and national levels in the context of national plans, policies, and commitments on these issues.			Information System on Climate Change in Agriculture (SICCA), functioning as a platform where various stakeholders collaborate to systematize information on climate change, monitor climate goals progress, and facilitate data-driven decision-making, complying with the requirements of the Enhanced Transparency Framework (ETF) of the Paris Agreement.
Initiative for Transparency in Climate Action (ICAT-Cuba)	CITMA; implemented by UNOPS, UNEP, CUBAENERGIA and ISPRA	ICAT 1: The objective was to develop a new baseline and mitigation scenario for the energy sector within the NDC framework, incorporating the identified mitigation actions. This involved designing a monitoring and reporting framework for the energy sector, taking into account international reporting requirements. ICAT 2: Focused on strengthening the capacities to meet the country's reporting requirements through the BTR and updating the NDC.	2020-2024	$340,000	It contributes to ETF implementation, to develop the methodological bases that allow for the monitoring of NDCs and Biennial Transparency Reports (BTR) under the Paris Agreement.
REDD + Readiness Preparation in Cuba	CITMA; FAO and GCF	Completion and consolidation of REDD+ readiness activities to: - Develop a robust National Food Security Monitoring System (NFMS) with institutional frameworks for data generation and reporting, considering the roles of men and women. - Adopt a national interpretation of Cancun safeguards and requirements for a robust SIS. - Develop a Forest Reference Level (FREL/FRL) with methodological protocols	2023 – ongoing	$525,000	Direct alignment with the technical components of the Enhanced Transparency Framework, such as MRV systems and Forest Reference Emission Levels (FRELs/FRLs)

		for the collection of remote and terrestrial data.			
GCF READINESS II		Implemented in collaboration with the United Nations Development Programme (UNDP), CUBAENERGIA and the Ministry of Science, Technology and Environment (CITMA), it aims to strengthen national capacities to access and manage climate finance.		$ 3 million	

Key barriers

The main barriers to the strengthening of Cuba's transparency framework to meet ETF requirements under the Paris Agreement were identified through a comprehensive baseline analysis (see previous section) and discussions with key stakeholders in the country. These barriers can be grouped into the following categories:[2]

Barrier 1: **Cuba lacks the capacity to systematically organize climate data.**

Despite institutional progress, Cuba continues to face significant challenges in establishing a robust climate data management system that fulfills the Enhanced Transparency Framework (ETF) requirements under the Paris Agreement. The CBIT I project facilitated the creation of the GHG Technical Team (ETGEI) and supported the development of foundational capacities for the MRV system in the agricultural sector. However, other sectors lack such systems, and persistent deficiencies in climate information management remain due to the absence of a comprehensive mechanism to centralize and govern climate data.

Currently, there is no integrated national platform that enables standardized data collection, efficient processing, secure storage, and timely dissemination across relevant sectors. This gap is driven by two interrelated factors:

(i) institutional fragmentation among data-generating and managing entities, which operate under diverse protocols and non-harmonized standards, resulting in uncoordinated and redundant information flows; and
(ii) technological limitations, including outdated IT infrastructure, which is insufficient to handle the growing volume and complexity of climate data required for international reporting.

These constraints undermine Cuba's ability to effectively report progress on mitigation and adaptation, and restrict access to critical international climate finance. Addressing this barrier demands a comprehensive intervention that simultaneously strengthens institutional coordination, enhances technical capacities, and modernizes the technological backbone of the climate data management system.

Barrier 2: Cuba´s **modules for GHG inventory, adaptation/vulnerability, NDC monitoring, and support needed and received are incomplete and not fully aligned with ETF requirements**.

The country has undertaken actions across the four key modules of the Enhanced Transparency Framework (ETF); however, these efforts remain uneven and insufficient, falling short of the technical guidelines established under the Paris Agreement. The GHG inventory continues to rely predominantly on Tier 1 methodologies and default emission factors (even for key source categories) limiting the accuracy and policy relevance of the reported data. Although efforts are underway to explore country-specific emission factors and higher-tier approaches, their adoption is constrained by limited technical and financial capacity, data gaps, and the absence of appropriate methodological tools.

The adaptation and vulnerability module lacks standardized metrics, data visualization tools, and a National Adaptation Plan, undermining its utility for planning, projecting, and clearly communicating adaptation actions in line with Paris Agreement expectations. Tracking systems for Nationally Determined Contributions (NDCs) are still in early development

[2]These barriers are discussed in more detail in the reference section.

and do not systematically or equitably cover mitigation and adaptation components. Adaptation actions, in particular, lack financial estimates and monitoring indicators, and neither mitigation nor adaptation tracking reflects integration with national budgets, planning cycles, or development indicators.
The module on support needed and received is hindered by the absence of a robust mechanism for tracking climate finance flows, making it difficult to assess progress or identify funding gaps. Collectively, these shortcomings point to limited institutional capacity and the lack of a comprehensive framework for implementing ETF-aligned reporting tools, training programs, and governance mechanisms.

Barrier 3: **Cuba lacks the capacity to systematically use its climate change information for UNFCCC reporting and national planning; its funding depends on support from international projects and cooperation.**

Cuba has shown strong political will by submitting multiple National Communications (NC), Biennial Update Reports (BUR), and its first Biennial Transparency Report (BTR1). Despite these achievements, the country's reporting architecture remains heavily dependent on international project support and cooperation.

National reporting processes are not fully institutionalized or funded through regular government budgets, making them vulnerable to discontinuation when donor-funded initiatives conclude. As a result, both the quality and frequency of submissions hinge on the availability of external financing rather than on sustained national capacity.

The various systems used to collect, analyze, and report climate data operate in silos. They lack interoperability, making it difficult to maintain continuity once project-specific support ends. Moreover, data generated for international obligations—such as greenhouse gas inventories or climate finance tracking—are seldom integrated into national or territorial planning. Ministries and planning agencies often lack the tools, incentives, or established workflows needed to leverage transparency outputs in their sectoral strategies, weakening the feedback loop between reporting and implementation.