ICAT Initiative for Climate Action Transparency

Indicators for Tracking NDC Progress

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Contributors and Acknowledgments

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Table of Contents

Introduction

The adoption of the Paris Agreement under the United Nations Framework Convention on Climate Change (UNFCCC) marked a turning point in global climate action. Catalysed by the urgent need to limit the global temperature increase to well below 2°C above preindustrial levels, the Paris Agreement sets clear rules for climate transparency. The Agreement, adopted in 2015, largely replaces the differentiated requirements and guidelines between developed and developing country Parties, which characterized the Convention and the Kyoto Protocol, with new requirements applicable to all Parties.

The Paris Agreement emphasizes the urgent need for all Parties to act and report transparently through an Enhanced Transparency Framework (ETF) for action and support. The ETF is designed to provide a clear, trusted system for tracking climate action and support, improving climate action over time and building trust among Parties. The ETF also introduces a new set of robust transparency rules applicable to all Parties, with built-in flexibility to accommodate the varying capacities of developing countries. Since 2024, all Parties under the ETF must report information related to climate action and support as part of their Biennial Transparency Reports (BTRs).

This updated report builds on the earlier publication “Proposed indicators for domestic MRV purposes and tracking progress of NDCs” (ISPRA, 2021) by highlighting the value and purposes of well-designed indicators and providing useful examples of indicators for climate change adaptation and mitigation, based on the BTRs submitted thus far. It reflects the current landscape for tracking Nationally Determined Contributions (NDCs) to support Parties in developing and adapting indicators to their domestic needs.

The report is organized into two sections:

CHAPTER 1

Chapter 1 provides a structured assessment of national reporting obligations under the ETF of the Paris Agreement to understand the requirements for reporting under the UNFCCC. These requirements define the minimum effort that countries are requested to undertake in monitoring their existing actions. Chapter 1 also provides an overview of Article 6 of the Paris Agreement, which sets out how Parties may utilize international carbon market mechanisms to support the implementation of their NDCs for emission reductions.

CHAPTER 2

Chapter 2 of this report discusses the importance of indicators in tracking progress towards climate goals. Under the Paris Agreement, Parties set targets related to climate mitigation and, often, climate adaptation. Parties communicate these targets in their NDCs. As they are set by Parties themselves, the types of targets and levels of ambition vary considerably. To track their progress in implementing and achieving NDCs, Parties use self-determined indicators, which can be qualitative or quantitative. Tracking progress in this way is essential for allowing Parties to adjust their approach as needed and to ultimately achieve their climate goals.

Chapter 2 also provides an overview of indicators used by Parties in their BTR submissions. This includes examples of additional indicators that are potentially useful in pursuing domestic monitoring tasks as well as in reporting on progress towards implementation and achievement of Parties’ NDCs.

Chapter 2 includes comprehensive lists of relevant indicators for monitoring mitigation and an overview of indicators and some of the key international tools that may be useful for tracking adaptation actions and targets. It should be noted that, at the time of drafting this report, negotiations on the Global Goal on Adaptation (GGA) were still ongoing. Consequently, the coverage on adaptation indicators should be considered provisional and will be updated in future editions of the report.

Finally, Chapter 2 provides five case studies that evaluate the indicators reported in the Parties' initial BTRs against those outlined in their corresponding NDCs. The selected case studies were included to show how Parties are choosing different indicators to track their progress, illustrating both the diversity of national approaches and the range of pathways that can lead to ambitious, effective climate action.

Key Takeaways

- Indicators are essential for tracking progress towards NDCs, supporting transparency, and strengthening climate governance.
- Under the ETF, Parties select their own indicators based on national context, priorities, and reporting needs.
- Indicators should be measurable, relevant, feasible, and consistent with national GHG inventories and reporting methodologies.
- Consistency between NDCs, BTRs, data sources, assumptions, and methodologies is critical for transparency, comparability, and credibility.
- It is important that indicators balance policy relevance with cost-effectiveness, making use of existing data systems and national capacities where possible.
- Beyond reporting, indicators support evidence-based decision-making, policy adjustment, coordination, accountability, and help identify underperforming measures.
- Indicators are expected to evolve over time based on lessons learned, improved data systems, and changing policy needs.

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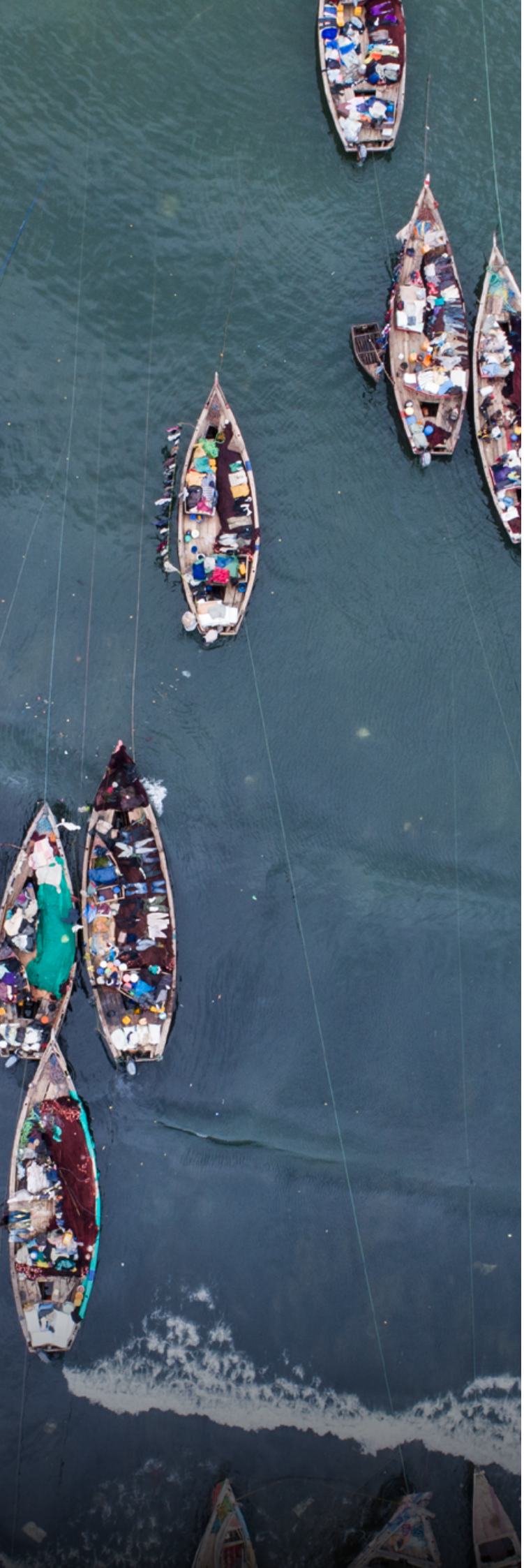


The Enhanced Transparency Framework and Article 6

1.1 Overview of the Enhanced Transparency Framework

The Paris Agreement brought all Parties together with the common goal to limit “the increase in the global average temperature to well below 2°C above preindustrial levels” and to pursue efforts “to limit the temperature increase to 1.5°C above pre-industrial levels.” Achieving this objective requires more than commitments on paper; it depends on trust, accountability, and continuous improvement over time.

Each Party to the Agreement must establish a Nationally Determined Contribution (NDC), to include climate targets and national policies and measures to mitigate climate change and adapt to its effects. Developed countries are called upon to support developing countries through financial assistance, technology transfer, and capacity-building initiatives. However, these commitments can only be effective if there is a shared understanding of what progress is being made and where gaps remain.

The Enhanced Transparency Framework (ETF), established under the Paris Agreement, serves this essential purpose. While its Modalities, Procedures and Guidelines (MPGs) set out technical reporting and review requirements, the deeper purpose of the ETF is to build confidence among Parties by ensuring that climate actions and support are transparent, comparable, and subject to review. Transparency reduces uncertainty, strengthens mutual trust, and helps ensure a level playing field. It enables countries to assess collective progress towards long-term temperature goals and to identify areas where ambition must be increased.

By providing reliable data and structured review processes, the ETF transforms climate commitments into an accountable, learning-oriented system. It facilitates evidence-based policymaking, encourages the sharing of best practices, and

supports continuous improvement of national climate strategies. In doing so, the ETF is not merely a reporting mechanism; it is a cornerstone of the Paris Agreement's "ambition cycle," ensuring that commitments evolve and strengthen over time.

Ultimately, the ETF reinforces the integrity of the global climate regime by fostering accountability, cooperation, and rising ambition and it helps safeguard the future of younger generations whose lives will be shaped by the success—or failure—of the international climate process.

1.2 Reporting requirements and formats

The key reporting vehicle under the ETF is the Biennial Transparency Report (BTR). The BTR serves as a uniform reporting mechanism through which Parties regularly communicate their climate actions and progress towards meeting their commitments under the Paris Agreement (see Figures 1 and 2). Parties are required to submit a BTR every two years; the first BTR was required to be submitted by 31 December 2024. Least Developed Countries (LDCs) and Small Island Developing States (SIDS) could submit their first BTR later and at their discretion.

FIGURE 1

Elements of the ETF

ETF

With the adoption of the Paris Agreement, a new **Enhanced Transparency Framework (ETF)** was established, with common rules applicable to all Parties and the provision of specific flexibilities for those developing countries that need them in light of their capacities.

MPGs

Modalities, Procedures and Guidelines (MPGs) for the ETF were adopted as part of the Paris Rulebook, containing the rules and requirements applicable to all countries for effective implementation of the ETF.

Reporting obligations for Parties are included in the Annex to Decision 18/CMA.1: https://unfccc.int/sites/default/files/resource/CMA2018_03a02E.pdf

BTR

At COP26, the "Paris Agreement rulebook" has been finalized. In the **biennial transparency report (BTR)**, Parties will provide information on their national GHG emissions and removals, progress in implementing and achieving NDCs, financial resources, technology development and transfer as well as capacity building provided and received. Decision 5/CMA.3: https://unfccc.int/documents/193407

Note: The "Paris Agreement Rulebook" is a set of rules that sets out how countries are held accountable for delivering on their climate action promises and self-set targets under their NDCs. See "COP26 Outcomes: Transparency and Reporting", https://unfccc.int/process-and-meetings/the-paris-agreement/the-glasgow-climate-pact/cop26-outcomes-transparency-and-reporting.

The detailed structure of the BTR and the set of reporting tables were agreed by CMA3,[1] embedding the provisions of Article 13.7 of the Paris Agreement (see Figure 3).

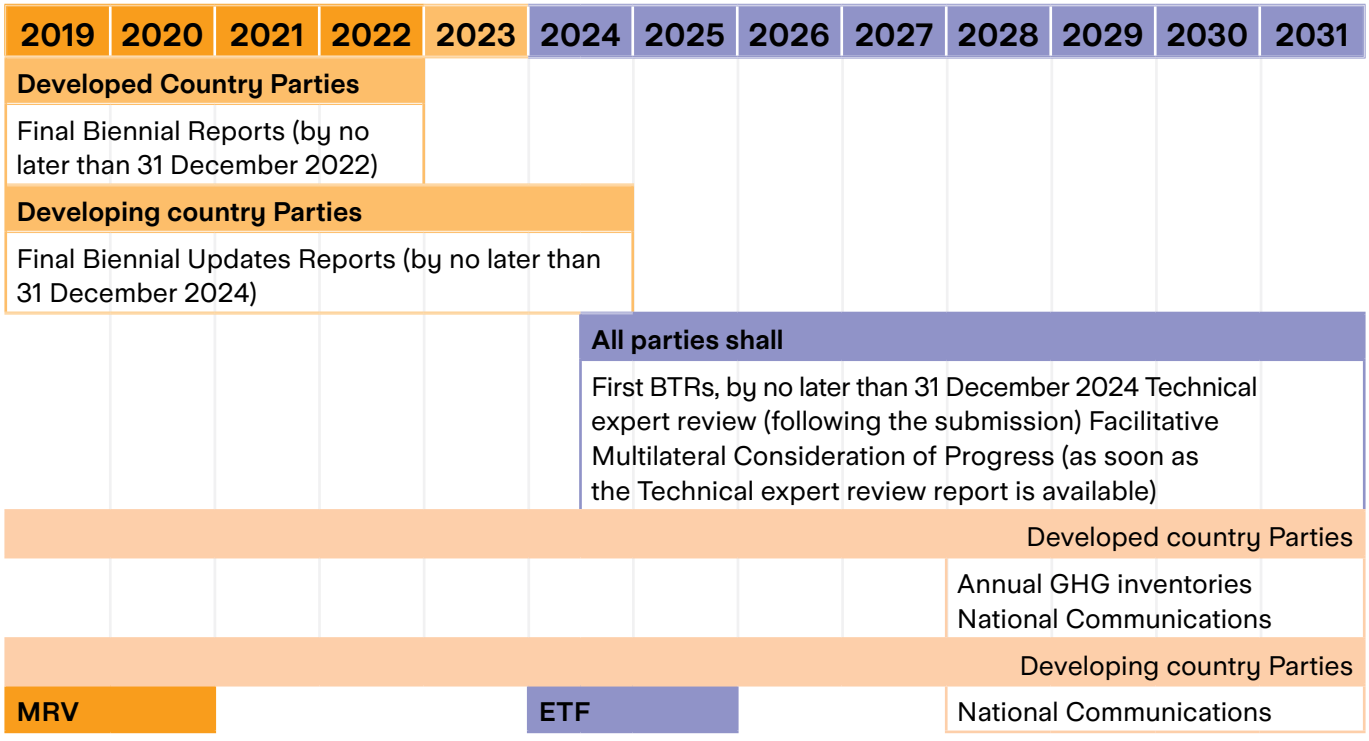
As outlined in the MPGs, BTR submissions consist of:

- A National Inventory Document (NID) providing narrative and methodological information;
- Common reporting tables (CRTs) for the electronic reporting of information on the National Inventory Report (NIR) of anthropogenic emissions by sources and removals by sinks of greenhouse gases (submitted as annexes);
- Common Tabular Formats (CTFs) for the electronic reporting of information necessary to track progress made in implementing and achieving NDCs,

1. First session of the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement.

FIGURE 2

Implementing the ETF



Source: UNFCCC (2022)

and information on financial, technology development and transfer and capacity-building support provided and mobilized and needed and received (submitted as annexes).

See Annex I for further details on the information to be submitted in the BTR.

All Parties must submit an NIR every two years, as a stand-alone report or in conjunction with their BTR submission. Developed country Parties will continue to be bound to an annual submission timeline. If the NIR is provided as a stand-alone report, a summary of greenhouse gas (GHG) emissions and removals must be provided within the BTR. Detailed information on GHG emissions and removals, strictly in line with the 2006 Intergovernmental Panel on Climate Change (IPCC) Guidelines and TACCC principles (i.e., transparency, accuracy, completeness, consistency and comparability), is vital for providing a clear picture of countries' achievements. Information on GHG emissions and removals is also a valuable indicator for many Parties in tracking the progress of their NDCs.

Parties should focus on the mitigation policies and measures, actions, and plans (PaMs) that have the most significant impact on GHG emissions and removals and on key categories

FIGURE 3

Reporting and review under the Paris Agreement

Reporting	**All parties shall**	**Developed countries Parties shall and other Parties that provided support should**
	National greenhouse gas (GHG) inventory report (Article 13.7 (a)) Progress made in implementing and achieving nationally determined contribution (NDC) (Article 13.7 (b))	Financial, technology transfer and capacity-building provided and mobilized to developing countries Parties under Articles 9, 10 and 11 (Article 13.9)
	All parties should, as appropriate	**Developing countries Parties should**
	Climate change impacts and adaptation (Article 13.8)	Financial, technology transfer and capacity-building support needed and received under Articles 9, 10 and 11 (Article 13.10)
Technical expert review	**All parties shall**	**Developed countries Parties shall and other Parties that provided support may**
	Undergo technical expert review of information submitted under Articles 13.7 (Article 13.11)	Undergo technical expert review of information submitted under Articles 13.9 (Article 13.11)
Facilitative multilateral consideration of progress	**Facilitative multilateral consideration of progress**	
	Facilitative multilateral consideration of progress with respect to efforts under Article 9, and its respective implementation and achievement of its NDCs (Article 13.11)	

Source: UNFCCC (2023b)

of the GHG inventory. PaMs must be presented in both a narrative and CTF and organized by sector (i.e., energy, transport, industrial processes and product use (IPPU), agriculture, land use, land use change and forestry (LULUCF), waste) and complemented by estimates of expected and achieved GHG emission reductions. Information on PaMs is needed in the GHG inventory to fulfil a specific requirement of the MPGs. In addition, Parties can use details such as the status or estimated emission reductions of individual PaMs to track progress where relevant, particularly for NDCs based on implementing mitigation PaMs rather than economy-wide emissions targets. Finally, the MPGs define specific information that all Parties must report regarding progress in implementing and achieving their NDCs. This should include a detailed list of information on indicators, relevant methodologies and accounting approaches. The information must be reported through the CTFs, shown in Figure 4.

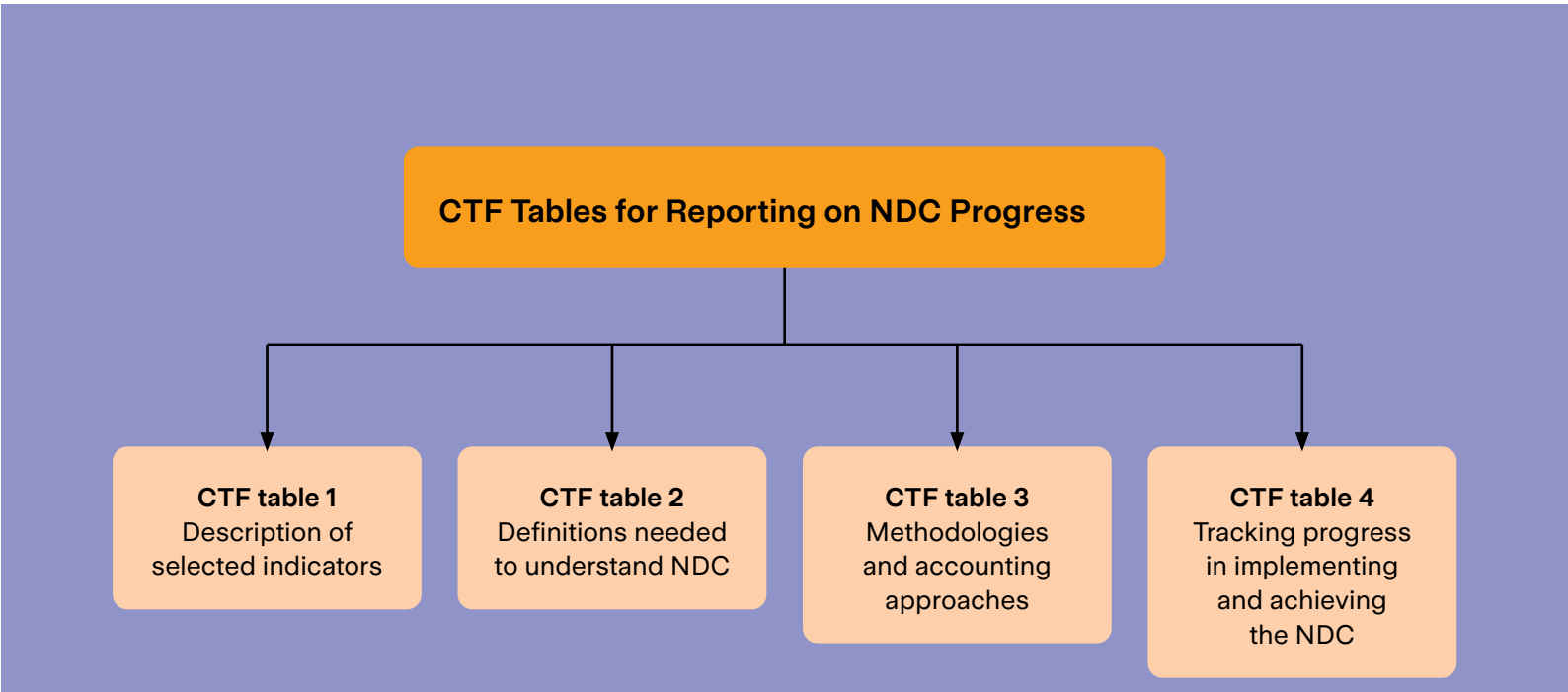
The reporting and the subsequent submission of the BTR must be done using the ETF Reporting Tools managed by the UNFCCC secretariat. The tools comprise three key components (Figure 5).

Annex II to UNFCCC decision 5/CMA.3 contains CTF tables for the electronic reporting of the information necessary to track progress in implementing and achieving NDCs, specifically to enable Parties to report information in the structured summary.

The textual part of BTRs and the CTF and CRT tables (generated from the ETF Reporting Tools application) are submitted using the submission portal. The BTRs, as submitted by Parties, are available at: https://unfccc.int/first-biennial-transparency-reports.

FIGURE 4

CTF tables for the electronic reporting of the information necessary to track progress made in implementing and achieving NDCs under Article 4 of the Paris Agreement



Source: UNFCCC (2022)

1.2.1 Technical expert review

Under the ETF, information submitted by each Party under Article 13, paragraphs 7 and 9, of the Paris Agreement shall undergo a technical expert review (TER) consistent with the MPGs. Technical expert reviews help to demonstrate action, identify areas of improvement and capacity-building needs, attract targeted support, and ultimately build trust.

A technical expert review consists of:

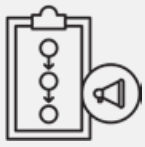
1. A review of the consistency of the information submitted by the Party, taking into account the flexibility accorded to the Party;
2. Consideration of the Party's implementation and achievement of its NDC under Article 4 of the Paris Agreement;
3. Consideration of the Party's support provided, as relevant;
4. Identification of areas of improvement for the Party related to implementation of Article 13 of the Paris Agreement;
5. For developing country Parties that need it in the light of their capacities, assistance in identifying capacity-building needs.

Finally, Parties will participate in a Facilitative Multilateral Consideration of Progress, with respect to their efforts on financial support (Article 9 of the Paris Agreement) and implementation and achievement of their NDCs.

FIGURE 5

The ETF Reporting Tools

GHG INVENTORY Reporting Tool - Generates the CRTs for the electronic reporting of the information in the NIRs of anthropogenic emissions by sources and removals by sinks of GHG as contained in annex I to decision 5/CMA.3.



PROGRESS Reporting Tool - Generates the CTFs for the electronic reporting of the information necessary to track progress made in implementing and achieving NDCs under Article 4 of the Paris Agreement, as contained in Annex II to decision 5.CMA.3.

SUPPORT Reporting Tool - Generates the CTFs for the electronic reporting of the information on financial, technology development and transfer and capacity-building support provided and mobilized, as well as support needed and received

Source: UNFCCC

United Nations Framework Convention on Climate Change (website) ETF Reporting Tools. Available at: https://unfccc.int/process-and-meetings/transparency-and-reporting/reporting-and-review/transparency-data-and-tools/etf-reporting-tools

1.2.2 Tracking Nationally Determined Contributions

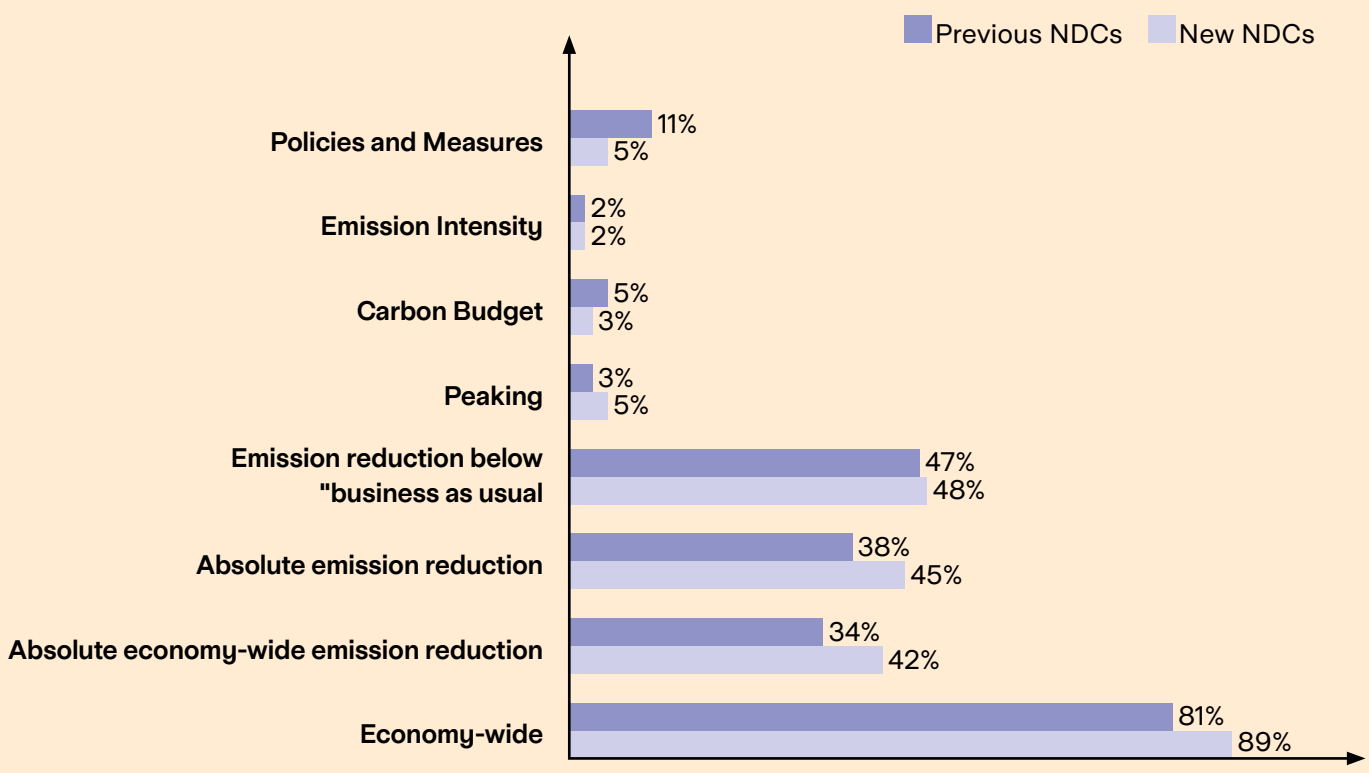
Tracking the implementation of mitigation actions requires substantial effort from all Parties, given that NDC targets vary in both format and scope, particularly in their mitigation components. As a result, the indicators selected by Parties to measure progress in implementing and achieving their NDCs may differ significantly based on their NDC type, the reporting formats, and individual Party preferences.

Examples of NDC GHG targets include:

- Reduction below the business-as-usual (BAU) levels, where GHG emissions reductions are calculated compared to a predicted baseline scenario in a future year (e.g., a 20 per cent reduction compared to BAU levels in 2030);
- Absolute economy-wide emissions reduction target, which provides for GHG emissions reductions to be achieved in a given year compared to a defined level in the past (e.g., a 40 per cent reduction compared to 1990 levels, by 2030);
- Policies and actions, which are not necessarily linked to a quantified GHG emissions reduction (e.g., implementation of renewable energy or improvement of energy efficiency over a given period);

FIGURE 6

Types of mitigation targets and share of Parties that communicated them in NDCs



Source: UNFCCC (2025a)

- Intensity target, where GHG emissions reduction goals are linked with a socioeconomic indicator (e.g., reducing emissions per unit of gross domestic product (GDP) or population);
- Peaking target, which implies a commitment to reach a peak in GHG emissions in a single year or period, to be followed by lower emissions levels (e.g., reaching a peak of GHG emissions in 2025 and to undertake a gradual reduction thereafter).

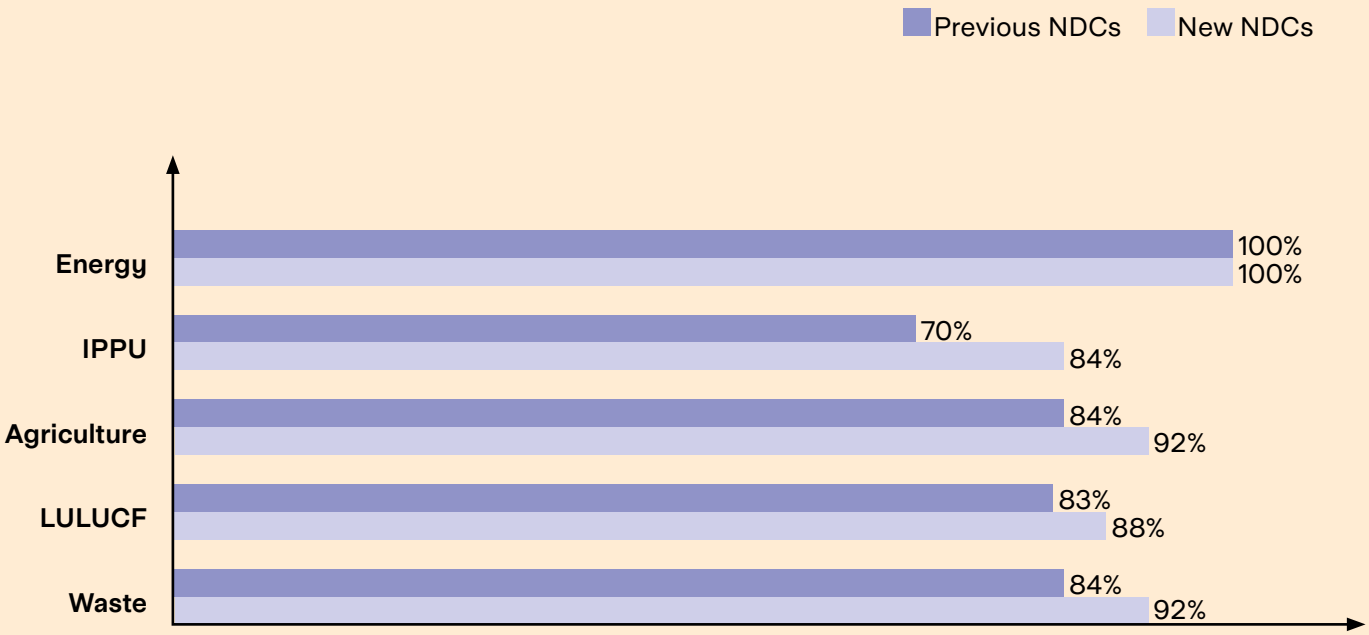
Analysis of the different NDC types (see Figure 6) submitted as of 30 September 2025 (UNFCCC, 2025 Nationally Determined Contributions Synthesis Report) shows that the most common NDC mitigation target is expressed as a GHG emissions reduction compared to a 'business-as-usual' scenario 48 per cent of Parties), followed by absolute emission reduction targets (45 per cent). Other NDC types, including policies and measures, emissions intensity, carbon budgets and peaking, represent approximately 15 per cent of NDCs.

A limited number of countries have adopted alternative NDC types. However, some of these are particularly significant in terms of the GHG emissions they cover. For example, China and India, together responsible for approximately one third of global emissions, have set their targets as reduction of emission/carbon intensity of GDP.

All Parties provided information on the scope and coverage of their NDCs, including the sectors and gases addressed. Compared with their previous NDCs, the latest submissions show an increase in sector and gas coverage. Currently, 89 per cent of Parties have economy-wide NDCs, with 84

FIGURE 7

Sectors covered by NDCs across Parties to the UNFCCC



Source: UNFCCC (2025a)

per cent covering all sectors defined in the 2006 IPCC Guidelines. The energy sector is included in 100 per cent of NDCs, while 92 per cent cover agriculture and waste, 88 per cent cover LULUCF, and 84 per cent include IPPU (Figure 7).

Among NDCs with adaptation components, all Parties (100 per cent) describe relevant policy frameworks, explaining how they support adaptation efforts and integrate with broader frameworks, including national climate plans, local and sectoral policies, disaster risk reduction strategies, and UNFCCC initiatives.

Notably, 9 per cent of Parties highlighted the inclusion of adaptation considerations in their national constitutions. The updated NDCs emphasize adaptation across key priority areas, particularly food security and nutrition, water resources, health, terrestrial ecosystems, key economic sectors, and disaster risk management. Other focus areas include urban and rural areas, ocean ecosystems, coastal and low-lying areas, poverty and livelihoods, and education.

Furthermore, 68 per cent of Parties outlined the connections between adaptation actions and sustainable development frameworks. They highlighted synergies with the Sustainable Development Goals (SDGs), emphasizing the role of adaptation in achieving these goals and the importance of integrating climate and SDG-related efforts.

Parties indicated plans or potential use of at least one scope of voluntary cooperation in implementing their NDCs (see Figure 8). This includes general cooperation under Article 6 of the Paris Agreement, internationally transferred mitigation outcomes (Article 6.2 and/or Article 6.4), and non-market approaches (Article 6.8).

1.3 Overview of Article 6

Article 6 of the Paris Agreement allows Parties to voluntarily cooperate to achieve their NDCs. It aims to enhance ambition, promote sustainable development, and ensure environmental integrity. Article 6 enables the use of international carbon markets to achieve emission reductions in a cost-effective manner. Article 6 and indicators are directly linked through the accounting and tracking requirements under the ETF. Article 6 reporting is integrated with NDC tracking, as internationally transferred mitigation outcomes (ITMOs) adjust a Party's emissions balance. Consequently, mitigation indicators must reflect these adjustments, capturing both domestic reductions and ITMO transfers to ensure accurate progress tracking.

Article 6 establishes three approaches:

- Article 6.2 provides an accounting framework for voluntary international cooperation, enabling the international transfer of carbon credits between Parties to help achieve NDCs, promote sustainable development and ensure transparency.
- Article 6.4 establishes a central United Nations mechanism for Parties to trade credits from emissions reductions generated through specific projects. The goal is to contribute to the reduction of GHGs, promote sustainable development, and encourage and support public and private sector participation
- Article 6.8 establishes a work programme for voluntary non-market approaches towards mitigation and adaptation that do not involve the transfer of mitigation outcomes, complementing Articles 6.2 and 6.4.

Overall, Article 6 mechanisms are increasingly recognized as important tools to help countries meet their national climate action goals, report

contributions to climate action and sustainable development, and account for corresponding adjustments to their national GHG emissions balance.[2]

1.3.1 Corresponding adjustments

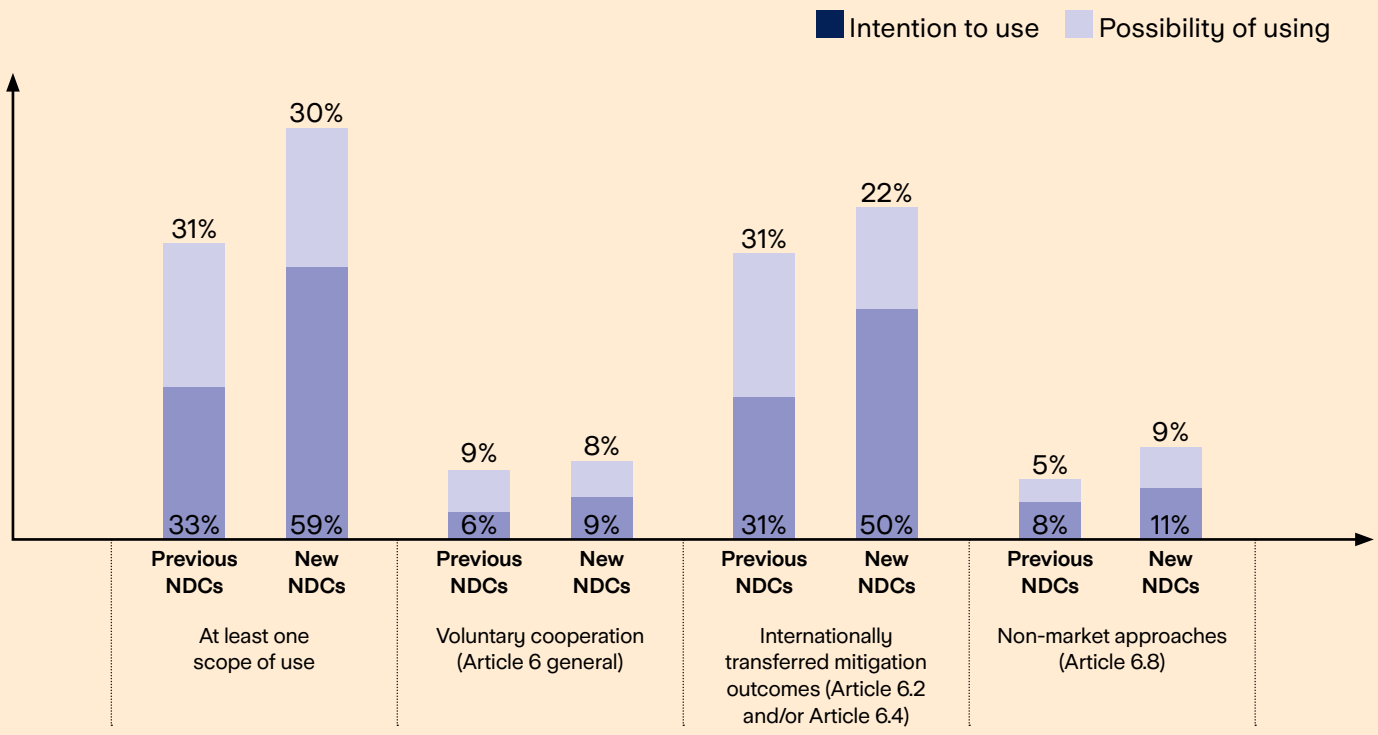
A country's reported emissions used to track progress towards its NDCs should be adjusted to reflect the transfer (export) or acquisition (import) of mitigation outcomes. To do this, corresponding adjustments may be used. Corresponding adjustments do not change the national GHG inventory. Rather, they are adjustments to an emissions balance that represents the sources of emissions and removals covered by the NDC targets.

According to the Paris Agreement, Parties must use robust accounting when engaging in cooperative approaches that involve the use of internationally transferred mitigation outcomes (ITMOs) towards an NDC. Parties should therefore apply corresponding adjustments in a manner that ensures transparency, accuracy, completeness, comparability and consistency. Corresponding adjustments can be made for three different cases: GHG metrics, non-GHG metrics, and

2. For further guidance on the linkages between Articles 6 and 13, see the ICAT Guide on Transparency for Article 6.

FIGURE 8

Share of Parties indicating in NDCs the intention to use or possibility of using specific scopes of voluntary cooperation under Article 6 of the Paris Agreement



Source: UNFCCC (2025a)

policies and measures, depending on the types of NDC targets and measures involved, as transfers of ITMOs may use different metrics and indicators. Corresponding adjustments can also be made for single-year and multi-year NDC targets. When a mitigation activity results in reduced emissions, the mitigation outcomes may be transferred as ITMOs. Once these ITMOs are transferred, corresponding adjustments are applied (Figure 9). The emission reductions are neutralized by corresponding adjustments, ensuring that the mitigation outcomes are not double counted.

In the acquiring country, the emissions balance is reduced through corresponding adjustments, allowing the acquiring Party to count the mitigation outcomes towards its NDC target (as of December 2025; Figure 10). As with the transferring Party, the national GHG inventory remains unaffected.

1.3.2 Article 6 reporting requirements

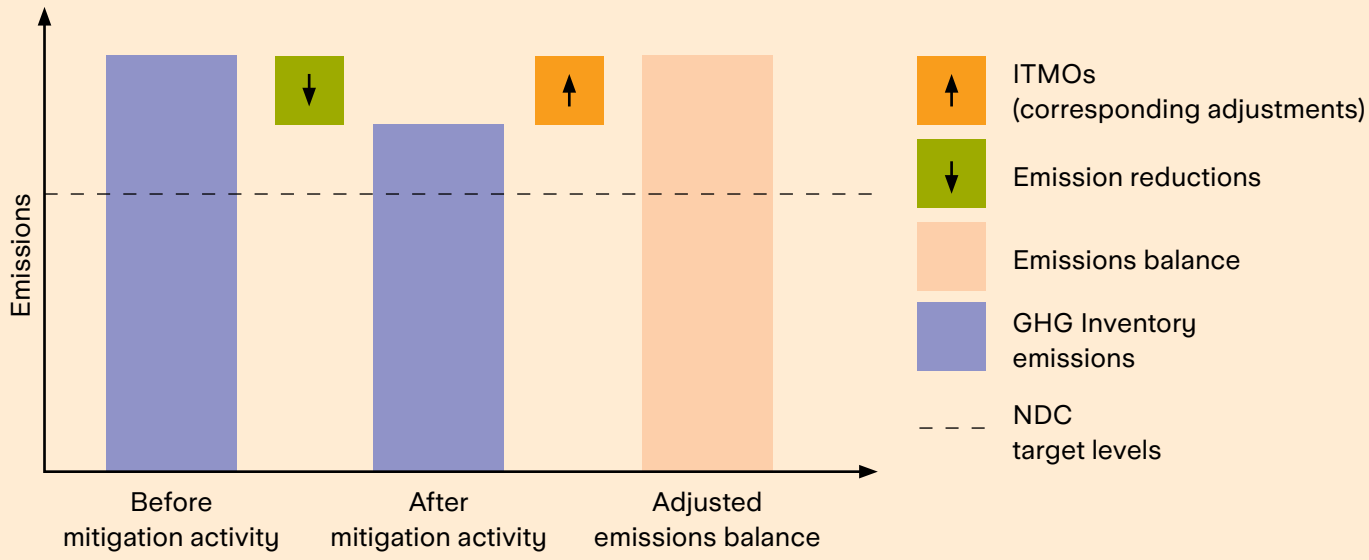
The ETF and Article 6 are linked through two core reporting components of the Paris Agreement: the national GHG inventory and the tracking of progress towards achieving NDC targets.

The latter is particularly important, as NDCs serve as the primary operational mechanism for implementing the objectives of the Paris Agreement and are directly affected by the use of internationally transferred mitigation outcomes (ITMOs) under Article 6.

Reporting and review requirements under the Paris Agreement explicitly include provisions related to the use of cooperative approaches for Parties to implement and achieve their NDCs.

FIGURE 9

Corresponding adjustments for the transferring country



Source: ICAT (2023)

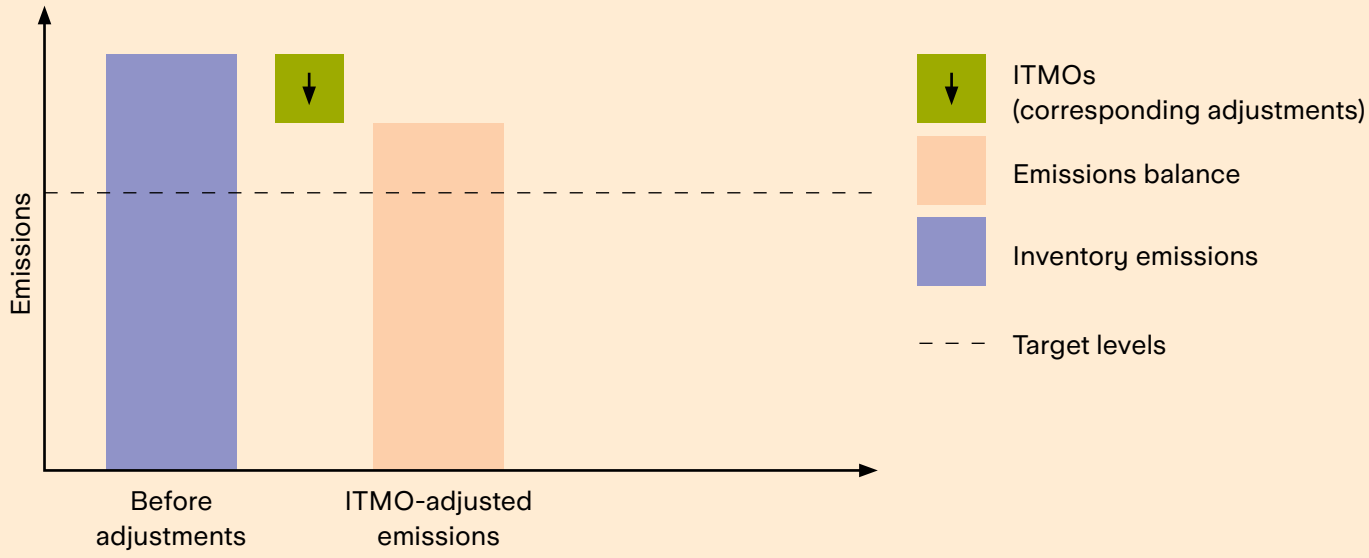
Parties must report information in three ways (for further details, see Annex II):

- Initial report. This should include information describing the cooperative approach and demonstrate that the Party fulfils its participation responsibilities. It should also describe how each cooperative approach ensures environmental integrity, promotes sustainable development and human rights, and avoids negative environmental, economic and social impacts.
- Annual report. This should include data on ITMOs, including the cooperative approach or other international mitigation purpose authorized by the Party.
- Regular report. This should include, as an annex to each Party's BTR, data on the Party's participation in cooperative approaches. Once a Party has engaged in a cooperative approach, it must report on that approach regularly, including how it is fulfilling the participation responsibilities and any updates to the information provided in its initial report. It should also describe how each cooperative approach contributes to the mitigation of GHGs and the implementation of the Party's NDC and ensures environmental integrity.

The Initial Report, Annual Information, and Regular Information required under Article 6 are not stand-alone reporting exercises. Rather, they are closely connected to the tracking of NDC progress under the ETF. Since ITMOs alter a

FIGURE 10

Corresponding adjustments for the acquiring country



Source: ICAT (2023)

Party's emissions balance through corresponding adjustments, their accurate reporting is essential to ensure environmental integrity and to avoid double counting. In other words, the transparency system established under the ETF cannot function effectively without integrating Article 6 reporting, as both mechanisms rely on consistent accounting of emissions and mitigation outcomes.

Also, the information submitted on cooperative approaches under Article 6 of the Paris Agreement is subject to an Article 6 technical expert review. The technical expert review report will include recommendations to Parties on how to improve consistency with the guidance and address any discrepancies. For further details on the technical expert review process, see Annex II.

1.3.3 Article 6 implementation status

Currently, 78 per cent of the Parties to the Paris Agreement have indicated in their NDCs the intention to participate in, or the possibility of participating in, at least one form of cooperation under Article 6. This reflects a strong global interest in using cooperative approaches to enhance climate ambition and improve cost-effectiveness in addressing climate change. However, actual progress in implementing the provisions of Article 6 remains limited.

Only seven Parties have submitted their Initial Report under Article 6.2; of these, six have completed the technical expert review process. Only two Parties have submitted authorization statements for activities involving the international transfer of mitigation outcomes. Under Article 6.4, 95 Parties have designated a national authority for the Article 6.4 centralized mechanism.

While political and technical interest in Article 6 is high, the current data show that its practical implementation is still in the early stages. This is due in part to delays in reaching decisions on key elements of Article 6, which has slowed operational progress. However, following the decisions adopted at COP29, a significant increase in the use of both Article 6.2 approaches and Article 6.4 mechanisms is expected. Continued efforts will be essential to strengthen the technical, institutional and regulatory capacities of Parties to ensure the effective and transparent application of the mechanisms provided under Article 6.

Indicators

2.1 The importance of indicators

For Parties to achieve their climate goals, tracking progress is essential. By setting suitable indicators, Parties can monitor whether their climate strategies and measures are progressing as planned or whether adjustments are necessary (due to unexpected delays or new developments, for example). Conversely, without reliable indicators to track progress, Parties cannot effectively fine-tune their approaches, identify underperforming measures or make evidence-based decisions about resource allocation and policy priorities.

Robust indicators are equally important for strengthening domestic planning and national policy processes. Clear, well-designed metrics help institutions coordinate across sectors, align national development objectives with climate ambitions, and ensure that implementation remains consistent through political or administrative changes. They also support accountability within domestic systems, enabling policymakers, stakeholders and the public to understand how national efforts are contributing to short and long-term climate and development goals.

Indicators are also important for sound governance and transparency. Achieving climate targets could result in co-benefits that may be important to national priorities, in terms of health, livelihoods or food security, for example. Parties may use their NDC indicators to measure and realize these additional benefits, ensuring that the full range of national priorities is captured, monitored and communicated.

At the international level, indicators can help Parties build trust by demonstrating that they are taking concrete action towards their commitments. This transparency helps Parties both share and access lessons learnt, allowing them to benefit from good practices used elsewhere and strengthening the collective global response to climate change.

Key processes such as the Global Stocktake (GST) provide a structured mechanism to assess collective progress every five years, covering mitigation, adaptation, and finance in line with equity and the best available science. The GST evaluates emissions, adaptation actions, NDC implementation, and financial flows, thereby informing the next round of NDC updates and supporting global accountability. Similarly, discussions on the Global Goal on Adaptation (GGA) have led to the development of a set of global indicators and targets, providing a common framework to measure adaptation progress across six thematic areas and four cross-cutting dimensions. Together, these processes ensure that national indicators are not only useful domestically but also contribute to coherent global monitoring and ambition-raising.

The ETF requires all Parties to report on relevant indicators to track progress towards their NDCs. To effectively fulfil this requirement, Parties need well-designed indicators that are measurable, relevant and closely aligned with their national climate goals and priorities. The careful selection and design of indicators is more than just a reporting obligation – it is a fundamental tool for effective climate action that supports both national policy implementation and international accountability.

2.1.1 What is an indicator?

An indicator (for mitigation and adaptation) is a measurable variable used to track progress in implementing climate actions, assess their effectiveness, and evaluate outcomes related to reducing greenhouse gas (GHG) emissions and enhancing resilience to climate change impacts. Indicators are self-determined by Parties, must be relevant for the NDC, and may be qualitative or quantitative.

The MPGs do not give a specific definition of an indicator. However, they do provide several illustrative examples, including:

- net GHG emissions and removals
- percentage reduction of GHG intensity
- hectares of reforestation
- percentage of renewable energy use or production
- carbon neutrality
- share of non-fossil fuel in primary energy consumption
- non-GHG related indicators.

Chapter III of the MPGs provides a detailed set of guidelines on the information necessary to track progress made in implementing and achieving NDCs, including prescriptions for the use of indicators. For each selected indicator, Parties should provide the following details:

- description of methodologies and accounting approaches used
- description of how indicators selected are relevant to their respective NDCs
- information for the reference points(s), level(s), year(s), baseline(s), base year(s) or starting point(s)
- information for each previous reporting year during the implementation period of the NDC
- the most recent information available for the indicator.

2.2 Indicators for tracking progress

Tracking progress in implementing and achieving NDCs is based on self-determined indicators selected by Parties. Parties track progress by comparing information on indicators during the implementation period of the NDC with the information for the reference points that correspond to the NDC targets.

Information on tracking progress enables all stakeholders, including other Parties and the international community, to understand each Party's progress towards meeting its NDC. Further, tracking progress of individual Parties' NDCs allows for an assessment of the collective progress of all Parties and of the adequacy of mitigation actions towards achieving the long-term goals of the Paris Agreement. The insights gained from this global

stocktake can inform each Party in developing its subsequent NDC in a progressive manner.

The use of indicators for tracking progress in implementing and achieving NDCs under the ETF was developed and agreed by Parties, primarily to accommodate the various types of NDC targets.

Parties must track progress towards the implementation and achievement of their NDC target(s) in their BTRs by comparing the most recent information on selected indicators with their respective reference points(s), level(s), year(s), baseline(s), base year(s) or starting point(s). In the first BTR containing information on the end year or period of the NDC, each Party must include an assessment of the achievement of its NDC based on, among other factors, the most recent information for each selected indicator. This information should be provided in CTF Table 1 (Table 1; see section 1.1 for more information on CTFs).

Parties should provide any definitions needed to understand their NDCs, including definitions for indicators identified in paragraph 65 of the MPGs, for any sectors or categories defined differently in the national inventory report, and for any mitigation co-benefits of adaptation actions and/or economic diversification plans (para. 73 of the MPGs). This information is reported in CTF Tables 1, 2 and 3 (see Annex III for further information on these tables).

Annex II to UNFCCC Decision 5/CMA.3 contains CTF tables for the electronic reporting of the information necessary to track progress in implementing and achieving NDCs, specifically to enable Parties to report information in the structured summary.

Parties' selected indicators may vary significantly in nature (quantitative or qualitative), coverage (economy-wide vs sectoral) and scope (to track progress towards implementation, achievement or both). During the technical expert review process, the expert review team (ERT) will not assess the adequacy or appropriateness of a selected indicator; however, the ERT may ask questions and/or make recommendations related to the completeness and transparency of information reported. For instance, if, on reviewing the BTR, the ERT cannot find clear information on how a selected indicator is relevant to the Party's NDC, it may seek further explanation from the Party.

The provision of robust and transparent information on indicators used constitutes a fundamental element of a Party's BTR. Beyond fulfilling Article 13 reporting obligations, this information serves a critical function in assessing Paris Agreement implementation. Specifically, it will inform the Global Stocktake (Article 14), which will encompass, among its sources of input, reports by Parties and synthesis reports prepared by the Secretariat on the aggregate effect of NDCs and collective progress towards their implementation.

2.3 Overview of BTRs submitted by the Parties

This section offers a comprehensive overview of the BTR, NID, CTF and CRT tables submitted by Parties as of December 2025. The analysis is based on a database specifically developed using information extracted from the submitted BTRs. By 31 December 2024, Parties were required to submit their BTRs with additional tabular format information on GHG inventories, projections and indicators to track progress towards the NDC targets, and financial support where applicable. The database serves as the foundation for tracking and summarizing the status of submissions across these key reporting components.

A total of 120 Parties to the Paris Agreement were required to submit their first BTR by 31 December 2024. LDCs and SIDS may submit the information referred to in Article 13 of the Paris Agreement at their discretion. A total of 75 Parties to the Paris Agreement are LDCs, SIDS or both.

As of December 2025:

- 117 out of 195 Parties (60 per cent) had submitted their first BTR (BTR1) to the UNFCCC, which was due by 31 December 2024.
- Among these, 97 submitted an NID as a standalone document.
- 92 out of 195 Parties (47 per cent) submitted the CTF tables for tracking progress and some countries submitted the BTR only.

Analysis of BTRs faces two primary methodological constraints: systemic data gaps due to uneven reporting across Parties, and substantive inconsistencies in submissions, particularly from non-Annex I Parties with nascent transparency systems. These challenges complicate cross-country comparability and trend analysis.

A key area of focus was Table 11 of the CTF tables, which details the key underlying assumptions and parameters used for projections. This sheet contains a significantly larger set of indicators compared to those previously analysed, reflecting the complexity and diversity of modelling approaches among Parties.

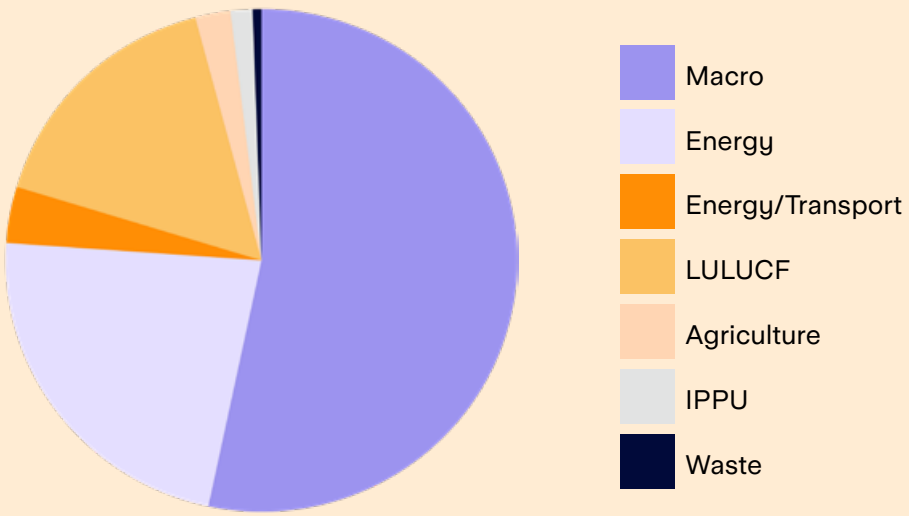
To better understand patterns and challenges observed in the global submissions, the analysis also placed a specific focus on G20 countries. These major economies represent a significant share of global emissions and are generally expected to have more advanced institutional and technical capacities for transparency reporting. As such, the G20 group offers a valuable benchmark for assessing the overall effectiveness and consistency of reporting under the ETF. The indicators selected by these Parties might be expected to be relatively homogeneous. However, considerable variation emerged across the G20 submissions, reflecting the diverse nature of their NDCs, the varying levels of completeness and detail in submissions, even among high-capacity countries, and highlighting the need for further methodological alignment in reporting standards. Notably, several NDCs used by these Parties are composite in nature, incorporating multiple targets and varying scopes, which complicates direct comparison.

As of December 2025:

- 19 out of the G20 Parties (95 per cent) submitted their BTR1, which was due by 31 December 2024.
- 16 Parties (80 per cent) provided the CTF tables for tracking progress towards their NDCs.

FIGURE 11

Indicators used by Parties, as reported in the first BTR



Source: UNFCCC

United Nations Framework Convention on Climate Change (website) First Biennial Transparency Reports. Available at: https://unfccc.int/first-biennial-transparency-reports

- 15 Parties (75 per cent) submitted an NID as a standalone report.
- 11 Parties (55 per cent) submitted the projections required under the ETF.

2.3.1 Indicators provided by Parties in their CTFs

This section provides an analysis of the CTF Tables 1 (Structured summary: description of selected indicators) submitted by Parties, considering that a single Party may use more than one indicator for tracking an NDC.

Each Party should report the information referred to in the below reported paragraphs 65–78 of the MPGs in a narrative and common tabular format, as applicable:

- Each Party should identify the indicator(s) that it has selected to track progress of its NDC.
- Each Party should provide the information for each selected indicator for the reference point(s), level(s), baseline(s), base year(s) or starting point(s), and should update the information in accordance with any recalculation of the GHG inventory, as appropriate.
- For each indicator selected, each Party should describe how it is related to its NDC.

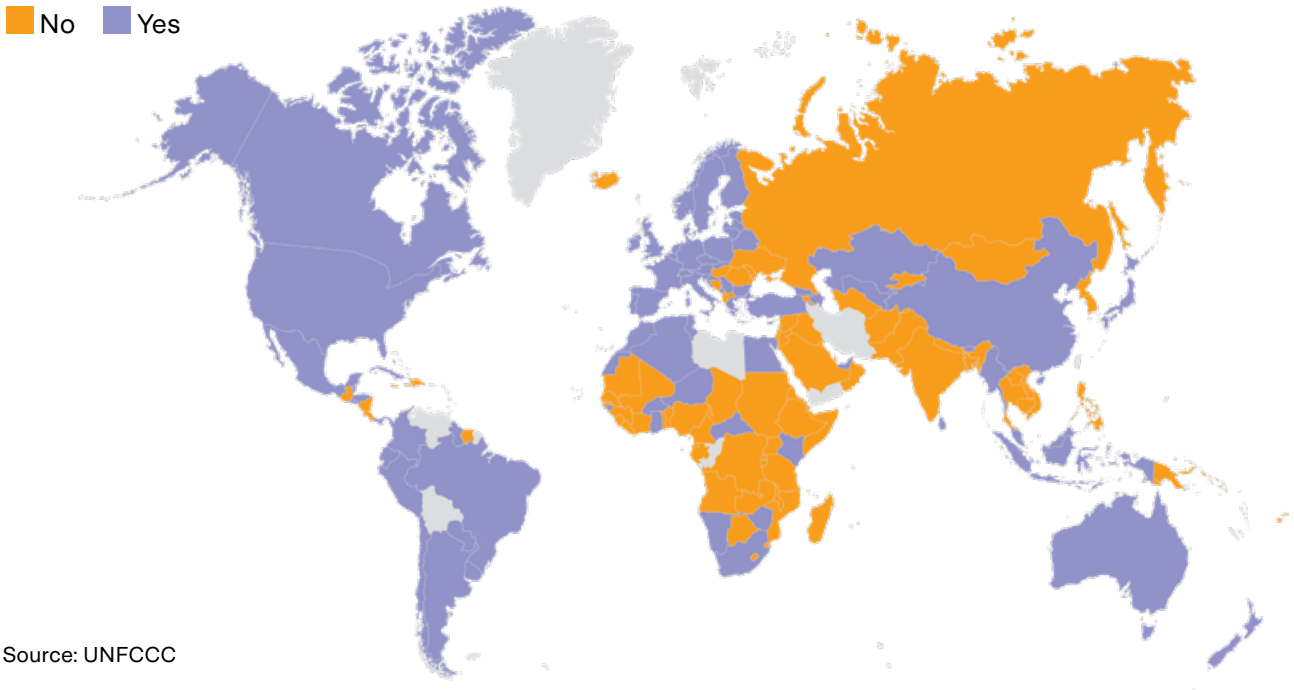
Of 92 CTF tables tracking NDCs submitted by Parties, 137 indicators were used and described in Tables 1 (Structured summary: description of selected indicators), grouped by type: Macro (73), Energy (30), Industry (1), Energy transport (5), LULUCF (22), Agriculture (3), IPPU (1), Waste (1) (Figure 11).

2.3.2 Common Tabular Format Tables reported by Parties

A total of 92 Parties, of the 117 BTR1 submissions included the CTF tables 4, aimed at tracking progress of NDC implementation and achievement (Figure 12).

FIGURE 12

Parties' submission of the CTF tables for tracking progress



Source: UNFCCC

United Nations Framework Convention on Climate Change (website) First Biennial Transparency Reports. Available at: https://unfccc.int/first-biennial-transparency-reports

2.4 Indicators for monitoring climate action

This section introduces relevant indicators for monitoring mitigation as well as an overview of indicators that may be useful for tracking adaptation actions and targets. These indicators are provided in two lists (see Tables 4 and 5, sections 2.4.1.1 and 2.4.1.2). The lists were compiled from expert experience in monitoring domestic climate action and are aligned with the requirements of UNFCCC decisions, making them applicable at national or regional levels. The lists are based on the indicators used by Parties to track NDCs under BTR and CTF tables, as submitted by December 2025.

These indicators may serve a dual function: supporting domestic measurement, reporting and verification (MRV) activities, regardless of whether the information is submitted to the UNFCCC, and tracking progress towards implementing and achieving NDCs, in accordance with the provisions set by the Enhanced Transparency Framework under the Paris Agreement. In doing so, they help to ensure consistency and comparability in assessing climate action over time, which is essential for both national planning processes and for meeting international transparency obligations.

While an effort has been made to cover most relevant sectors, thematic areas and activity types, reflecting the diversity of NDCs currently submitted, the lists of indicators provided here remain non-exhaustive and non-exclusive. Parties may need to supplement them with additional indicators, especially in cases where NDCs include sector-specific policies, economy-wide strategies, or cross-cutting measures such as just transition.

Most of the indicators in the provided lists are quantitative in nature. Although quantitative and qualitative indicators can be relevant for domestic monitoring purposes and may, depending on the NDC target type, be needed for assessing and tracking progress of NDCs, qualitative indicators tend to be more challenging to aggregate or standardize. Their formulation often varies significantly between Parties, even when used for similar purposes, as they may reflect unique institutional arrangements, governance structures, policy frameworks or national development priorities.

Accordingly, it is essential that any Party aiming to identify appropriate indicators for monitoring climate action carefully evaluates the available options and tailors its selections to specific domestic objectives, policy contexts and national circumstances. In practice, this may involve assessing data availability, institutional capacity, methodological robustness and the degree to which indicators can inform policy decision-making.

Broader lists of indicators published by international organizations, research institutions and sectoral initiatives may also prove useful for developing more detailed or policy-driven indicators, particularly in emerging areas such as climate risk management, carbon market participation or alignment with long-term low-emission development strategies (LT-LEDS). For example:

- **IPCC guidance and methodological reports** contain broader lists of mitigation indicators, including sectoral emission drivers (e.g., energy intensity, carbon intensity, land-use change rates) that can support LT-LEDS tracking and scenario-modelling consistency checks.
- **The** World Bank's Climate Change Knowledge Portal and Climate Action Portal provide sector-specific vulnerability and risk indicators, such as climate hazard exposure, adaptive capacity indices and socioeconomic vulnerability metrics that can support climate-risk-related monitoring.
- **The World Meteorological Organization (WMO)** Global Framework for Climate Services (GFCS) provides indicators for monitoring climate risk management and early-warning systems, such as forecast accuracy, lead time and coverage of climate information services.
- **The Organisation for Economic Co-operation and Development (OECD) and International Energy Agency (IEA)** publish indicators that support monitoring low-emission transitions, including energy system transformation metrics, technology deployment indicators and investment flows aligned with LT-LEDS pathways.

- **The Food and Agriculture Organization (FAO) and the Global Forest Observations Initiative (GFOI)** provide indicator frameworks for land-use, agriculture and forest-sector mitigation and adaptation, including MRV-ready metrics for Reducing Emissions from Deforestation and Forest Degradation (REDD+), sustainable land management and climate-smart agriculture.

2.4.1 Mitigation

The following lists (Tables 4 and 5) of proposed indicators for mitigation are organized into two main categories: macro-level and energy-related indicators, and non-energy-related sector-specific indicators. These indicators may be applicable to both economy-wide and non-economy-wide NDC targets. For NDCs with an economy-wide mitigation target, progress can be tracked using sector-level indicators, aligned with the national GHG inventory structure. However, this sectoral grouping is only one way of organizing GHG inventory data and may differ between countries. For NDCs without an economy-wide target, indicators must be tailored to the specific mitigation targets set out in the NDC.

2.4.1.1 Macro and energy-related indicators

TABLE 4

Macro and energy-related indicators for mitigation activities and targets

#	Group	Indicator	Description	Remarks	Indicator used in the first BTR*
1	Macro	Total GHG emissions trend	Total annual CO2eq. emissions (Mt)	This is a relevant indicator to evaluate the impact of policies and measures on GHG emissions over time. It is particularly relevant for NDC targets expressed in the form of absolute-base year targets and peaking targets. It is also needed for tracking BAU targets.	Yes
2	Macro	Total carbon intensity of the economy	Total annual CO2eq emissions (Mt) per GDP (bn currency)	Total CO2-eq emissions (excluding LULUCF) and gross domestic product at constant prices are considered. This indicator is particularly relevant for NDC intensity targets.	Yes
3	Macro	Per-capita carbon intensity of the economy	Total annual CO2eq emissions (Mt) per inhabitants	Total annual GHG emissions (with or without LULUCF) and the number of inhabitants is considered. This indicator is particularly relevant for NDC intensity targets.	

#	Group	Indicator	Description	Remarks	Indicator used in the first BTR*
4	Services	Carbon intensity of the commercial and institutional sector	CO2-eq emissions from fossil fuel consumption in commercial and institutional sectors (Mt) per gross value-added services (bn currency)	CO2-eq emissions from fossil fuel combustion in commercial and institutional buildings in the public and private sectors are considered. Energy used for transport by services should not be included here but in the transport indicators. Gross value added is taken at constant prices in services (Relevant ISIC/NACE codes to be specified).	
5	Energy	Total CO2 eq emissions from the energy sector	Total CO_2 eq emissions from the energy sector/ compared to the target year or baseline scenario	This indicator considers total quantity of GHG emissions avoided through activities related to energy production, transformation, distribution, and consumption.	Yes
6	Energy	Energy consumption from fossil sources	Total amount of energy that is derived from fossil sources	This indicator measures the quantity of energy consumed that comes from these non-renewable sources. Higher energy consumption from fossil sources generally leads to higher GHG emissions. The indicator is expressed in terajoules (TJ).	Yes
7	Energy	Specific GHG emissions of public and autoproducer power plants	CO2-eq emissions from public and autoproducer thermal power stations (Mt) per output (all products) by public and autoproducer thermal power stations (PJ)	This indicator considers CO2-eq emissions from all fossil fuel combustion for gross electricity and heat production, as well as gross electricity produced and any heat sold to third parties (combined heat and power plants), by public and autoproducer thermal power and combined heat and power plants. Emissions/outputs from heat only plants are not included. Public thermal plants generate electricity (and heat) for sale to third parties, as their primary activity. They may be privately or publicly owned. Autoproducer thermal power stations generate electricity	

#	Group	Indicator	Description	Remarks	Indicator used in the first BTR*
				(and heat) entirely or partly for their use as an activity, which supports their primary activity. The gross electricity generation is measured at the outlet of the main transformers, i.e., the consumption of electricity in the plant auxiliaries and in transformers is included.	
8	Energy	Energy intensity of GDP	Energy intensity, calculated as the ratio of primary energy consumption to GDP	This indicator can be used to track NDC in terms of both primary energy consumption and GDP.	Yes
9	Energy	Share of renewable energy production	Annual renewable energy production per total annual energy production (%)	This indicator can be used to track NDC progress in terms of both annual renewable energy production and annual GHG emissions reduction.	Yes
10	Energy	Residential heating	CO2 emissions (Mt) from residential heating out of the number of dwellings	This indicator can be used to track NDC progress in terms of annual contribution of residential heating to total GHG emissions.	Yes
11	Energy	Total energy consumption	Annual energy consumption (PJ)	This indicator can be used to track NDC progress in terms of annual energy efficiency.	Yes
12	Energy	Total energy production out of energy input	Annual energy production (TJ) / energy input (TJ)	This indicator can be used to track NDC progress in terms of annual energy efficiency, i.e., electricity produced out of energy content of the fuel input.	
13	Energy	Energy consumption from fossil sources per unit of GDP	Amount of energy derived from fossil sources consumed to produce a unit economic output (GDP)	This indicator reflects the energy efficiency of an economy in utilising fossil sources. When less fossil sources are used to produce a given amount of economic output this can indicate more efficient use of energy.	Yes

#	Group	Indicator	Description	Remarks	Indicator used in the first BTR*
14	Energy	Share of non-fossil fuel energy production	Annual non-fossil energy production per total annual energy production (%)	This indicator can be used to track NDC progress in terms of both non-fossil energy production and annual GHG emissions reduction.	Yes
15	Energy	Fraction of energy generated by renewable energy (RE) in the electric grid	Annual RE produced per total annual (%)	This indicator can be used to track NDC progress in terms of both RE production in the electric grid and annual GHG emissions reduction.	Yes
16	Energy	More efficient equipment introduced (i.e., solar heaters, LED lights, stoves, and solar pumping)	Annual number of efficient equipment units introduced (U)	This indicator tracks the annual introduction of more efficient equipment units (U) and related annual GHG emissions reduction.	Yes
17	Energy	Share of heat demand in the building sector by RE sources	Annual RE production per total annual heat demand in the building sector (%)	This indicator considers total heat generation in the building sector and heat generation in the building sector produced by renewable energy sources.	Yes
18	Energy	Increase in electricity access in isolated households	Share of isolated households that have access to electricity	This indicator tracks the increase in electricity production capacity for isolated households that do not yet have access to electricity.	Yes
19	Energy	Increase in charcoal production efficiency	Volume of wood produced compared to the total volume of wood carbonized	This indicator accounts for the increase in efficiency of charcoal production (indicator: the volume of wood produced compared to the total volume of wood carbonized).	Yes
20	Energy	Increase in the share of charcoal in final consumption	The mass of charcoal used monthly by each household	This indicator tracks the increase in the share of charcoal in final consumption (indicator: the mass of charcoal used monthly by each household).	Yes

#	Group	Indicator	Description	Remarks	Indicator used in the first BTR*
21	Energy	GHG emission levels for oil & gas sector	Total CO_2 eq emissions from oil and gas	This indicator accounts for the mitigation of GHG emissions projections for oil and gas.	Yes
22	Energy – Transport	Specific GHG emissions from the transport sector	Annual CO2-eq emissions from the transport sector (Mt) per final energy consumption (PJ)	This indicator considers annual GHG emissions derived from the transport sector (considered as a whole or differentiated by subsector: domestic aviation, road transportation, railways, domestic navigation, other transportation) and respective final energy consumption (from all energy sources, including biomass and electricity consumption), including tracking changes in transport performances in terms of GHG emissions per final energy consumption over the years.	Yes
23	Energy – Transport	Percentage of fossil fuel consumption by vehicles	Annual fossil fuel consumption by vehicles per total fuel consumption	The indicator estimates the annual percentage variation in the fuel consumption matrix for land vehicles.	Yes
24	Energy – Transport	Specific GHG emissions of passenger cars with respect to miles travelled	Annual CO2-eq emissions from road passenger cars (kt) per miles travelled (Mkm)	This indicator takes into account annual GHG emissions derived from passenger cars, considered as a whole or differentiated by fuel, and the respective number of vehicle kilometres travelled (source: transport statistics). Activity data should be consistent with emissions data, so the indicator tracks changes in performance of passenger cars in relation to GHG emissions per vehicle-km over the years.	
25	Energy – Transport	Specific road transport fuel consumption	Annual fuel consumptions of road transport vehicles (MJ) per distance travelled (km)	This indicator considers annual fuel consumption (MJ) of different road transport vehicle categories (passenger cars, light duty trucks, heavy duty trucks, buses, two-wheeled vehicles) and the respective	

#	Group	Indicator	Description	Remarks	Indicator used in the first BTR*
				distance travelled (source: transport statistics), tracking changes of vehicle efficiency over the years.	
26	Energy – Transport	Road transport vehicle fleet complying with highest emission standards	Share of vehicles complying with highest emission standards compared to the total road transport circulating fleet (%)	This indicator takes into account the number of vehicles complying with highest emission standards (according to the vehicle fleet classification adopted in the country), specifically for the road transport vehicle category (passenger cars, light duty trucks, heavy duty trucks, buses, two wheeled vehicles), and the respective total number of circulating vehicles (source: transport statistics), allowing tracking changes in penetration of more modern vehicles in national road transport fleets.	
27	Energy – Transport	Use of alternative fuels in transport	Share of alternative fuel consumption compared to total energy consumption in the transport sector (%)	This indicator considers the amount of alternative fuel consumption (including natural gas, LPG, biomass and electricity) and total final energy consumption (from all energy sources) in the transport sector (including domestic aviation, road transportation, railways, domestic navigation, and others), allowing tracking changes of the penetration of fuels with a lower environmental impact.	
28	Energy – Transport	Electrification of the railway network	Share of the electrified railway network compared the total network (%)	This indicator considers the length data (km) of the total railway network and of the electrified portion (transport statistics), allowing to identify the electrified share of the railway infrastructure of a territory.	

#	Group	Indicator	Description	Remarks	Indicator used in the first BTR*
29	Energy – Industry	GHG emissions from the industry sector	Total CO2-eq emissions from the sector (Mt)	This indicator considers emissions from combustion of fossil fuels in manufacturing industries, construction and mining, and quarrying (except coal mines and oil and gas extraction), including combustion for the generation of electricity and heat. Energy used for transport by industry should not be included here but in the transport indicators. Emissions arising from off-road and other mobile machinery in industry should be included in this sector.	Yes
30	Energy – Industry	Final energy consumption from the industry sector	Total final energy consumption from the sector (PJ)	This indicator considers total final energy consumption of industry from all energy sources (including biomass and electricity consumption).	

(*) The indicators marked with "YES" are those directly drawn from BTRs that have already been submitted. The indicators without the "YES" are not taken from BTRs; rather, they are indicators are provided as illustrative example.

2.4.1.2 Non-energy-related indicators

TABLE 5

Non-energy-related indicators for mitigation activities and targets

#	Group	Indicator	Description	Remarks	Indicator used in the first BTR**
31	Agriculture	CH4 emissions	CH4 emissions by emission category (enteric fermentation, manure management, rice cultivation, field burning of agricultural residues)	The indicator tracks changes in CH4 emissions due to livestock and soil management.	Yes

#	Group	Indicator	Description	Remarks	Indicator used in the first BTR**
32	Agriculture	N2O emissions	N2O emissions by emission category (manure management, agricultural soils, field burning of agricultural residues)	The indicator tracks changes in N2O emissions due to livestock and soil management.	
33	Agriculture	Synthetic nitrogen fertilizers applied	Change in the applied amount of synthetic nitrogen fertilizers (%)	The indicator tracks changes in N2O emissions due to synthetic nitrogen fertilizers use.	
34	Agriculture	Livestock numbers	Change in livestock numbers, e.g., cattle, swine, poultry (%)	The indicator tracks changes in the share of emissions from livestock and soil management.	
35	Agriculture	Cultivated area	Cultivated area (ha) with respect to a base year/base period/baseline (*)	The indicator estimates emissions/removals from cultivations.	Yes
36	Agriculture	Rice cultivated area	Area (ha) by several conditions, e.g., ecosystem rice/ water regime/ type of seeding, changes of surface (%) with respect to a base year/base period/baseline (*)	The area subject to each management practice is needed, since each management practice is linked to a specific set of parameters indicated in the IPCC guidelines (e.g., ecosystem rice/water regime/ type of seeding, etc.), therefore driving the estimation process. The indicator estimates CH4 emissions from rice cultivation. It tracks CH4 emissions reduction from cultivation/ irrigation techniques other than the conventional continuously flooded rice practice.	

#	Group	Indicator	Description	Remarks	Indicator used in the first BTR**
37	Agriculture	Annual milk production	Annual amount of milk produced (t or lt), or changes (%) compared to the base year	Tracking the total amount of milk and number of heads allows for calculation of yield. This information may be related to changes in diets.	
38	Agriculture	CH_4 emissions intensity per Gg of beef production	Average annual ratios of CH_4 emissions from enteric fermentation and manure management of non-dairy cattle (in Gg CH_4) to beef production (in Gg of live weight beef)	Tracking the amount of beef helps calculate the CH4 average of the annual ratios of CH_4 emissions from enteric fermentation and manure management of non-dairy cattle to beef production.	Yes
39	Agriculture	Manure storage in closed structures	Annual amount (t)	The indicator calculates NH3 emissions from manure management, which lead to the indirect N2O emissions.	
40	Agriculture	Manure distribution on agricultural soils	Annual amount per manure spreading technique (t)	The indicator calculates NH3 emissions from agricultural soils (NH3 emissions are important as they affect indirect N2O emissions); management practice is also correlated to potential increase of soil organic content.	
41	Agriculture	Anaerobic digesters	Number and installed power generation capacity of digesters fed with animal manure (MW)	The indicator is correlated to the reduction of CH4 emissions from manure management.	
42	Agriculture	Animal manure sent to anaerobic digesters	Annual amount of manure (t)	The indicator is correlated to the reduction of CH4 emissions from manure management.	

#	Group	Indicator	Description	Remarks	Indicator used in the first BTR**
43	Agriculture/ Energy	Annual energy or biogas produced by anaerobic digestion of animal manure	Energy (MWh) or biogas (Sm3) produced in a calendar year or changes in these numbers (%) with respect to the base year/ base period/ baseline	The indicator is correlated to the reduction of annual GHG emissions from manure management and can be used to track NDC progress and achievement.	
44	Agriculture	Reduction of slash-and-burn practices	The rate of reduction of slash-and-burn practices		Yes
45	Waste	Anaerobic digesters	Waste production (t) per population (inhabitants).	The indicator is key in tracking changes in emissions from waste.	
46	Waste	Waste management	Total amount (t) or share (%) of waste sent to landfills	The indicator is key in tracking changes in emissions from waste.	
47	Waste/Energy	Annual energy or biogas produced by anaerobic digestion of waste	Energy (MWh) or biogas (Sm3) produced in a calendar year or changes in these numbers (%) with respect to the base year/ base period/ baseline	The indicator is correlated to the reduction of annual GHG emissions from waste management.	
48	Waste	CH4 emissions	CH4 emissions time series from solid waste disposal sites	The indicator tracks changes in CH4 emissions due to landfill waste.	
49	Waste	GHG emissions in the waste sector	GHG reduction against the BAU scenario	GHG reduction against the BAU scenario (reduction in the waste sector)	Yes
50	Waste	Landfill gas recovered in managed landfills	Biogas (Sm3) recovered through a gas collection system	The indicator evaluates the reduction of methane emissions from solid waste disposal sites.	

#	Group	Indicator	Description	Remarks	Indicator used in the first BTR**
51	LULUCF	Total CO_2 eq emissions from agriculture, forestry, and other land use sectors	Total CO_2-eq emissions from the sector (Mt)	Total quantity of GHG emissions avoided through activities related to agriculture, livestock, forestry and other land use. This indicator tracks the evolution of emissions in the sector compared to the baseline scenario.	Yes
52	LULUCF	Mitigation co-benefits	Mitigation co-benefits	The co-benefit actions recorded in the NDC include, among others: planting of multipurpose species; land development for irrigated crops; promotion of assisted natural regeneration; private forestry; rehabilitation of degraded classified forests; development of zero grazing farms.	Yes
53	LULUCF – Cropland	Burial of crop residues	Annual area of cropland subject to the activity, for types of crop (ha) (*)	Management practice correlated with the potential increase of soil organic carbon and nitrogen content. Effects depending on temperature and humidity.	
54	LULUCF – Cropland	Cover crop	Annual area of cropland with cover crop (ha) (*)	Management practice correlated with the potential increase of soil organic carbon or to increase carbon and nitrogen content and soil erosion.	
55	LULUCF – Cropland	Zero/ minimum tillage	Annual area of cropland subject to the management practice (ha) (*)	Management practice correlated with the potential increase of soil organic carbon; the indicator can be used to estimate C removals from cropland soils.	
56	LULUCF – Grassland	Grassland area	Annual area of grassland under best management practices (ha)	Area of grassland under best management practices for natural rangelands and breeding herds, where CO_2 emissions from soil organic carbon (SOC) are avoided, in hectares.	Yes
57	LULUCF/Cropland	Cropland area	Avoided cropland area (ha)	Area of cropland under land use and management plans where CO_2 emissions from soil	Yes

#	Group	Indicator	Description	Remarks	Indicator used in the first BTR**
				organic carbon are avoided by including at least 30% pastures in the crop rotation, in hectares.	
58	LULUCF – Peatland	Peatland area	Annual area of peatland in good and fair (ha) conservation status	Area of peatland in good and fair conservation status (states in which it is considered that carbon stock is potentially maintained), in hectares	Yes
59	LULUCF – Forestry	Land covered by forests	Area (ha), number of trees or changes of surface (%) with respect to a base year/ base period/baseline (*)	The indicator is key in estimating CO_2-eq removals and can be used to track NDC progress and achievement (e.g., millions of trees, hectares of forest area). The activity is also linked to REDD+ activities.	Yes
60	LULUCF – Forestry	Carbon capture potential forests of	GHG emissions/ removal of forest	This indicator is calculated as the sum of emissions from the following direct GHGs: CO_2, CH_4, and N_2O. Emissions are measured in gigagrams (Gg) of CO_2 equivalent, using global warming potential over a 100-year time horizon, as specified in the IPCC 5th Assessment Report. The sectoral scope includes all emission sources outlined in the IPCC 2006 Reporting Guidelines, covering forestry and other land use categories.	Yes
61	LULUCF – Forest	Quality improvement of growing stock	Quality improvement of growing stock		Yes
62	LULUCF – Forestry	Afforestation/ Reforestation, land converted to forest land	Annual afforested/ reforested land area (ha), changes of surface (%) with respect to a base year / base period / baseline, or number of planted trees (*)	The indicator is key in estimating CO_2-eq removals and can be used to track NDC progress and achievement (e.g., millions of trees, hectares of forest area). The activity is also linked to REDD+ activities.	

#	Group	Indicator	Description	Remarks	Indicator used in the first BTR**
63	LULUCF – Forestry	Deforestation forest converted to other land uses	Annual deforested area (ha), changes of surface (%) with respect to a base year/base period/baseline, or number of harvested trees (*)	The indicator is key in estimating CO_2-eq emissions. The activity is also linked to REDD+ activities.	
64	LULUCF – Forestry	Area of shade and shelter forests	Total area of shade and shelter forests	Total area of shade and shelter forests, including the area of silvopastoral systems, in hectares.	Yes
65	LULUCF – Forestry	Enhancement /conservation of forest carbon stocks	Annual change in biomass carbon stock (tC/ha), or another equivalent unit	The indicator is key in estimating CO_2-eq removals. The activity is also linked to REDD+ activities.	
66	LULUCF – Forestry	Sustainable management of forests	Area (ha), changes of annual surface (%) (*)	The indicator is key in estimating CO_2-eq removals. The activity is also linked to the REDD+ activities.	
67	LULUCF – Forestry	National territory covered by forest	Share of national territory covered by forest (%)	By maintaining or increasing the area of forested land, GHG emissions can be reduced, contributing to climate change mitigation efforts.	Yes
68	LULUCF – Forestry	Burned area (wildfires, controlled burning)	Annual area (ha)	The indicator is key in estimating CO_2eq emissions from wildfires occurring in forest areas.	
69	LULUCF – Forestry	Staff dedicated to field monitoring	Number of staff dedicated to field monitoring	This indicator (number of staff) complements the previous indicator to evaluate the overall dedication of the country to monitoring sustainable practices in forest management. It tracks the number of staff assigned specifically to monitor and enforce sustainable forest management practices.	Yes
70	LULUCF – Forestry	Harvested biomass	Annual volume (m3) or annual biomass (t)	The indicator is key in estimating CO_2-eq emissions and removals.	

#	Group	Indicator	Description	Remarks	Indicator used in the first BTR**
71	LULUCF – Forestry	Trees outside forests	Number of trees outside forests		Yes
72	LULUCF – Forestry	Biomass	Aboveground biomass carbon stock (t C/ha)	The indicator is key in estimating GHG sinks; it is also linked to REDD+ activities.	
73	IPPU	Clinker substitution	Amount of secondary raw materials, i.e., waste input (t) per amount of natural raw materials (t)	The amount of waste replacing natural raw material fed into kilns is considered.	
74	IPPU	Total GHG emissions in IPPU sector	Total CO_2 eq emissions from the IPPU sector	This indicator considers total GHG emissions from IPPU sector activities.	Yes

(*) for management practice, its implementation in the reporting years is an important factor (% of area subject to the practice on the total cultivated area), being a driver of emissions variation compared to a baseline/base year/period.
(**) The indicators marked with "YES" are those directly drawn from BTRs that have already been submitted. The indicators without the "YES" are not taken from BTRs; rather, they are indicators are provided as illustrative examples.

2.4.2 Adaptation

Although the BTRs include a section dedicated to adaptation, Parties have not yet provided quantitative or structured indicators that would allow progress to be tracked in a comparable and consistent manner. This reflects both the non-mandatory nature of the adaptation section and the historical absence of a standardized global methodology for defining and collecting adaptation indicators. As a result, monitoring adaptation effectiveness through BTRs remains limited.

However, discussions on the Global Goal on Adaptation (GGA), established under Article 7 of the Paris Agreement, have led to the development of the first global framework for adaptation targets and indicators at COP30. It should be noted that, at the time of drafting this report, negotiations on the GGA were still ongoing. Consequently, the coverage on adaptation indicators should be considered provisional and will be updated in future editions of the report.

At COP30, negotiations on the GGA were among the most complex. Building on two years of work under the UAE–Belém Work Programme, Parties agreed on an initial global architecture for measuring adaptation progress. This architecture includes:

- a thematic framework of adaptation targets (UAE Framework for Global Climate Resilience);
- a set of 59 global indicators linked to these targets; and
- a dedicated political and technical pathway for their implementation and refinement.

This provides, for the first time, a shared basis to measure global progress on adaptation. The 59 indicators cover six thematic areas: food systems, water, health, infrastructure, ecosystems, and communities. In addition, they address four cross-cutting dimensions: adaptive capacity, governance, inclusion, and finance/means of implementation.

The indicators are voluntary, non-prescriptive, non-comparative and global in nature. They are designed to support a collective understanding of progress rather than to rank or benchmark individual Parties. While further methodological refinement will be required, the indicators provide a reference point

that Parties can integrate into their national monitoring and reporting systems under the ETF, adapting them to national circumstances.

COP30 also established a forward-looking work programme for the period 2026–2029 to operationalize these indicators. Key elements include:

- further improvement of methodologies and metadata, with technical work by the Subsidiary Bodies and a view to CMA9 (2027);
- enhanced technical support from constituted bodies such as the Adaptation Committee (AC), the Least Developed Countries Expert Group (LEG) and the Consultative Group of Experts (CGE);
- two workshops per year under the Baku Adaptation Roadmap (2026–2028);
- a political alignment process to support operationalization; and
- a comprehensive review of the indicator set after the second Global Stocktake (GST-2) in 2029.

Once operationalized, these global indicators are expected to support voluntary integration by Parties into their regular reporting under the ETF of the Paris Agreement, thereby strengthening the quality, coherence and comparability of adaptation information in future BTRs. Their effective implementation will require robust scientific foundations, transparent methodologies, comparable data, and improved knowledge of vulnerability and resilience. Selected references and resources on adaptation indicators are provided in Table 6.

TABLE 6

References and links related to adaptation indicators

Project/Framework	Description	Link
Climate-ADAPT–Repository of Adaptation Indicators	A structured collection of adaptation indicators categorized by climate parameters, impacts, actions and results	https://climate-adapt.eea.europa.eu/en/metadata/publications/repository-of-adaptation-indicators
NAP Global Network – Adaptation in Biennial Transparency Reports: The Basics	This resource outlines how countries can include adaptation information in their BTRs, emphasizing the optional nature of this section and its role in the Global Stocktake process	https://napglobalnetwork.org/accordion/faq-adaptation-in-biennial-transparency-reports-the-basics/
International Institute for Sustainable Development (IISD) – Adaptation in Biennial Transparency Reports	This brief discusses the challenges and opportunities of reporting adaptation in BTRs, highlighting the need for standardized indicators and methodologies	https://www.iisd.org/publications/brief/faq-adaptation-in-biennial-transparency-reports
OECD – Communicating Progress in National and Global Adaptation to Climate Change	This working paper explores elements of countries' adaptation responses and progress that could be reported under the Paris Agreement to better communicate efforts towards enhanced adaptation and resilience	https://www.oecd.org/en/publications/communicating-progress-in-national-and-global-adaptation-to-climate-change_5jlww009v1hj-en.html

Project/Framework	Description	Link
weADAPT – Compilation of Illustrative Targets and Indicators for the Global Goal on Adaptation	This compilation provides examples of potential targets and indicators that could be considered relevant to the Global Goal on Adaptation, aiming to support negotiators in making choices about the structure of the framework	https://adaptationwithoutborders.org/knowledge-base/adaptation-without-borders/compilation-of-illustrative-targets-and-indicators-for-the-global-goal-on-adaptation/
Center for International Forestry Research (CIFOR) – Indicators for Tracking the Global Goal on Adaptation: Insights from 50+ African Countries	This publication discusses over 400 indicators for tracking adaptation progress included in NDCs and NAPs of African countries	https://www.cifor-icraf.org/knowledge/publication/23782/
Belém Adaptation Indicators for measuring progress achieved towards the targets referred to in paragraphs 9–10 of decision 2/CMA.5	The Annex to the COP30 Decision listed 59 indicators for tracking adaptation progress	https://unfccc.int/sites/default/files/resource/cma2025_L25E.pdf

2.5 Key tools for tracking progress of policies and measures

Implementing effective climate strategies requires not only strong policies and measures but also systems to track and evaluate their impacts. The need to assess the effectiveness, costs and co-benefits of PaMs is increasingly vital for decision makers, considering the reporting requirements of the Paris Agreement.

To support these efforts, a range of analytical models and assessment tools have been developed over recent years. These tools enable governments and institutions to:

- estimate GHG reductions resulting from specific interventions;
- assess the cost-effectiveness of mitigation options;
- explore long-term pathways for decarbonization;
- integrate climate action with broader objectives such as energy security; air quality improvement and sustainable development; and
- build transparent and credible MRV systems.

The tools vary widely in terms of complexity, data requirements, scope and purpose. Some provide quick and user-friendly screenings of mitigation options, suitable for initial assessments in developing countries, while others are sophisticated energy system optimization models designed to support long-term strategic planning and deep decarbonization scenarios. Additionally, methodological frameworks have been developed to help countries standardize their assessments and align with ETF requirements.

In this context, the ICAT Series of Policy Assessment Guides are a comprehensive suite of methodologies that help countries evaluate the GHG, sustainable development, and transformational impacts of climate policies. They provide a structured, step-by-step approach to assessing both ex-ante (planned) and ex-post (implemented) policies, enabling governments to quantify emissions reductions, identify co-benefits and trade-offs, and determine whether policies drive long-term, systemic change. The guides are designed to

strengthen evidence-based decision-making and policy design and implementation, NDC development and tracking of progress, domestic or international reporting, and the mobilization of finance by demonstrating the potential and results of effective policies.

The following section provides a structured overview of some of the most widely used tools for tracking and assessing PaMs. It presents their objectives, strengths and limitations. Readers should note that in addition to the tools mentioned, countries often also use complementary instruments to address specific sectors or policy needs.

a. Greenhouse Gas Abatement Cost Model (GACMO)

Developed by the United Nations Environment Programme Copenhagen Climate Centre (UNEP-CCC), through the support of ICAT, GACMO is a straightforward, Excel-based emissions projection tool that allows countries to carry out rapid, accurate analyses of how a variety of mitigation options across different economic sectors impact emissions. It has been applied widely by many developing countries and estimates both GHG reductions and associated costs. Its main strengths lie in its user-friendliness. Countries can use it with limited data and obtain valuable input to support the preparation and update of NDCs and BTRs. However, GACMO is based on simplified assumptions and does not function as a full energy system model.

License: GACMO is free to use and download. Find out more about the tool and how to access it via the ICAT website (https://climateactiontransparency.org/our-work/icat-toolbox/gacmo/).

b. Long-range Energy Alternatives Planning System (LEAP)

LEAP, developed by the Stockholm Environment Institute, is a versatile tool for energy system modelling and scenario analysis. It allows policymakers to explore how policies influence energy use, emissions and costs across different time horizons. Widely used in more than 190 countries, LEAP is valued for its flexibility and ability to integrate mitigation policies into national and regional energy strategies. However, effective use of LEAP requires significant data inputs and user training, and while it focuses on the energy sector, it can also be linked with land-use models.

License: LEAP is available at no cost to governments, NGOs, nonprofits and academic institutions in low- and middle-income countries, most SIDS, and accredited students globally. Other users must obtain a paid license. Licenses and installation files are available via the LEAP website (https://leap.sei.org/).

c. TIMES/MARKAL Models

Developed under the International Energy Agency Energy Technology Systems Analysis Program (IEA-ETSAP), the TIMES and MARKAL models are highly detailed, bottom-up optimization tools for energy systems. They are designed to assess the long-term implications of policies on the energy mix and GHG emissions, linking policy choices to least-cost pathways for decarbonization. These models are robust and widely applied for deep decarbonization analysis at national, regional and global levels. However, they are extremely data-intensive, technically complex and less user-friendly, often requiring significant expertise to implement effectively.

License: The TIMES model generator is open source, released under GNU GPL v3.0. Available for download via IEA-ETSAP (https://iea-etsap.org/)

d. Greenhouse Gas and Air Pollution Interactions and Synergies (GAINS)

The GAINS model, developed by the International Institute for Applied Systems Analysis (IIASA),

provides an integrated assessment of air pollutants and GHGs, making it especially valuable for examining the co-benefits of climate and air quality policies. While GAINS has been most extensively applied in Europe, its scope has also expanded to other regions. Its strength lies in its ability to capture the synergies between different environmental objectives. However, its datasets are primarily Europe-focused, and full global data access can be limited.

License: The GAINS model is free to use for research and policy analysis under a Creative Commons Attribution–Non Commercial licence. Commercial use requires explicit permission from IIASA. Available for download via the IIASA GAINS Portal (https://gains.iiasa.ac.at/gains/)

e. National Climate Models and Tools

Many countries have also developed their own in-house models to track PaMs, tailored to national policy priorities and data availability. These national models provide more direct alignment with country-specific policies but often build on or adapt international tools.

2.6 Case studies

This section presents five case studies, each evaluating how Parties have reported indicators in their initial BTRs and comparing them with the indicators articulated in their corresponding NDCs. The case studies illustrate the diversity of indicators selected by Parties and demonstrate the variety of possible routes to climate progress, aiming to assess the degree of alignment between planned and reported indicators. By doing so, they offer insight into the practical application of the ETF and provide concrete examples of how countries operationalize transparency provisions under the Paris Agreement. Differences emerge not only across sectors and target types, but also in the structure of indicator systems, data availability, institutional arrangements and the maturity of national MRV systems.

Collectively, the case studies underscore that while Parties may share common reporting obligations, their pathways towards meeting these requirements are shaped by national circumstances, development priorities and capacities. To illustrate this diversity, the five selected countries represent different continents and feature distinct NDC characteristics, ranging from economy-wide emissions reduction targets to sector-specific mitigation commitments, adaptation-focused goals, and qualitative or policy-based pledges. Through these examples, the section seeks to highlight practical lessons and common challenges that may inform other Parties as they develop or refine their own indicator frameworks and prepare subsequent BTR submissions.

China

China's first NDC (updated submission), submitted in 2021, includes targets on achieving carbon neutrality, lowering CO2 emissions and increasing the share of non-fossil fuels in primary energy consumption (see Table 7).

China's first BTR outlines specific indicators to track progress towards its climate goals. These indicators are aligned with China's updated NDCs and include:

- Annual CO_2-equivalent emissions: Tracking total emissions from fuel combustion and industrial processes.
- CO_2 emissions per unit of GDP: for tracking reduction of energy-related CO2 emissions per GDP.
- Forest stock volume: for tracking the increase of the forest stock volume.
- Share of non-fossil fuels in primary energy consumption: for tracking increases in non-fossil fuel use in primary energy consumption.
- Installed capacity of wind and solar power: to track the total installed capacity of wind and solar power and the share of renewable energy production.

These indicators are designed to be both quantitative and qualitative, providing a comprehensive view of China's climate action progress. The chosen indicators are directly linked to China's key climate objectives: achieving peak CO_2 emissions before 2030 and carbon neutrality before 2060. By monitoring these indicators, China aims to demonstrate its progress in reducing emissions, increasing energy efficiency, and expanding renewable energy capacity.

Cuba
Cuba's first NDC (updated submission), submitted in 2020, provides specific sectoral targets and policies to mitigate its emissions, including an increase of up to 24 per cent in electricity generation from renewable energy in Cuba's electricity grid by 2030 (see Table 7).

Cuba's first BTR includes CTF for tracking progress in implementing and achieving NDCs.

Cuba has selected indicators for tracking its NDCs, focusing on key sectors such as energy, forestry and agriculture. This framework includes specific indicators to measure progress towards its mitigation targets. The indicators are designed to align with the ETF of the Paris Agreement, ensuring that Cuba can effectively monitor and report its climate actions:

- Fraction of energy generated by renewable energy (RE) in the electric grid: the indicator estimates the percentage of energy generated by RE in the country's electricity grid for tracking the increase in RE electricity generation in Cuba's electricity grid.
- More efficient units introduced (solar heaters, LED lights, stoves, solar pumping): this indicator accounts for the annual introduction of more efficient equipment for tracking increase in energy efficiency and savings.
- Percentage of fossil fuel consumption in vehicles: this indicator estimates the annual percentage variation in the fuel consumption matrix for land vehicles for tracking less carbon-intensive land transport.
- Area covered by forests: this indicator accounts for the annual increase in newly planted areas for tracking the increase in the country's forest cover.
- GHG emissions: this indicator estimates the accumulated reduction of GHG emissions during the target's implementation period for the pig farming sector in Cuba.

European Union
The European Union's updated NDC, submitted in 2023, commits to an economy-wide net domestic reduction of at least 55 per cent in GHG emissions by 2030, compared to 1990 levels. This target is legally enshrined in European Climate Law and represents a key milestone in the EU's pathway to climate neutrality by 2050.

The indicator used for tracking progress is the Total annual CO_2-equivalent (CO_2-eq) emissions (Mt). This indicator reflects annual total net GHG emissions, consistent with the scope of the EU's NDC. It includes emissions from all sectors (e.g., energy, transport, industry, agriculture, and waste) and accounts for removals from LULUCF.

It is reported annually through the EU GHG inventory submitted to the UNFCCC and is aligned with the reporting requirements under the ETF of the Paris Agreement. By using this single, comprehensive indicator, the EU aims to ensure the tracking of its NDC, demonstrating its progress in reducing emissions.

Indonesia
Indonesia's Enhanced NDC, submitted in 2022, sets out both unconditional and conditional targets for GHG emission reductions by 2030. The country aims to reduce its emissions by 31.89 per cent unconditionally and up to 43.2 per cent conditional on international support, such

as finance, technology transfer and capacity-building. The baseline year for these targets is 2010.

To track progress, Indonesia's first BTR outlines a range of indicators that reflect its commitment to comprehensive climate action across key sectors.

The primary indicator used to assess overall progress is the total GHG emissions trend. This measures the annual level of CO_2-equivalent emissions and compares it against a baseline scenario, providing both the absolute level and the percentage reduction achieved.

In addition to this economy-wide indicator, Indonesia has established a sectoral monitoring framework covering the following key areas: LULUCF, energy, transport, industry (IPPU), and waste.

These indicators together provide a comprehensive overview of Indonesia's mitigation efforts, covering all major GHG-emitting sectors. The dual structure of unconditional and conditional targets allows for flexibility in implementation while emphasizing the need for international cooperation to reach more ambitious goals.

South Africa
South Africa's first NDC (updated submission), submitted in 2021, outlines a fixed-level target for GHG emissions for the years 2025 and 2030. Specifically, the country commits to keeping its annual GHG emissions within a range of 398–510 Mt CO_2-equivalent by 2025, and between 350–420 Mt CO_2-equivalent by 2030.

To track progress towards these targets, South Africa's BTR identifies one primary indicator: total annual CO_2-equivalent emissions (measured in megatonnes). This indicator reflects the comprehensive level of net GHG emissions across the national economy.

The emissions are calculated based on the most recent national GHG inventory, which includes: all gases covered by the Paris Agreement (e.g., CO_2, CH_4, N_2O, HFCs, etc.); all sectors and sources, including energy, industrial processes, agriculture, waste, and LULUCF; all emissions and removals excluding those from natural disturbances (e.g., wildfires or natural events not directly influenced by human activity). This single and comprehensive indicator ensures that the tracking of South Africa's NDC is aligned with the ETF of the Paris Agreement.

TABLE 7

Case studies, with indicators reported in the initial BTRs and information outlined in the corresponding NDC

Party's NDC		Target year	Target type	Indicator	Description of selected indicators by Party	Group
China						
China's updated first NDC (2021) goals:	To have CO_2 emissions peak before 2030 and achieve carbon neutrality before 2060	2030	Intensity target; Trajectory target	Annual CO2-eq emissions (Mt)	CO_2 emissions from fuel combustion and IPPU annual CO_2-eq emissions (Mt)	Macro
	To lower CO_2 emissions per unit of GDP by over 65% from the 2005 level			Total annual CO2-eq emissions (Mt) per GDP (bn currency)	Reduction of energy-related CO_2 emissions per GDP Total annual CO_2-eq emissions (Mt) per GDP (bn currency)	Macro
	To increase the forest stock volume by 6 billion cubic meters from the 2005 level			Land covered by forests	Forest stock volume	LULUCF/ Forest
	To increase the share of non-fossil fuels in primary energy consumption to around 25%			Share of non-fossil fuel energy production	Share of non-fossil fuels	Energy
	To bring its total installed capacity of wind and solar power to over 1.2 billion kilowatts by 2030.			Share of renewable energy production	Total installed capacity of wind and solar power	Energy

Party's NDC		Target year	Target type	Indicator	Description of selected indicators by Party	Group
Cuba						
Cuba's updated NDC (2020) provides specific sectoral targets and policies to mitigate its emissions, including:	Increase of up to 24% in electricity generation based on RE in Cuba's electricity grid by 2030	2030	Base year target 2014	Fraction of energy generated by RE in the electric grid	The indicator estimates the percentage of energy generated by RE in the country's electricity grid.	Energy
	Increase in energy efficiency and savings			More efficient units introduced (solar heaters)	This indicator accounts for the annual introduction of more efficient equipment.	Energy
				More efficient units introduced (LED lights)		
				More efficient units introduced (stoves)		
				More efficient units introduced (solar pumping)		
	Less carbon-intensive land transport			Percentage of fossil fuel consumption in vehicles	The indicator estimates the annual percentage variation in the fuel consumption matrix for land vehicles.	Energy/ Transport
	Increase in the country's forest cover to 33% by 2030			Area covered by forests	The indicator accounts for the annual increase in newly planted areas.	LULUCF/ Forest
	Reduction of GHG emissions in the pig farming sector in Cuba			GHG emissions	This indicator estimates the accumulated reduction of GHG emissions during the target's implementation period for the pig farming sector.	Macro

Party's NDC	Target year	Target type	Indicator	Description of selected indicators by Party	Group
European Union					
EU's updated NDC (2023): Economy-wide net domestic reduction of at least 55% in greenhouse gas emissions by 2030 compared to 1990.	2030	Base year target 1990	Total annual CO2-eq emissions (Mt)	Annual total net GHG emissions consistent with the scope of the NDC in CO_2eq.	Macro
Indonesia					
Indonesia's Enhanced NDC (2022): ▪ -31.89% unconditional ▪ -43.2% conditional	2030	Base year target 2010	Total GHG emissions trend	Level and percent of reduction of CO_2e emission from baseline emission.	Macro
			GHG emissions/ removal of forest		LULUCF
			GHG emissions from energy		Energy
			GHG emissions from transport		IPPU
			GHG emissions from industry		Waste
South Africa					
South Africa's first NDC (updated submission 2021), mitigation targets: 2025: South Africa's annual GHG emissions will be in a range from 398–510 Mt CO_2-eq. 2030: South Africa's annual GHG emissions will be in a range from 350-420 Mt CO_2-eq	2025-2030	Fixed level target	Total annual CO2-eq emissions (Mt)	Total GHG emissions including LULUCF as reported in the most recent national GHG inventory (contained in the relevant National Inventory Document), and including all gases, sectors and sources estimated in that GHG inventory, excluding GHG emissions from natural disturbances.	Macro

2.7 Conclusions

Climate indicators are the foundation of robust monitoring systems. A thoughtful approach that considers cost, uncertainty, time series consistency, national context and policy relevance ensures that indicators not only fulfil international obligations under the ETF but also strengthen domestic climate governance. Parties select their indicators to be practical, policy-relevant and consistent with required reporting formats – serving both implementation tracking and strategic decision-making.

For Parties to achieve their climate goals, tracking progress is essential. By setting suitable indicators, Parties can monitor whether their climate strategies and measures are progressing as planned or whether adjustments are necessary (due to unexpected delays or new developments, for example). Conversely, without reliable indicators to track progress, Parties cannot effectively fine-tune their approaches, identify underperforming measures or make evidence-based decisions about resource allocation and policy priorities.

As this represents the first reporting cycle under the new ETF formats, it will be particularly important to reflect on lessons learned. Over time, Parties may refine, replace or expand their set of indicators based on practical experience, improved data systems or evolving policy needs. Such an iterative approach is fully consistent with the spirit of the ETF and will contribute to strengthening transparency, comparability and national ownership. Continuous improvement in indicator design and application will therefore be key to ensuring that reporting requirements meaningfully support climate action.

2.7.1 Indicator selection and reporting requirements

Under the MPGs, all Parties must select indicators to track progress towards their NDCs, but the choice of specific indicators remains at each Party's discretion. Progress is assessed by comparing indicator values from the base or reference year with the most recent year, using the Party's chosen accounting approach, and the results are reported in the BTR. Indicators may be quantitative or qualitative and should ideally be identified during NDC development to ensure relevance and usefulness for tracking progress. During the review process, the ERT will verify that indicators are provided and that they correspond to the NDC, but it will not assess whether the selected indicators are adequate or appropriate.

2.7.2 Consistency is vital for transparency

The integrity of the NDC accounting framework relies on consistency between the information presented in the NDC (e.g., data sources, coverage, methodologies, assumptions) and the information reported in the BTR, particularly in relation to the national GHG inventory and indicators used for tracking progress towards achieving targets.

When reporting all this information, due consideration should be given to the fundamental principles of reporting established by the IPCC and adopted by the UNFCCC, namely: transparency, accuracy, consistency, completeness and comparability. These principles, along with the avoidance of double counting and the promotion of environmental integrity, are embedded in the Paris Agreement as well as in the decision on NDCs and BTR reporting.

2.7.3 Good indicators are measurable and relevant

Even though the selection of indicators is at the discretion of Parties, well-designed indicators are essential to effectively track progress towards their NDCs. A good indicator should be measurable, based on observable and quantifiable data, and relevant, meaning it closely aligns with national climate goals, NDCs and key sectoral priorities. Ideally, indicators should also be consistent with national GHG inventories, using similar data sources or categories (e.g., IPCC sectors), and time-bound, allowing progress to be tracked over time through regular updates. Another important feature is attribution – indicators should help to assess whether specific policies or measures are actually responsible for observed changes. They should also be comparable, not only across different time periods but, where possible, between

countries or regions. Crucially, they must be feasible, meaning data can realistically be collected and reported within national capacities.

2.7.4 Balancing cost and effectiveness

The cost of developing and maintaining indicators is also a key consideration. Parties must strike a balance between policy relevance and cost-effectiveness, ideally using existing data sources when possible. Some cost factors include: data availability; update frequency; technical complexity; and institutional capacity. In countries with limited technical infrastructure, even standard indicators can become resource intensive. Climate targets also have benefits beyond transparency, which could be related to health, job creation, livelihoods or food security, for example. Parties may use their NDC indicators to measure and realize these additional benefits.

2.7.5 Indicators are valuable beyond reporting

Beyond reporting, indicators serve an essential governance function. They help Parties to determine whether planned policies are being implemented, identify underperforming or off-track measures early and improve coordination across ministries. At the international level, indicators can help Parties to build trust by demonstrating that they are taking concrete action towards their commitments.

This transparency supports Parties in sharing lessons learnt, allowing them to benefit from good practices used elsewhere and strengthening the collective global response to climate change. The careful selection and design of indicators is more than just a reporting obligation; it is a fundamental tool for effective climate action that supports both national policy implementation and international accountability.

Annex I. Overview of information to be submitted in Biennial Transparency Reports

Chapter of the BTR	References	Which Parties?	Information to be reported
I. National inventory report of anthropogenic emissions by sources and removals by sinks of GHGs	Paris Agreement, Article 13, para. 7(a) Decision 18/ CMA.1, annex, paras. 17–58 Decision 5/ CMA.3 and annexes I, IV and V CRT reporting software IPCC guidelines	All Parties shall report a GHG inventory	All countries shall report a national inventory report of GHG emissions and removals following the BTR guidelines, which incorporate the 2006 IPCC Guidelines (mandatory). Parties may use the 2019 Refinement to the 2006 IPCC Guidelines, but it is not mandatory (future refinements to IPCC guidelines, including the 2019 Refinement, shall be used once agreed by the CMA). The national inventory report may be submitted as a standalone document (with a reference to the submitted document and a summary of its content provided in the BTR) or as a specific section of the BTR. For those developing country Parties that need flexibility in the light of their capacities, specific flexibility provisions may be applied. ▪ The submission includes the national inventory document and the CRTs for the electronic reporting of the national inventory report of anthropogenic emissions by sources and removals by sinks of GHGs. ▪ The CRTs were adopted by the CMA in 2021 to enable Parties to fulfil reporting requirements set in the MPGs. The CRTs are submitted electronically and considered part of the submission; tables need not be reproduced in the BTR itself. The CRTs include summary report tables, sectoral report tables, background data tables, cross-sectoral tables and other tables. The BTR outline contains an “Annex 2: Common reporting tables for the electronic reporting of the national inventory report of anthropogenic emissions by sources and removals by sinks of GHGs”. Parties are encouraged to follow the national inventory document outline contained in annex IV to decision 5/CMA.3 when preparing their GHG inventory submission, although its use is not mandatory.

Chapter of the BTR	References	Which Parties?	Information to be reported
II. Information necessary to track progress made in implementing and achieving the NDC	Paris Agreement, Articles 4 and 13, para. 7(b) Decision 18/ CMA.1, annex, paras. 59–103 Decision 5/ CMA.3 and annexes II and IV CTF reporting software Country-driven tools/analyses	All Parties shall report this information	▪ This chapter of the BTR contains: ° Information on national circumstances and institutional arrangements relevant to this chapter heading ° A description of the NDC ° Information necessary to track progress (e.g. indicators, definitions, methodologies, accounting approaches, use of ITMOs under Article 6, approaches to LULUCF) ° Information on mitigation policies and measures, actions and plans, including those with mitigation co-benefits from adaptation actions and economic diversification plans ° A summary of GHG emissions and removals (if a stand-alone GHG inventory is submitted) ° Projections of GHG emissions and removals ° Other information deemed relevant by theParty ▪ For those developing country Parties that need flexibility in the light of their capacities, specific flexibility provisions may be applied. ▪ Information to track progress towards the implementation and achievement of a Party's NDCs shall be reported in a narrative and common tabular format, as applicable. Accordingly, the submission includes, as appropriate, information in the BTR document as well as CTF tables. ▪ The CTF tables, which were adopted by CMA 3 in 2021, are: ° Structured summary, which is organized as follows: ° Description of selected indicators (CTF table 1); ° Definitions needed to understand the NDC (CTF table 2); ° Methodologies and accounting approaches ° (CTF table 3); ° Tracking progress made in implementing and achieving the NDC (CTF table 4);

Chapter of the BTR	References	Which Parties?	Information to be reported
			▪ Mitigation policies and measures, actions and plans, including those with mitigation cobenefits resulting from adaptation actions and economic diversification plans (CTF table 5); ▪ Summary of GHG emissions and removals (CTF table 6); ▪ Information on projections of GHG emissions and removals, organized as follows: ° "With measures" scenario (CTF table 7); ° "With additional measures" scenario (CTF table 8); ° "Without measures" scenarios (CTF table 9); ° Projections of key indicators (CTF table 10); ° Key underlying assumptions and parameters used (CTF table 11). ▪ Parties are encouraged to report information in the BTR document following the BTR outline contained in annex IV to decision 5/ CMA.3. The BTR outline also contains an "Annex 3" that, among other information, includes "Information necessary to track progress in implementing and achieving NDCs under Article 4 of the Paris Agreement". Parties may include a reference to external tables in annex 3.
III. Information related to climate change impacts and adaptation	Paris Agreement, Article 7, paras. 10–11, and Article 13, para. 8 Decision 18/ CMA.1, annex, paras. 13–14 Decision 18/ CMA.1, annex, paras. 104–117 Decision 5/ CMA.3 and annex IV	All Parties should report this information	▪ Some or all of this chapter of the BTR may serve as the adaptation communication under Article 7, paragraphs 10–11. If this is the case, it should be clearly stated and the part of the BTR constituting the adaptation ▪ This chapter of the BTR should contain, as appropriate, information on: ° National circumstances, institutional arrangements and legal frameworks relevant to this chapter heading ° Impacts, risk and vulnerabilities ° Adaptation priorities and barriers ° Adaptation strategies, policies, plans, goals and actions to integrate adaptation into national policymaking

Chapter of the BTR	References	Which Parties?	Information to be reported
			° Progress on the implementation of adaptation ° Monitoring and evaluation of adaptation actions and processes ° Averting, minimizing and addressing loss and damage associated with climate change impacts ° Cooperation, good practices, experience and lessons learned ° Other matters deemed relevant by the Party ▪ The "other matters" noted above could also include a clarification on the linkages between information related to climate change impacts and adaptation under Article 7 of the Paris Agreement reported in the BTR and that are reported in the (optional) adaptation communication, if submitted. ▪ When reporting information related to climate change impacts and adaptation, Parties may cross-reference previously reported information and focus their reporting on updates to such information
IV. Information on FTC support provided and mobilized	Paris Agreement, Articles 9–11 and 13, para. 9 Decision 18/ CMA.1, annex, paras. 118–129 Decision 5/ CMA.3 and annexes IIII–V	Developed country Parties shall report this information Other Parties providing support should report this information	This chapter of the BTR contains information on: ° National circumstances and institutional arrangements relevant to this chapter heading ° Underlying assumptions, definitions and methodologies ° Financial support provided and mobilized (multilateral channels; bilateral, regional and other channels; and finance mobilized through public interventions) ° Support provided for technology development and transfer ° Capacity-building support provided ▪ The submission includes, as appropriate, information in the BTR document as well as CTF tables. The relevant CTF tables, which were adopted by CMA 3 in 2021, are: ° Information on financial support provided: bilateral, regional and other channels (CTF Table III.1);

Chapter of the BTR	References	Which Parties?	Information to be reported
			° Information on financial support provided: multilateral channels (CTF Table III.2); ° Information on financial support mobilized through public interventions (CTF Table III.3); ° Information on support for technology development and transfer provided (CTF Table III.4); ° Information on capacity-building support provided (CTF Table III.5). ▪ The BTR outline contains an "Annex 3" including "Information on FTC support provided and mobilized under Articles 9–11 of the Paris Agreement".
V. Information on FTC support needed and received	Paris Agreement, Articles 9–11 and 13, para. 10 Decision 18/CMA.1, annex, paras. 130–145 Decision 5/CMA.3 and Annexes III–IV	Developing country Parties should provide this information	This chapter of the BTR contains information on: ° National circumstances, institutional arrangements and country-driven strategies relevant to this chapter heading ° Underlying assumptions, definitions and methodologies ° Financial support needed ° Financial support received ° Technology development and transfer support needed ° Technology development and transfer support received ° Capacity-building support needed ° Capacity-building support received ° Support needed and received by developing country Parties for the implementation of Article 13 and transparency-related activities, including for transparency-related capacity-building ▪ The submission includes, as appropriate, information in the BTR as well as CTF tables. The relevant CTF tables, which were adopted at CMA3, are:

Chapter of the BTR	References	Which Parties?	Information to be reported
			° Information on financial support needed by developing country Parties (CTF Table III.6); ° Information on financial support received by developing country Parties (CTF Table III.7); ° Information on technology development and transfer support needed by developing country Parties (CTF Table III.8); ° Information on technology development and transfer support received by developing country Parties (CTF Table III.9); ° Information on capacity-building support needed by developing country Parties (CTF Table III.10); ° Information on capacity-building support received by developing country Parties (CTF Table III.11); ° Information on support needed by developing country Parties for the implementation of Article 13 of the Paris Agreement and transparency related activities, including for transparency related capacity-building (CTF Table III.12). ° Information on support received by developing country Parties for the implementation of Article 13 of the Paris Agreement and transparency related activities, including for transparency related capacity-building (CTF Table III.13). ▪ The BTR outline contains an “Annex 3” including “Information on financial, technology development and transfer and capacity building support needed and received under Articles 9–11 of the Paris Agreement”.
VI . Information to be reported when national communications and BTRs are submitted jointly every four years	Decision 1/ CP.24, para. 43 Decision 17/CP.8 Decision 6/ CP.25	Parties that choose to submit their national communication and biennial report as a single report shall provide these chapters	▪ Parties may choose to submit their national communication and BTR as a single report in the years in which both reports are due. ▪ Parties that choose to submit a single report shall also include in the BTR supplemental chapters on: ° Research and systematic observation ° Education, training and public awareness

Chapter of the BTR	References	Which Parties?	Information to be reported
			° Adaptation, but only for those Parties that did not report under chapter IV of the BTR guidelines on information related to climate change impacts and adaptation under Article 7 of the Paris Agreement
VII. Information on flexibility	Decision 18/ CMA.1 Decision 5/ CMA.3, annex IV	Developing country Parties that need flexibility in the light of their capacities shall report this information, but have discretion as to where it is reported	▪ Developing country Parties may elect to report information on the specific flexibility provisions applied in the overview chapter of the BTR and/ or integrate this information into the relevant chapters above where specific flexibility provisions have been applied. ▪ Information to include: ° Reporting provisions to which self-determined flexibility is applied; ° Capacity constraints in relation to the application of flexibility; ° Self-determined estimated time frames for improvements in relation to those capacity constraints. ▪ Parties may also elect to include on a voluntary basis a summary table in the BTR and/or CRTs on the specific flexibility provisions applied.
VIII. Improvements in reporting over time	Decision 18/ CMA.1, paras. 7–8 Decision 5/ CMA.3, annex IV	All Parties may report this information here, or in the relevant chapters	▪ Areas of improvement identified by the Party and technical expert review team in relation to the Party's implementation of Article 13 of the ▪ Paris Agreement; ▪ How the Party is addressing or intends to address areas of improvement; ▪ Areas of improvement that are related to the flexibility provisions; ▪ Reporting-related capacity-building support needs identified, including those referred to in chapter VI above and any progress made, including those previously identified as part of the technical expert review; Parties' domestic plans and priorities with regard to improved reporting are not examined during the technical expert review, but the information may inform discussions on areas of improvement and identification of capacity-building needs between the technical expert review team and the Party concerned.

Chapter of the BTR	References	Which Parties?	Information to be reported
IX. Any other information	Decision 5/ CMA.3, annex IV	All Parties are allowed	In this chapter, Parties are allowed to include any information that they consider relevant to the achievement of the objective of the Paris Agreement, and suitable for inclusion in the BTR.

Annex II. Article 6 and reporting requirements

Article 6.2 of the Paris Agreement provides for voluntary cooperation approaches for the exchange of "internationally transferred mitigation outcomes" (ITMOs), aimed at achieving NDCs, promoting sustainable development, and ensuring environmental integrity and transparency, through a robust accounting system that prevents double counting. Article 6.2 thus establishes a solid and common rule framework for accounting.

Article 6.4 of the Paris Agreement establishes a voluntary project-based mechanism under the authority and guidance of the Conference of the Parties and overseen by a body (the Article 6.4 Supervisory Body), aiming to reduce GHG emissions and promoting sustainable development; incentivizing and facilitating both public and private sector participation; helping reduce emission levels in host countries and other countries to achieve their NDCs and overall global emission reductions; and contributing to reduced emission levels in host countries benefiting from mitigation activities that may also be used by other Parties to achieve their NDCs.

Article 6.8 of the Paris Agreement addresses cooperative approaches to climate action that do not involve the transfer of mitigation outcomes or transactional mechanisms. It complements the market-based provisions under Articles 6.2 and 6.4 by promoting voluntary, non-market approaches aimed at supporting the implementation of NDCs and enhancing overall ambition. Article 6.8 encourages Parties to implement voluntary non-market approaches in the context of sustainable development and poverty eradication. Under Article 6.8, Parties may collaborate in areas such as financial support, technology development and transfer, and capacity-building to design and implement non-market-based climate strategies.

At its third session, the CMA discussed matters relating to Article 6 and adopted guidance on cooperative approaches referred to in Article 6, paragraph 2; rules, modalities and procedures for the mechanism established by Article 6, paragraph 4; and a work programme under the framework for non-market approaches referred to in Article 6, paragraph 8.

Article 6 reporting requirements

Reporting and review requirements under the Paris Agreement explicitly include provisions related to the use of cooperative approaches towards the implementation and achievement of Parties' NDCs.

The reporting of such information cuts across Article 13 and Article 6.2 of the Paris Agreement:

- Under Article 13, Parties are required to report, inter alia, information that is necessary to track progress made in implementing and achieving NDCs.
- Under Article 6.2 of the Paris Agreement, Parties are required to report information on the use of cooperative approaches involving the use of internationally transferred mitigation outcomes (ITMOs) towards NDCs.

Article 6 information required as per chapter IV of the annex to decision 2/CMA.3:

- Initial report and its updates
- Annual information
- Regular information as an annex to the BTR submitted (paragraph 10 (b) of the annex to decision 18/CMA.1).

Initial report

The initial report shall include information describing the cooperative approach. The initial report should comprise the following information (section IV. A. Reporting. annex to decision 2/CMA.3):

1. Demonstrate that the participating Party fulfills the participation responsibilities;
2. Provide a description of the Party's NDC, where the participating Party has not yet submitted a Biennial Transparency Report;
3. Communicate the ITMO metrics and the method for applying corresponding adjustments;
4. Quantify the Party's mitigation information in its NDC in tCO2eq.: sectors, sources, GHGs and periods covered by the NDC; the reference level of emissions, the target level for its NDC, methodology for the quantification;
5. Quantify the NDC in a non-GHG metric determined by each participating Party;
6. For NDCs consisting of policies and measures that are not quantified, quantify the emission level resulting from the cooperative approach;
7. Provide a copy of the authorization by the participating Party, a description of the approach, its duration, the expected mitigation for each year of its duration, and the participating Parties involved and authorized entities;
8. Describe how each cooperative approach ensures environmental integrity; and
9. Describe how each cooperative approach will minimize and avoid negative environmental, economic and social impacts; how they respect, promote and consider human rights, rights to health, rights of vulnerable groups and gender equality; and be consistent with the sustainable development objectives of the Party.

Annual information

The annual information shall include data on ITMOs (e.g., authorizations, transfers, and cancellations). Countries must report annual information from their registries electronically, using an agreed format. The information shall feed into the Article 6 database.

The information to be reported annually includes:

- Annual information on authorization of ITMOs and detailed information on any transactions of ITMOs for each ITMO authorization
- Cooperative approach or other international mitigation purpose authorized by the Party
- First transferring participating Party, as well as any using participating Party or authorized entity or entities
- Year of mitigation, sector(s) and activity type(s)
- Unique identifiers.

Regular information

The regular information shall include, as an annex to each Party's BTR, data on the Party's participation in cooperative approaches. Once a country has engaged in a cooperative approach, it must report information on that approach regularly. Paragraphs 21 and 22 of Decision 2/CMA.3 (Annex) list the information related to cooperative approaches that countries participating in Article 6.2 must include in the BTR, specifically:

- How a Party is fulfilling the participation responsibilities
- Updates to the information provided in its initial report
- Authorizations for the use of ITMOs
- How the selected corresponding adjustments ensure that double counting is avoided, are representative of progress towards implementation and achievement of the country's NDC, and do not lead to a net increase in emissions
- How the country has ensured that the selected ITMOs will not be further transferred, further cancelled or otherwise used
- How each cooperative approach in which the country participates contributes to the mitigation of GHGs and the implementation of its NDC and ensures environmental integrity.

Annex III. CTF Tables 1, 2 and 3

TABLE III.1: CTF TABLE 1

Structured summary: Description of selected indicators

Indicator(s) selected to track progress	Description
{Indicator}	
Information for the reference point(s), level(s), baseline(s), base year(s) or starting point(s), as appropriate	
Updates in accordance with any recalculation of the GHG inventory, as appropriate	
Relation to NDC	

TABLE III.2: CTF TABLE 2

Structured summary: Definitions needed to understand the NDC

Definitions	
Structured summary: Definitions needed to understand the NDC	
{Indicator}	
Any sector or category defined differently than in the national inventory report:	
{Sector}	
{Category}	
Definition needed to understand mitigation co-benefits of adaptation actions and/or economic diversification plans:	
{Mitigation co-benefit(s)}	
Any other relevant definitions	
{…}	

TABLE III.3: CTF TABLE 3.

Structured summary: Methodologies and accounting approaches

Reporting requirement	Description or reference to the relevant section of the BTR
For the first NDC under Article 4:	
Accounting approach, including how it is consistent with Article 4, paragraphs 13–14, of the Paris Agreement (para. 71 of the MPGs)	
For the second and subsequent NDC under Article 4, and optionally for the first NDC under Article 4:	
Information on how the accounting approach used is consistent with paragraphs 13–17 and annex II of decision 4/CMA.1 (para. 72 of the MPGs)	
Explain how the accounting for anthropogenic emissions and removals is in accordance with methodologies and common metrics assessed by the IPCC and in accordance with decision 18/CMA.1 (para. 1(a) of annex II to decision 4/CMA.1)	
Explain how consistency has been maintained between any GHG data and estimation methodologies used for accounting and the Party's GHG inventory, pursuant to Article 13, paragraph 7(a), of the Paris Agreement, if applicable (para. 2(b) of annex II to decision 4/CMA.1)	
Explain how overestimation or underestimation has been avoided for any projected emissions and removals used for accounting (para. 2(c) of annex II to decision 4/CMA.1)	
For each NDC under Article 4:	
Accounting for anthropogenic emissions and removals in accordance with methodologies and common metrics assessed by the IPCC and adopted by the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement (para. 12(a) of decision 4/CMA.1 and para 1 of its annex II):	
Each methodology and/or accounting approach used to assess the implementation and achievement of the target(s), as applicable (para. 74(a) of the MPGs)	
Each methodology and/or accounting approach used for the construction of any baseline, to the extent possible (para. 74(b) of the MPGs)	
If the methodology or accounting approach used for the indicator(s) in table 1 differ from those used to assess the implementation and achievement the target, describe each methodology or accounting	

approach used to generate the information generated for each indicator in table 4 (para. 74(c) of the MPGs)	
Any conditions and assumptions relevant to the achievement of the NDC under Article 4, as applicable and available (para. 75(i) of the MPGs)	
Key parameters, assumptions, definitions, data sources and models used, as applicable and available (para. 75(a) of the MPGs)	
IPCC Guidelines used, as applicable and available (para. 75(b) of the MPGs)	
Report the metrics used, as applicable and available (para. 75(c) of the MPGs)	
For Parties whose NDC cannot be accounted for using methodologies covered by IPCC guidelines, provide information on their own methodology used, including for NDCs, pursuant to Article 4, paragraph 6, of the Paris Agreement, if applicable (para. 1(b) of annex II to decision 4/CMA.1)	
Provide information on methodologies used to track progress arising from the implementation of policies and measures, as appropriate (para. 1(d) of annex II to decision 4/CMA.1)	
Where applicable to its NDC, any sector-, category or activity-specific assumptions, methodologies and approaches consistent with IPCC guidance, taking into account any relevant decision under the Convention, as applicable (para. 75(d) of the MPGs):	
For Parties that address emissions and subsequent removals from natural disturbances on managed lands, provide detailed information on the approach used and how it is consistent with relevant IPCC guidance, as appropriate, or indicate the relevant section of the national GHG inventory report containing that information (para. 1(e) of annex II to decision 4/CMA.1, para. 75(d)(i) of the MPGs)	
For Parties that account for emissions and removals from harvested wood products, provide detailed information on which IPCC approach has been used to estimate emissions and removals (para. 1(f) of annex II to decision 4/CMA.1, para. 75(d)(ii) of the MPGs)	
For Parties that address the effects of age-class structure in forests, provide detailed information on the approach used and how this is consistent with relevant IPCC guidance, as appropriate (para. 1(g) of annex II to decision 4/CMA.1, para. 75(d)(iii) of the MPGs)	

How the Party has drawn on existing methods and guidance established under the Convention and its related legal instruments, as appropriate, if applicable (para. 1(c) of annex II to decision 4/CMA.1)	
Any methodologies used to account for mitigation benefits of adaptation actions and/or economic diversification plans (para. 75(e) of the MPGs)	
Describe how double counting of net GHG emission reductions has been avoided, including in accordance with guidance developed related to Article 6 if relevant (para. 76(d) of the MPGs)	
Any other methodologies related to the NDC under Article 4 (para. 75(h) of the MPGs)	
Ensuring methodological consistency, including on baselines, between the communication and implementation of NDCs (para. 12(b) of the decision 4/CMA.1 and para 1 of its annex II)):	
Explain how consistency has been maintained in scope and coverage, definitions, data sources, metrics, assumptions and methodological approaches including on baselines, between the commu-nication and implementation of NDCs (para. 2(a) of annex II to decision 4/CMA.1)	
Explain how consistency has been maintained between any GHG data and estimation methodologies used for accounting and the Party's GHG inventory, pursuant to Article 13, paragraph 7(a), of the Paris Agreement, if applicable (para. 2(b) of annex II to decision 4/CMA.1) and explain methodological inconsistencies with the Party's most recent national inventory report, if applicable (para. 76(c) of the MPGs)	
For Parties that apply technical changes to update reference points, reference levels or projections, the changes should reflect either of the following (para. 2(d) of annex II to decision 4/CMA.1):	
Technical changes related to technical corrections to the Party's inventory (para. 2(d)(i) of annex II to decision 4/CMA.1)	
Technical changes related to improvements in accuracy that maintain methodological consistency (para. 2(d)(ii) of annex II to decision 4/CMA.1)	
Explain how any methodological changes and technical updates made during the implementation of their NDC were transparently reported (para. 2(e) of annex II to decision 4/CMA.1)	

Striving to include all categories of anthropogenic emissions or removals in the NDC and, once a source, sink or activity is included, continuing to include it (para. 12 (c) of decision 4/CMA.1 and para. 3 of annex II to decision 4/CMA.1):	
Explain how all categories of anthropogenic emissions and removals corresponding to their NDC were accounted for (para. 3(a) of annex II to decision 4/CMA.1)	
Explain how Party is striving to include all categories of anthropogenic emissions and removals in its NDC, and, once a source, sink or activity is included, continue to include it (para. 3(b) of annex II to decision 4/CMA.1)	
Provide an explanation of why any categories of anthropogenic emissions or removals are excluded (para. 12 (c) of decision 4/CMA.1 and para. 4 of annex II to decision	
Each Party that participates in cooperative approaches that involve the use of ITMOs towards an NDC under Article 4, or authorizes the use of mitigation outcomes for international mitigation purposes other than achievement of its NDC	
Provide information on any methodologies associated with any cooperative approaches that involve the use of ITMOs towards an NDC under Article 4 (para. 75(f) of the MPGs)	
Provide information on how each cooperative approach promotes sustainable development, consistent with decisions adopted by the CMA on Article 6 (para. 77(d)(iv) of the MPGs)	
Provide information on how each cooperative approach ensures environmental integrity consistent with decisions adopted by the CMA on Article 6 (para. 77(d)(iv) of the MPGs)	
Provide information on how each cooperative approach ensures transparency, including in governance, consistent with decisions adopted by the CMA on Article 6 (para. 77(d)(iv) of the MPGs)	
Provide information on how each cooperative approach applies robust accounting to ensure, inter alia, the avoidance of double counting, consistent with decisions adopted by the CMA on Article 6 (para. 77(d)(iv) of the MPGs)	
Any other information consistent with decisions adopted by the CMA on reporting under Article 6 (para. 77(d)(iii) of the MPGs)	

Acronyms and abbreviations

BAU	Business-as-usual
BTR	Biennial Transparency Report
CMA	Session of the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement
COP	Conference of the Parties
CRT	Common Reporting Table
CTF	Common Tabular Format
ERT	Expert review team
ETF	Enhanced Transparency Framework
GACMO	Greenhouse Gas Abatement Cost Model
GAINS	Greenhouse Gas and Air Pollution Interactions and Synergies
GDP	Gross Domestic Product
GGA	Global Goal on Adaptation
GHG	Greenhouse Gas
GST	Global Stocktake
IPCC	Intergovernmental Panel on Climate Change
IPPU	Industrial Processes and Product Use
ITMOs	Internationally transferred mitigation outcomes
LDC	Least Developed Country
LEAP	Long-range Energy Alternatives Planning System
LT-LEDS	Long-term low-emission development strategies
LULUCF	Land Use, Land Use Change and Forestry

MPG	Modalities, Procedures And Guidelines
MRV	Measurement, reporting and verification
NDC	Nationally Determined Contribution
NID	National Inventory Document
NIR	National Inventory Report
PaMs	Policies and measures, actions and plans
REDD+	Reducing Emissions from Deforestation and Forest Degradation
SDGs	Sustainable Development Goals
SIDS	Small Island Developing States
TER	Technical expert review
UNFCCC	United Nations Framework Convention on Climate Change

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