Partnership on Transparency
in the Paris Agreement

Accounting for Nationally Determined Contributions

Guidance for Accounting for NDCs with Greenhouse Gas Emissions Targets

Second edition – Updated for the provisions of the Katowice Rulebook and decisions taken at COP26 in Glasgow

On behalf of:

Federal Ministry
for the Environment, Nature Conservation
Nuclear Safety and Consumer Protection

of the Federal Republic of Germany

Imprint

Deutsche Gesellschaft
für Internationale
Zusammenarbeit (GIZ) GmbH

Published by:
Deutsche Gesellschaft für
Internationale Zusammenarbeit (GIZ) GmbH

Registered offices
Bonn and Eschborn, Germany

Dag-Hammarskjöld-Weg 1–5
65760 Eschborn, Germany
T +49 30 33 85 25 15

E info@giz.de
I www.giz.de

Responsible:
Anna Schreyögg

Authors of the 2nd edition:
Daniel Blank (GIZ)
Lambert Schneider, Ralph Harthan, Lorenz Moosmann (Öko-Institut e.V.)

With inputs from:
Simone Gotthardt (GIZ)

Design/layout:
SCHUMACHER – Brand + Interaction Design, www.schumacher-design.de

This project is part of the International Climate Initiative (IKI). The Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection (BMUV) supports this initiative, based on a decision by the German Bundestag.

Berlin, March 2022.

Table of Contents

List of Figures

List of Tables

Glossary

BAU	Business-As-Usual
BTR	Biennial Transparency Report
CMA	Conference of the Parties serving as the meeting of the Parties to the Paris Agreement
COP	Conference of the Parties (to the UNFCCC)
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change
ITMO	Internationally Transferred Mitigation Outcome
LDC	Least Developed Country
MPGs	Modalities, Procedures and Guidelines (here: for the transparency framework for action and support under the Paris Agreement)
MRV	Monitoring, Reporting and Verification
NDC	Nationally Determined Contribution
PaMs	Policies and Measures
SIDS	Small Island Developing States
TACCC	Transparency, accuracy, completeness, consistency and comparability
UNFCCC	United Nations Framework Convention on Climate Change

About the Partnership on Transparency in the Paris Agreement

In May 2010, Germany, South Africa and South Korea launched the Partnership on Transparency in the Paris Agreement (PATPA, formerly: International Partnership on Mitigation and MRV) in the context of the Petersberg Climate Dialogue with the aim of promoting ambitious climate action through practical exchange. With the Paris Agreement entering into force in 2016, the path has now been paved for the Partnership to focus on implementing the Agreement and particularly on the Enhanced Transparency Framework. Over 100 countries, more than half of which are developing countries, have taken part in the Partnership's various activities to date. The Partnership has no formal character and is open to new countries. Currently, the secretariat of PATPA is hosted by the Support Project for the Implementation of the Paris Agreement (SPA).

Find more information on the partnership here:
www.transparency-partnership.net

1. Introduction

The 2015 Paris Agreement requires Parties to regularly communicate nationally determined contributions (NDCs) in which they specify their national climate mitigation targets and actions (Article 4.2). At the same time, the Paris Agreement establishes a transparency framework that requires countries to track and report their progress in implementing and achieving their NDCs (Article 13.7). The Agreement also requires countries to account for their NDCs (Article 4.13).

In December 2018, at the First session of the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement (CMA) held in Katowice, Poland, Parties adopted a rulebook for the operationalization of the Paris Agreement. This rulebook was further amended at COP26 in Glasgow in November 2021. As of 2021, the Paris Agreement rulebook includes following decisions which are particularly relevant to accounting for NDCs:

- *Modalities, procedures and guidelines for the transparency framework for action and support* (Decision 18/CMA.1, hereinafter referred to as "MPGs");
- *Further guidance in relation to the mitigation section of decision 1/COP.21*[1] (Decision 4/CMA.1, hereinafter referred to as the "Katowice mitigation decision");
- *Guidance on cooperative approaches referred to in Article 6, paragraph 2, of the Paris Agreement* (Decision -/CMA.3, hereinafter referred to as the "Article 6.2 guidance"); and
- *Guidance for operationalizing the modalities, procedures and guidelines for the Enhanced Transparency Framework* (Decision -/CMA.3, hereinafter referred to as the "transparency guidance").

The MPGs mainly specify the information which countries have to report in the form of biennial transparency reports (BTRs). This includes information that is relevant to NDC accounting. The Katowice mitigation decision includes further guidance on how countries provide transparency and clarity on their NDC and how they shall account for their NDC. The Article 6.2 guidance includes elements for how countries shall account for their engagement in international carbon market mechanisms. The transparency guidance provides the tabular formats for reporting this information.

While accounting for climate mitigation targets has been a well-known requirement for developed countries with commitments inscribed in Annex B to the Kyoto Protocol, which had to account for their greenhouse gas (GHG) emission reduction commitments, NDC accounting is a new mandatory requirement for all Parties of the Paris Agreement. When the first edition of the present document was published – Accounting of Nationally Determined Contributions. Guidance for the Establishment of an Accounting for NDCs for absolute or relative mitigation targets with a baseline – the rulebook of the Paris Agreement had not yet been adopted. This present second edition, hereinafter referred to as the "Guidance", integrates relevant provisions from the above decisions.

The first edition was elaborated as part of the project Accounting rules for the achievement of the mitigation goals of non-Annex I countries, implemented with the governments of Mexico, Colombia and Costa Rica. This second edition of the report constitutes an update and complete revision, conducted on behalf of the Partnership on Transparency in the Paris Agreement (PATPA).

1 Decision 4/CMA.1, Annex II.

1.1. Application areas of this Guidance

This Guidance provides structure to the process of establishing NDC accounting. It is applicable to two general types of mitigation targets distinguished by their reference period:

- **Base year target,** i.e. a mitigation target expressed in relation to the GHG emissions level in a historical base year or a period of several historical base years (e.g. a 20% GHG emission reduction below 2005 emission levels by 2030); and
- **Baseline scenario target,** i.e. a mitigation target expressed as a deviation from a projected baseline scenario of business-as-usual (BAU) GHG emissions for the target year or period (e.g. a 20% reduction in 2030 emissions compared to the projected business-as-usual scenario emissions for 2030). Such projections typically represent a time series of BAU emissions from a historic start year until the target year or period.

Both types of targets can be expressed in "**relative figures**" (i.e., as a percentage reduction in emissions compared to the base year or scenario) or in "**absolute figures**" (i.e., as an absolute reduction in emissions in tons of CO_2 equivalents (CO_2e) compared to the base year or scenario). Examples of these target types are given in ***Table 1***. In practice, most NDC targets are expressed in relative figures.

Alternatively, these targets can be formulated as "**emissions intensity targets**", i.e., targets expressed as emissions over a "**non-GHG denominator**" such as the gross domestic product (GDP) or the population. For example, a 30% reduction in GHG emissions per unit of GDP by 2030 compared to the GHG emissions per unit of GDP in 2005. Emissions intensity targets can be both base year targets and baseline scenario targets.

By covering base year and baseline scenario targets as well as emissions intensity targets, this Guidance is applicable to a significant part of NDCs, since many countries, including most developing countries and emerging economies, have formulated these types of mitigation targets in their NDCs.

While international rules for accounting for NDCs were not yet available by the publication of the first edition of this Guidance, the MPGs, in particular its chapter III, the Katowice mitigation decision and the decisions adopted in Glasgow have meanwhile closed this gap.

This Guidance offers additional value to these decisions:

- The MPGs and the Katowice mitigation decision, though binding documents that further specify NDC accounting under the Paris Agreement, do not specify how to put accounting into practice. This Guidance provides examples of how these international provisions could be implemented and suggests further elements that are not covered by international decisions to help countries account for their NDCs.
- Countries, among them many developing countries, have been gathering valuable experience in monitoring, reporting and verification (MRV) of mitigation policies and measures. The MPGs also address, in chapter III.D, the tracking of information on mitigation policies and measures. This Guidance makes proposals for ways in which countries may compare and combine information from the MRV of policies and measures with NDC accounting, with a view to better understanding and improving the approaches used for MRV of policies and measures and improving the GHG inventories used for accounting for NDCs. This may also inform the formulation of new NDCs.

Table 1: Examples of targets expressed in absolute and relative figures

	Base year target	Baseline scenario target
In relative figures	Reduction by 10% below 2010 emissions in 2030	Reduction by 10% below BAU emissions in 2030
In absolute figures	Reduction by 1 million t CO_2e below 2010 emissions in 2030	Reduction by 1 million t CO_2e below BAU emissions in 2030

- Many NDCs submitted under the Paris Agreement comprise mitigation targets that are conditional or unconditional on the provision of international support. This Guidance includes elements that help countries to understand the implication of international support on NDC achievement.
- Some countries plan to engage in cooperative approaches under Article 6 of the Paris Agreement. This Guidance provides additional information on how internationally transferred mitigation outcomes (ITMO) can be accounted for.

1.2. Scope and content of this Guidance

This Guidance first explains the main concepts and elements for NDC accounting and tracking progress towards NDCs (***Chapter 2***). To support countries in establishing NDC accounting systems that fulfil international accounting requirements and align with national MRV elements, this Guidance then suggests that countries implement the following steps (***Chapters 3*** to ***6***):

- ***Step 1. Describe the national circumstances and institutional setup:*** Based on section III.A of the MPGs and the Katowice mitigation decision, this step provides guidance on the description of the national circumstances and institutional set-up relevant to NDC accounting.
- ***Step 2. Specify the NDC target(s):*** Based on section III.B of the MPGs and the Katowice mitigation decision, this step describes how countries can further specify and clarify their NDC targets. This step also explains how to fill in the reporting format for the NDC description.
- ***Step 3. Account for the NDC:*** Based on section III.C of the MPGs and the Katowice mitigation decision, this step provides a concrete approach and calculation formulas for the accounting of NDCs. This step also explains how to fill in the reporting formats for indicators and for tracking progress.
- ***Step 4. Assess synergies with tracking of policies and measures:*** Based on section III.D of the MPGs, this step shows how tracking progress of policies and measures (PaMs) that support NDC implementation and achievement can be used to enhance the understanding of how GHG emissions targets were achieved and to partly inform NDC accounting.

This Guidance is complemented by an accompanying **Excel calculation tool** which aims to help countries implement this Guidance.

Before applying this Guidance to NDCs, users should be aware of the following limitations:

- **NDC target types:** The Guidance is exclusively applicable to base year targets and baseline scenario targets expressed as GHG emissions targets, as defined in ***Section 1.1*** above. If an NDC includes one of these types of targets and additionally one or several non-GHG targets (e.g. a renewable energy target), the steps in this Guidance can be applied to the GHG target(s) only. This Guidance does not address accounting for non-GHG targets.
- **Land-use sector:** In accounting for GHG emissions and removals in the land-use sector, specific issues need to be addressed. For example, the MPGs require information on the approach taken to address emissions and removals from natural disturbances on managed lands, information on the emissions and removals from harvested wood products, and information on how the effect of age class structure in forests is addressed. None of these issues are addressed in this Guidance. If a Party includes the land-use sector in its NDC target, it is recommended that the guidance Accounting of the land-use sector in nationally determined contributions (NDCs) under the Paris Agreement is used. In this sense, please note that this Guidance, in contrast to the language in the MPGs and the Katowice mitigation decisions, for simplicity refers to "GHG emissions" and not to "net GHG emissions and removals".
- **Facilitative nature of this Guidance:** This Guidance suggests an accounting approach and provides justification for it. However, this shall in no way be understood as prescriptive; it is meant to be facilitative within the limits of the Guidance's applicability. Countries may also choose to develop their own approaches.

2. Overview of the Paris Agreement's provisions for tracking of progress and accounting for NDCs

This chapter aims to clarify different concepts and elements contributing to the overall understanding of NDC accounting.

2.1. The Enhanced Transparency Framework

Article 13 of the Paris Agreement establishes an "Enhanced Transparency Framework for Action and Support" to "build mutual trust [..] and promote effective implementation". In 2018, the Enhanced Transparency Framework has been further specified through the MPGs. The MPGs comprise eight chapters: I. Introduction, II. National Inventory Report, III. Tracking progress made in implementing and achieving NDCs, IV. Climate change impacts and adaptation, V.–VI. Support provided and mobilized, and needed and received, VII. Technical Expert Review, and VIII. Facilitative, multilateral consideration of progress. Of these eight chapters, chapter III is closely related to NDC accounting because it further specifies the requirement in Article 13.7 of the Paris Agreement for "tracking of progress made in implementing and achieving NDCs".

The MPGs also take up the accounting principles specified in Article 4.13 of the Paris Agreement: the so-called "**TACCC**" principles (transparency, accuracy, completeness, consistency and comparability), **avoidance of double counting** (commonly understood as avoiding that a single emission reduction is used more than once by any Party in achieving its NDC), and **environmental integrity** (which has not been defined in the Katowice decisions but could, in the context of accounting for NDCs, be interpreted to mean that actual GHG emissions are not higher than what countries account for).

Further relevant principles of the MPGs include:

- **Improvement over time:** Continuous improvement of data and processes in all areas of the transparency framework (inventory, progress tracking, support, adaptation, etc.) is addressed. Each Party should "identify, regularly update and include as part of its Biennial Transparency Report information on areas of improvement" (section I.D, paragraph 7).
- **Flexibility:** Given that countries have different capacities, the MPGs offer flexibility to developing country Parties that need it in the light of their capacities. It requires those Parties that apply flexibility to clearly indicate the provision to which it is applied, to clarify the constraints and to provide time frames for improvement (section I.D, paragraphs 5 and 6).
- **Recognizing special needs**: The MPGs recognize the special needs of Small Island Developing States (SIDS) and Least Developed Countries (LDCs) (section I.B, paragraph 3a). LDCs and SIDS may submit the information referred to in the MPGs at their discretion (section I.B, paragraph 11).
- **Efficiency:** Duplication and undue burdens for Parties and for the UNFCCC Secretariat should be avoided while ensuring that Parties maintain at least the frequency and quality of reporting they are obliged to deliver under the Convention (section I.B, paragraphs 3a, 3e and 3f).

2.2. NDC accounting

As per Article 4.13 of the Paris Agreement, "Parties shall account for their nationally determined contributions". For the purpose of this Guidance, **accounting is defined as the process, rules and principles applied in determining achievement of the NDC mitigation target(s)**. This definition is based on the following assumptions:

- **Accounting relates to mitigation only:** Article 4.13 of the Paris Agreements establishes the generic requirement for NDC accounting (i.e. Parties shall account for the emissions and removals corresponding to their NDC). Article 4 mainly relates to climate change mitigation. However, mitigation co-benefits resulting from adaptation actions and/or economic diversification plans are covered by Article 4, and they are also accounted for. In this Guidance, only the mitigation aspect is considered.
- **NDC accounting refers to the achievement of targets:** Accounting is about the achievement of the targets (e.g. whether the anthropogenic emissions and removals exceed the GHG emissions target level) and not about how the targets have been achieved.

Chapter III of the MPGs sets out important requirements when accounting for NDCs: A. National circumstances and Institutional Arrangements, B. Description of the NDC, C. Information Necessary to Track Progress, D. Mitigation Policies and Measures, E. Summary of national GHG emissions and removals, and F. Projections. Section III.C most directly relates to NDC accounting, while sections III.A, III.B, and III.D touch upon matters that are necessary for, or facilitate, robust accounting for NDCs. This Guidance draws on relevant elements from sections III.A – III.D of the MPGs. The Guidance does not address all matters in these sections but only those that are particularly relevant to NDC accounting.

Based on the MPGs and the Katowice mitigation decision, key principles for NDC accounting can be summarized as follows:

- NDC accounting requires the selection of (an) indicator(s) to track progress towards each NDC mitigation target. For a GHG emission target, the relevant indicator is the actual anthropogenic GHG emissions covered by the NDC target.
- Methodologies and metrics provided by Intergovernmental Panel on Climate Change (IPCC) and adopted by the CMA must be used and methodological consistency, including on baselines, must be ensured between the communication and implementation of the NDCs.
- Inclusion of all categories of anthropogenic emissions or removals in the NDC shall be strived for, or a justification of the exclusions be provided. Once a source, sink or activity has been accounted for, it must continue to be accounted for.
- NDC accounting also covers the use of internationally transferred mitigation outcomes (ITMOs) from cooperative approaches under Article 6 of the Paris Agreement.

Lastly, tracking progress and accounting for NDCs also facilitates aggregating Parties' achievements to understand global progress made in mitigation, as assessed under the global stock taking process specified in Article 14 of the Paris Agreement.

2.3. Relationship between domestic targets and NDC targets

Usually, the formulation of NDCs does not happen in isolation but builds on existing and planned climate policies or evolves from domestic mitigation targets. Ideally, domestic mitigation targets and policies are aligned with, or aggregated into, the NDC. In this sense, domestic mitigation targets may represent a disaggregation of an NDC target. For instance, the NDC target could include an economy-wide mitigation target, while the government may have adopted further domestic mitigation targets that break down the economy-wide NDC target into sectoral targets. There may also be cases in which domestic mitigation targets have already existed before the NDC was formulated and are thus not essentially a breakdown of the NDC.

Table 2: Relevance of types of mitigation targets to the NDC

<table>
<tr><th>Not specified in the NDC</th><th>Specified in the NDC</th></tr>
<tr><td>Domestic target(s)
Mitigation targets not included in NDCs but adopted by national or sub-national authorities within the country. Those may complement NDC targets. By sharing responsibilities, they can strengthen the ability of the country to achieve its NDC.</td><td>NDC target(s)
All mitigation target(s) communicated in NDCs to the UNFCCC.</td></tr>
<tr><td>–––</td><td>Conditional / Unconditional target(s)
An unconditional target is a target that the country intends to achieve without international support. In contrast, a conditional target is a target that a country intends to achieve only on the condition that it receives relevant international support.</td></tr>
<tr><td colspan="2">Aggregated / Disaggregated target(s)
A disaggregated target is the breakdown of a target into sub-targets. Vice versa, an aggregated target is the sum of sub-targets. Examples are sectoral targets (as disaggregated targets) in conjunction with an economy-wide target (as aggregated target). Typically, the aggregated target is communicated in the NDC, while disaggregated targets may or may not be included in the NDC.</td></tr>
<tr><td colspan="2">GHG / Non-GHG target(s)
A GHG target is quantified in greenhouse gas emissions metrics (t CO_2e), covering gases addressed under the UNFCCC. In contrast, non-GHG target(s) refer to measures whose effects ultimately also contribute to climate change mitigation but are not quantified in greenhouse gas emission metrics (e.g. megawatts of renewable energy generation capacity to be installed).</td></tr>
</table>

Domestic targets may have a different coverage or scope (e.g. covering only a region of the country) than the NDC target. In terms of NDC accounting, the simultaneous existence of different layers of mitigation targets in one country raises the need to clearly distinguish between NDC targets and domestic targets. ***Table 2*** above introduces a terminology to differentiate these target types in the context of this Guidance. The table also explains other features of different types of targets.

Although this Guidance addresses only accounting for NDC targets, the following recommendations regarding domestic targets may be helpful as they matter in the context of NDC accounting:

- When it comes to the implementation of NDCs, setting domestic targets, for example in the form of a disaggregation of the NDC target into sectoral targets, may be helpful. This may facilitate the domestic planning process of how the NDC is achieved and help assign responsibilities to different domestic institutions for achieving the sectoral targets.
- Countries should be clear about which targets they communicate through the NDC to the international community, and which targets they keep exclusively as domestic.
- NDC accounting does not apply to domestic targets. If countries establish domestic targets, tracking the achievement of those targets is still important, though it is not required under the Paris Agreement.

2.4. Forms of progress tracking

Managing mitigation actions to ensure that the NDC is achieved is a key challenge for policymakers. To take fully informed decisions, policymakers may benefit from the simultaneous implementation of different forms of progress tracking. Basically, three forms may be available. Two of them are required under the Paris Agreement and one would follow purely domestic rules (see ***Table 3***).

Tracking progress towards NDC targets and accounting for NDC targets answers the question of how much progress the country has made towards achieving its NDC targets over time and to what extent the country has achieved its NDC. This is implemented by reporting a time series of the relevant indicator and comparing it to the target level.

A second form of progress tracking relates to the tracking of "mitigation policies and measures, actions and plans" as set out in section III.D of the MPGs. This concept has previously also been referred to as MRV of Policies and Measures (PaMs). MRV of policies and measures has been a voluntary action for developing countries, with little specifications of what and how to implement MRV systems. The MPGs now provide more specific requirements. As part of the information on tracking progress towards NDC, paragraph 80 of the MPGs requires all countries to "provide information on actions, policies and measures that support the implementation and achievement of its NDC under Article 4 of the Paris Agreement, focusing on those that have the most significant impact on GHG emissions or removals and those impacting key categories in the national GHG inventory." Paragraph 85 of the MPGs adds that "each Party shall provide, to the extent possible, estimates of expected and achieved GHG emissions reductions for its actions, policies and measures (…)". The MPGs provide some flexibility in the tracking of PaMs by requiring it only "to the extent possible". Moreover, the paragraph refers to those PaMs "that have the most significant impact on GHG emissions or removals", a focus that makes sense when factoring in the purpose of this form of progress tracking – i.e., understanding generally whether certain PaMs deliver or not – and also when factoring in associated costs and methodological challenges (e.g. overlapping PaMs impacts).

A third form of progress tracking is the MRV of domestic mitigation targets. Elements of MRV of domestic mitigation targets are already in place and known in many countries. As with PaMs tracking, policymakers may also wish to evaluate the overall socio-economic impacts of domestic targets. Such evaluations may address questions around social aspects of measures (e.g. job creation, distribution effects) or other environmental aspects (air quality, etc.).

While all three forms of progress tracking can stand independently to a certain degree, exploiting synergies among them merits attention. Possible ways of exploiting synergies are discussed in Step 4 (***Chapter 6***).

Table 3: Forms of tracking progress

Form	Main evaluation question	Paris Agreement reference	Concept	Level
NDC progress tracking and accounting	To what extent is the country on track to achieve its NDC target(s) and has it achieved its NDC?	Art. 13 & MPGs, section III.C, Art. 4.13 & Katowice mitigation decision	Tracking progress towards and accounting for NDCs	International requirement
PaMs tracking*	How are policies and measures contributing to NDC implementation and achievement?	Art. 13 & MPGs, section III.D	Information on PaMs that support NDC implementation and achievement	International requirement
Domestic target tracking*	To what extent is the country on track to achieve relevant domestic targets?	None	MRV for relevant target types (e.g. emission targets or specific policies)	Domestic rules

*This may include tracking of co-benefits beyond mitigation impacts, such as other environmental (e.g. other air pollutants), social (e.g. job creation from renewable energies), or economic impacts.

3. Step 1: Describe the national circumstances and institutional set-up

This step is based on section III.A of the MPGs, but it looks at its contents from an NDC accounting perspective. With this focus on NDC accounting, countries still must apply section III.A of the MPGs in their entirety, meaning also those parts not touched upon here.

Section III.A of the MPGs provides a comprehensive list of national circumstances that need to be described. The MPGs require all Parties to provide information on at least the following national circumstances: a) government structure, b) population profile, c) geographical profile, d) economic profile, e) climate profile, and f) sector details. The MPGs also require Parties to describe how those circumstances affect GHG emissions and removals over time. It is recommended this latter aspect receives some emphasis since proper understanding of the interrelation of national circumstances and GHG emissions and removals can improve the formulation of the NDC. If the national circumstances that affect GHG emissions and removals are identified and their relation to GHG emissions and removals is understood, then baseline scenarios can become more robust and transparent (to third Parties).

Beyond national circumstances, the MPGs also require Parties to provide "information on the institutional arrangements in place to track progress made in implementing and achieving its NDC under Article 4". Parties are also required to describe "legal, institutional, administrative and procedural arrangements" (paragraph 62) in terms of NDC accounting.

Whenever a Party has decided to engage in cooperative approaches involving internationally transferred mitigation outcomes (ITMOs) under Article 6 of the Paris Agreement, also institutional arrangements for tracking ITMOs must be described.

For each subsequent Biennial Transparency Report (BTR), it is enough to update relevant information concerning institutional set-up and national circumstances. Information reported previously may be referenced.

4. Step 2: Specify the NDC target(s)

This step refers to the aspects covered in section III.B of the MPGs and Annex I of the Katowice mitigation decision, focusing on aspects relevant to NDC accounting. Yet, describing NDCs under Article 4 goes beyond that, so when describing NDCs, all elements of the MPGs should be considered.

As per section III.B of the MPGs (paragraph 64), the NDC shall be described by providing information, as applicable, on a) target type (e.g. fixed-level emission reduction), b) target year(s) / period(s) and whether they are single-year or multi-year target(s), c) reference point(s), level(s), baseline(s), base year(s) or starting point(s), and their respective value(s), d) time frame(s) and/or periods for implementation, including start and end date, e) scope and coverage, including, as relevant, sectors, categories, activities, sources and sinks, pools and gases, f) intention to use cooperative approaches that involve the use of ITMOs under Article 6, and g) any updates or clarifications of previously reported information.

The information listed in section III.B of the MPGs is very much in line with the information specified in Annex I of the Katowice mitigation decision. This information was provided by many Parties when they submitted their new or updated NDCs in or around the year 2020. However, as the information specified in Annex I to the Katowice mitigation decision is mandatory from the second NDC onwards, some Parties did not communicate all this information. Annex I of the Katowice mitigation decision further clarifies that quantifiable information shall be provided for the reference point, reference indicators and the targets, whereby indicating the source of information for the reference point. Paragraph 1(f) of Annex I to the Katowice mitigation decision also requires countries to describe the circumstances under which the Party may update the value of the reference indicators. This topic is discussed further below.

A further important choice is the global warming potential (GWP) values used in accounting for the NDC. Paragraph 37 of the MPGs requires all countries, in reporting national GHG inventories, to apply the 100-year time horizon GWP values from the Fifth Assessment Report of the IPCC or any newer values adopted by the CMA. Paragraph 1(a) of Annex II to the Katowice mitigation decision further specifies that countries shall "account for anthropogenic emissions and removals in accordance with methodologies and common metrics assessed by the IPCC and in accordance with decision 18/CMA.1". This means that countries shall use the same GWP values for accounting for their NDCs. However, Annex II to the Katowice mitigation decision is only mandatory for second and subsequent NDCs, and not yet to countries' first NDCs. Nevertheless, this guidance recommends that countries apply the 100-year time horizon GWP values from the Fifth Assessment Report when they update their first NDCs in order to ensure consistency with national GHG inventories and to facilitate the engagement in cooperative approaches under Article 6.

4.1. Specify a 'Base year target'

For base year targets, i.e. targets formulated with respect to a historical reference year or period, the requirements set out in the MPGs, section III.B, are straightforward. Countries need to specify:

- the base year (e.g. 1990) or period (e.g. average emissions in the period 2000 to 2005);

- the coverage in terms of greenhouse gases, sectors, categories, activities, and carbon pools in the LULUCF sector;
- the GHG emissions level in the base year or period;
- the target year or period;
- the NDC implementation period (e.g. 2021 to 2030); and
- the reduction effort (e.g. a 30% emissions reduction in the target year or period compared to the base year or period).

The same information also needs to be provided for emissions intensity targets (e.g. a reduction in GHG emissions per GDP or per capita in relation to a historical base year or period).

4.2. Specify a 'Baseline scenario target'

For baseline scenario targets, i.e. targets expressed as a deviation from a projected GHG emissions baseline scenario, the same information as for base year targets needs to be provided. The exception is that the target is not derived from a base year or base period but from the projected GHG emissions for the target year or period. For this reason, the projected emissions in the target year or period need to be provided. The same information also needs to be provided for emissions intensity targets.

Developing the GHG emissions baseline scenario requires identifying main drivers and their development over the NDC implementation period. Typically, among those are economic growth, population growth, consumption patterns, production patterns, or any other national circumstances influencing emissions and removals. Baseline scenarios are **counterfactual** scenarios built on assumptions about the future that cannot be verified. Since the baseline scenario describes the development of GHG emissions and removals in the absence of the mitigation policies over time (typically in a business-as-usual scenario), the baseline scenario is a **time series** of the projected emissions and removals development.

A transparent description of baseline scenarios and underlying assumptions is indispensable. The MPGs, section III.C, paragraphs 74 and 75, require information on the methodology applied to establish the baseline as well as on corresponding data sources and models used. Moreover, describing key parameters, key assumptions, and corresponding levels of uncertainty can provide further clarity and transparency. Annex I to the Katowice mitigation decision, paragraph 5(f), provides a list of information to enhance clarity of baseline scenario targets. The following sections describe actions that are recommended to be taken for specifying baseline scenario targets.

4.2.1. Assign policies and measures to the baseline or mitigation scenario

To estimate the baseline, it is necessary to differentiate which policies and measures (PaMs) are part of the baseline scenario and which ones will be considered as part of the efforts to achieve the NDC target, here referred to as the 'mitigation scenario'. In some instances, some parts of a policy or measure may correspond to the baseline scenario and other parts to the mitigation scenario. To attribute PaMs to either the baseline scenario or the mitigation scenario, any of the following methods may be applied, and the choice should be explained:

- **Defining a cut-off date:** Define that all PaMs adopted before a certain point in time (for example, the year when a climate strategy was adopted or the year when the NDC was communicated) are part of the baseline, while the PaMs adopted thereafter are assigned to the mitigation scenarios (i.e. they will be used to deviate from the baseline and achieve the target).
- **Defining quantitative limits for PaMs**: Based on the scope of a policy or measure, determine which part counts towards the baseline and which part counts towards the mitigation target (for example, for a solar panel development policy, it could be determined that the first 100,000 panels count towards the baseline since the underlying renewable energy policy had already existed pre-2020. Every additional panel, however, would count towards the NDC target).

4.2.2. Align the baseline scenario with the national GHG inventory

The baseline scenario should depart from the (historical) emissions reported in the national GHG inventory. The scope of this inventory generally covers all gases and sectors, which the NDC target not necessarily does. Depending on how a Party defines its NDC target(s), the NDC may only cover some gases, sectors, categories, and, in the case of the land-use sector, activities and carbon pools. The baseline should thus be construed consistently with the coverage of the NDC target and hence the corresponding part of the inventory for the baseline's base year. Furthermore, the baseline scenario should use the same sector definitions, the same gases, the same metrics and methodologies as the national GHG inventory (Paragraph 2b of Annex II of the Katowice mitigation decision). According to paragraph 67 of the MPGs, information on the baseline must be updated if the inventory is recalculated. If there are methodological inconsistencies with the national inventory these should be explained as per section III.C, MPGs, paragraph 76(c).

Unlike national GHG inventories that quantify historical emissions, baseline scenarios estimate emissions for a future year, based on counterfactual modelling. Counterfactual means that a baseline scenario cannot be observed in the "real world" since it is built on assumptions about the development in the absence of climate policies. For instance, solar photovoltaic panels could already be sold in a country, but a new promotional program is about to be launched to achieve the NDC which contains a target in terms of installed power generation capacity of solar panels. While the installed capacity of solar panels can be measured, it can never be known for certain how many solar panels and thus power generation capacity would have been installed without this program. For this reason, assumptions about the capacity of solar panels installed in the baseline scenario must be made.

The MPGs also require Parties to strive "to avoid overestimating or underestimating projected emissions and removals used for accounting" (paragraph 2c). Baselines should thus represent a **best estimate** for the most likely development and **not include a bias towards under- or overestimating the baseline scenario**.

Key parameters of baseline emission scenarios may for instance encompass GDP development, population growth, energy efficiency, introduction of eco-technologies and fuel prices. Predictions of those key parameters, though limited in number, are associated with a high degree of uncertainty. For example, GDP projections by the Organization for Economic Cooperation and Development and the International Monetary Fund show a typical error of 1.6 percentage points in two-year terms. This holds true for "normal times"; "rough times" such as economic recessions are even harder to predict, yet they occur. Considering that most baseline scenarios of current NDCs have a time horizon of 10 to 15 years, it is clear that establishing baselines is associated with a lot of uncertainty. Yet, on the flipside, countries could decide to update baseline scenarios over time in order to reflect, for some parameters, observed developments. Such parameters typically comprise economic development, population growth, or other key determinants if these can be measured, such as fuel prices. Other baseline parameters are difficult to update since it is difficult to know what would have happened in the absence of the climate policy. Updates to baselines are further discussed in ***Section 4.2.4*** below.

4.2.3. Identify key baseline parameters

When preparing the baseline scenario, the parameters that most affect its development, such as the GDP growth, should be identified. For this purpose, the description of national circumstances and how those affect GHG emissions as per section III.A of the MPGs might be helpful. It should be borne in mind that some parameters influence not only the baseline, but also the mitigation scenario. This is particularly important when comparing NDC target achievement with mitigation outcomes of the most important policies and measures (see ***Step 4***). The same parameters should be used in both assessments to ensure comparability. Methods to identify key parameters are described further below.

4.2.4. Clarify whether the baseline scenario will be updated

There are two generic forms of baselines: fixed and dynamic. A fixed baseline is not updated over time, whereas a dynamic one may be updated to reflect the actual development of key parameters against the ones assumed at the time of the communication of the NDC. Relevant parameters to be updated may include, for example, GDP, population growth, or fuel prices. Each form of baseline has specific advantages and disadvantages as explained in ***Table 4***.

Table 4: Comparison of fixed and dynamic baselines

Baseline	Pros	Cons
Fixed	• No resources needed for repeated updating • Provides certainty on the emission level of the NDC target, thereby facilitating the estimation of global ambition of aggregated NDCs	• Higher uncertainty of achievability of NDC target(s) (due to unpredictable/ unpredicted factors, see example in the box below)
Dynamic	• Predefined circumstances under which the baseline will be updated provides transparency to the international community (as long as criteria and thresholds for the update incl. their key parameters are clear) • Higher certainty about achievability of the NDC target(s)	• The unpredictability of the effects of updates involves a higher uncertainty about the aggregate of global emission reductions

In updating baselines, information underlying the update of the baselines needs to be provided, including "information on sources of data used in quantifying references points" (paragraph 1e) along with "information on the circumstances under which the Party may update the value of the reference indicators" (paragraph 1f of Annex I of the Katowice mitigation decision). A Party should thus not take ad-hoc decisions to update their baseline at any specific point in time during the implementation period of the NDC but should define the circumstances under which it would update the baseline beforehand.

Updates of baselines may be undertaken not only to reflect the actual development of key parameters such as GDP growth but also to ensure methodological consistency. According to paragraph 2 of Annex II of the Katowice mitigation decision, "methodological consistency, including on baselines, between the communication and implementation of nationally determined contributions" is to be ensured. The paragraph specifically refers to "technical changes to update reference points, reference levels or projections" to reflect "changes in the Party's inventory" or "improvements in accuracy that maintain methodological consistency".

Example:

A baseline is calculated based on the assumption of an annual economic growth rate of 5% from 2010 to 2030. The country could decide to update the baseline to incorporate the actual economic growth instead of the previous assumption of 5%. If the baseline is not updated, part of the NDC achievement might be attributed to mitigation actions, while another part may be due to unexpected slower economic development, which makes it easier to achieve the NDC target since slower economic growth usually results in lower emissions. In the end, however, it is a political decision whether to opt for a dynamic baseline, i.e. a baseline that may be updated and incorporates unexpected developments of key parameters, or whether the baseline remains fixed and thus ignores unexpected development of key baseline parameters.

4.3. Completing the relevant reporting table

When Parties submit their Biennial Transparency Report, they have to provide the information described in ***Sections 4.1*** and ***4.2***, above. For submitting this information, a pre-defined reporting format is available. It can be found in the appendix to Annex II of the transparency guidance. The use of this reporting format is voluntary, and Parties may alternatively provide the related information in a freely chosen format in their Biennial Transparency Report. However, it is recommended that the defined reporting format is used because it helps country experts to ensure that all required elements are included. It also helps readers and reviewers to understand this information and it may reduce the number of questions raised during the review process. ***Table 5*** provides a filled-in reporting format for an example using a base year target.

Table 5: Example of a completed reporting format for an NDC target (Appendix to Annex II of the transparency guidance)

	Description
Target(s) and description, including target type(s), as applicable	• Economy-wide net greenhouse gas emission reduction of 20% by 2030 compared to the base year 2005 • Target Type: economy-wide emission reduction target
Target year(s) or period(s), and whether they are single-year or multi-year target(s), as applicable	• Target year: 2030 • Single-year target
Reference point(s), level(s), baseline(s), base year(s) or starting point(s), and their respective value(s), as applicable	• Reference level: Economy-wide net greenhouse gas emissions and removals in 2005 • Value: 100 Mt CO_2e
Time frame(s) and/or periods for implementation, as applicable	• Period for implementation: 2021-2030
Scope and coverage, including, as relevant, sectors, categories, activities, sources and sinks, pools and gases, as applicable	• Sectors: Energy, industrial processes and product use, agriculture, land use, land use change and forestry, waste • Coverage: All emissions and removals on the national territory • Gases: CO_2, CH_4, N_2O, HFCs, PFCs, SF_6, NF_3
Intention to use cooperative approaches that involve the use of ITMOs under Article 6 towards NDCs under Article 4 of the Paris Agreement, as applicable	The Party does not intend to use cooperative approaches
Any updates or clarifications of previously reported information, as applicable	The reference level has been updated due to recalculations in the national greenhouse gas inventory. The value communicated in the NDC was 101 Mt CO_2e. The updated reference level (emissions level in the base year) is 100 Mt CO_2e.

As can be seen in the example, the table allows for providing the information on a base year target in a concise manner. In case of a baseline scenario target, for example an emission reduction compared to a baseline, the following information has to be provided:

- In the first row, the target is identified as "emission reduction below a projected baseline".
- In the third row, the baseline has to be provided instead of the reference level. For an implementation period of 2021 to 2030, the baseline consists of emission levels in each year from 2021 to 2030. It is recommended that these ten years and emission values are entered directly in the table.
- All other entries in the table remain the same as in the case of a base year target.

The reporting format allows for entering a combination of numerical and textual information. For some targets, a more detailed structure of the table would be more helpful. However, the table was designed in a rather generic way to ensure that the same table accommodates all types of NDCs. If additional explanations are needed to fully describe the target, such information can be provided in the Biennial Transparency Report.

5. Step 3: Account for the NDC's mitigation target(s)

This step relates closely to section III.C of the MPGs and Annex II of the Katowice mitigation decision. This Guidance goes beyond the provisions in these two documents by suggesting a concrete accounting approach. In terms of the provisions relating to reporting progress, the MPGs and the Katowice mitigation decision contain further information not discussed here. For the accounting for emissions and removals from the land-use sector, further guidance should be sought, such as from the publication Accounting of the land-use sector in nationally determined contributions (NDCs) under the Paris Agreement (2018).

5.1. Background on accounting provisions

This section provides an overview of the main actions that countries need to take when accounting for their NDC targets. First, the MPGs require countries to define an indicator or indicators to track progress made in the implementation and achievement of the NDC (paragraph 65). Second, countries must provide the value of the indicator for a reference point, level, baseline, base year or starting point (paragraph 67). Further, countries must provide for each reporting year within the NDC implementation period the most recent information for each indicator (paragraph 68) and compare it to the reference value (paragraph 69). For the last year of the NDC's implementation period, each country must additionally provide an assessment of whether it has achieved the target(s) for its NDC (paragraph 70).

In short, four actions thus constitute the NDC accounting approach as defined by the MPGs. If a NDC includes several targets, these actions should be applied to each target:

- **Action I: Identification of indicator(s)**. Countries shall identify an indicator for each target included in their NDC. The indicator applied shall be relevant to the target. This means that for quantitative targets the indicator must also be quantitative. The indicator should also be in the same metric as the target. For example, if a target is expressed as a GHG emissions target, the indicator should be the GHG emissions covered by the NDC, reported in the same GWP metric.
- **Action II: Provision of the reference value(s) for the indicator(s)**. Countries shall provide the respective value(s) of the indicator(s) for the relevant reference point(s), level(s), baseline(s), base year(s) or starting point(s). In the context of the target types considered in this Guidance, the reference value is the value of the indicator in the base year or period (in the case of base year targets) or the projected BAU value in the target year or period (in the case of baseline scenario targets). For example, if an NDC target is a GHG emission reduction compared to 1990, the GHG emissions as covered by the NDC target should be provided for 1990.
- **Action III: Provision of a time series of the indicator value(s) and comparison of the most recent indicator value with the reference value.** Countries must provide the most recent indicator value(s) as well as the value(s) for previous years of the NDC implementation period (paragraph 67 and 77(a)(ii)). This means that countries must provide a time series of indicator values. The most recent indicator values(s) must be compared to the reference value(s) (paragraph 67).

- **Action IV: Assessment of the target achievement.** In the first BTR that includes information on the end year of the NDC implementation period, countries must assess whether the target has been achieved (paragraph 70). This means that the indicator value in the target year or period is compared with the target level. This requires that the target level is expressed in the same metrics as the indicator. Depending on the type of target, the NDC target level may need to be calculated. For example, if the target is expressed as a 20% reduction in GHG emissions compared to 1990 emissions, which corresponded to 100 Mt CO_2e, the target level would be calculated as 80 Mt CO_2e.

The next sections provide further information on how these four actions can be implemented. ***Section 5.2*** includes guidance for countries that have base year targets, including intensity targets. ***Section 5.3*** includes guidance for countries that have baseline scenario targets, also including intensity targets. If a country has several targets, the actions described in these two sections must be applied to each target. ***Section 5.4*** provides guidance on the accounting of conditional and unconditional targets. ***Section 5.5*** provides guidance for countries that plan to engage in cooperative approaches under Article 6 of the Paris Agreement.

5.2. Accounting for base year targets

This section provides guidance on how the four steps for NDC accounting can be applied in the specific context of base year targets.

5.2.1. Action i: Identification of the indicator

The indicator must be relevant for the NDC as specified in ***Step 2*** of this Guidance. This Guidance focuses on GHG emission targets. The indicator should thus be the GHG emissions covered by the NDC in the relevant reporting year, expressed in t CO_2e. It is hereinafter referred to as *Emissions*:

> ***Emissions:*** GHG emissions covered by the NDC in the relevant reporting year (t CO_2e)

In determining the emissions covered by the NDC, countries must take into account which greenhouse gases, sectors, categories, and activities and carbon pools in the LULUCF sector are included in the NDC.

If the GHG emissions target is economy-wide, the total GHG emissions as reported in the national GHG inventory must be used. Where the GHG emission target is not economy-wide, the relevant emission categories and gases from the national GHG inventory must be added together to determine the GHG emissions covered by the NDC. This ensures consistency between the national GHG inventory and the indicator used to track progress towards the NDC target.

In the case of intensity targets, countries have two options: First, they may use the GHG emissions covered by the NDC as indicator. In this case, the target level, as determined in action iv, needs to be expressed in GHG emissions. This requires converting the target level expressed as GHG emissions per unit of GDP or capita ex-post into an absolute GHG emissions level (see further guidance under ***Action iv*** below). Alternatively, countries may use the GHG emissions covered by the NDC divided by the relevant intensity denominator as indicator. The metric of this indicator would be t CO_2e per unit of GDP or per capita (or relevant other denominators), hereinafter referred to as *Intensity*:

> ***Intensity:*** GHG emissions covered by the NDC per unit of GDP in the relevant reporting year (e.g. t CO_2e / USD)

or

> ***Intensity:*** GHG emissions covered by the NDC per population in the relevant reporting year (t CO_2e / capita)

The MPGs require that countries provide information on their GHG emissions covered by the NDC, regardless of whether they use an indicator that is in t CO_2e or not (paragraphs 77(b) and (d)). Therefore, and in order to

enhance transparency, countries that use an intensity indicator (e.g. t CO_2 / GDP) should provide information on both the emissions in t CO_2e and the denominator values used to determine the intensity level. In this Guidance, the denominator values are referred to as the parameter *Denominator*:

> ***Denominator:*** GDP or population (or other denominator used) in the relevant reporting year (e.g. USD or capita)

The GHG emissions intensity is then determined as follows:

> ***Intensity = Emissions / Denominator***

5.2.2. Action ii: Provision of the reference value for the indicator

The reference value for the indicator is its value for the base year or period, hereinafter referred to as *RefEmissions* (if the indicator is expressed as emissions) and *RefIntensity* (if the indicator is expressed as emissions intensity). For intensity targets, we also define here the parameter *RefDenominator* as the value of the denominator (GDP or population) in the base year or period:

> ***RefEmissions:*** GHG emissions covered by the NDC in the base year or period (t CO_2e)

For intensity targets:

> ***RefDenominator:*** GDP or population in the base year or period (e.g. USD or capita)
>
> ***RefIntensity:*** GHG emissions covered by the NDC per unit of GDP or population in the base year or period (t CO_2e / USD or t CO_2e / capita)

with

> ***RefIntensity = RefEmissions / RefDenominator***

5.2.3. Action iii: Provision of a time series of the indicator value(s) and comparison of the most recent indicator value(s) with the reference value(s)

The MPGs require Parties to provide the most recent information for each selected indicator for each reporting year (paragraph 68) and information for previous reporting years of the NDC implementation period (paragraph 77(b)). This means that countries shall provide a time series of their GHG emissions covered by the NDC (*Emissions*) and, in the case of GHG intensity targets, a time series of the relevant denominator (*Denominator*) and the GHG emissions intensity (*Intensity*). Moreover, the MPGs require comparing the most recent information with the reference value (paragraph 69).

In providing time series information, it is important that methodological consistency is ensured. This means that the same methods and a consistent approach should be used for each reported year (see section II.C, paragraphs 26–28, of the MPGs for GHG inventories). Countries are encouraged to improve their emissions and other data over time, moving towards more accurate methods. In practice, national GHG inventories are often recalculated due to such methodological improvements. If new methods are applied, it is important to recalculate the entire time series of the emissions or other relevant data. This is to ensure methodological consistency and to avoid that changes in emission trends (or GDP or population data) are introduced as a result of changes in methods or assumptions across the time series (see section II.C, paragraph 27, of the MPGs for GHG inventories). Any changes in the methods and recalculations must also be applied to the reference value in the base year target or period (paragraph 67).

For base year targets, countries should provide a full time series from the base year or period until the most recent reporting year. Such a time series should also be provided for all other relevant parameters. For intensity targets, this includes both the GHG emissions covered by the NDC and the denominator.

When comparing the most recent indicator with the reference value, countries could determine the absolute and/or the relative change of the respective values:

- The **absolute** change in GHG emissions can be determined as follows:

AbsCompEmissions = Emissions – RefEmissions

Where:

AbsCompEmissions: Absolute change in GHG emissions covered by the NDC in the relevant reporting year compared to base year or period (t CO_2e)

Emissions: GHG emissions covered by the NDC in the relevant reporting year (t CO_2e)

- The **relative** change in GHG emissions can be determined as follows:

RelCompEmissions = (Emissions / RefEmissions – 1) * 100

Where:

RelCompEmissions: Relative change in GHG emissions covered by the NDC in the relevant reporting year compared to base year or period (%)

- For **intensity targets**, the **absolute** change in GHG emissions intensity can be determined as follows:

AbsCompIntensity = Intensity – RefIntensity

Where:

AbsCompIntensity: Absolute change in GHG emissions covered by the NDC per unit of GDP or population in the relevant reporting year compared to base year or period (t CO_2e / USD or t CO_2e / capita)

Intensity: GHG emissions covered by the NDC per unit of GDP or population in the relevant reporting year (e.g. t CO_2e / USD or t CO_2e / capita)

- For **intensity targets**, the **relative** change in GHG emissions intensity can be determined as follows:

RelCompIntensity = (Intensity / RefIntensity – 1) * 100

Where:

RelCompIntensity: Relative change in GHG emissions covered by the NDC per unit of GDP or population in the relevant reporting year compared to base year or period (%)

5.2.4. Action iv: Assessment of target achievement

The MPGs require countries to assess whether the NDC target has been achieved (paragraph 70). This means that the indicator value in the target year or period is compared with the target level in that year or period.

The first consideration relates to the time frame of the target. If the target is for a single year, target achievement is determined for this single year, noting that countries still need to report their emissions for other years. In the case of multi-year targets (e.g. covering the period from 2021 to 2030), the comparison of the indicator value with the target level applies to the entire period, meaning, for example, the aggregate of emissions over the period.

The second consideration relates to whether the NDC already specifies the target as a GHG emissions level or a GHG emissions intensity level. For example, if the target is specified as a 25% emissions reduction below the base year emissions, then the target emissions level is the base year emissions level minus 25%. The target emissions level can thus be determined as follows:

- For base year targets expressed as a percentage reduction:

TargEmissions = RefEmissions * (1 – PercReductionTarget)

Where:

TargEmissions: Target emissions level in the target year or period (t CO_2e)

PercReductionTarget: Percentage reduction target, expressed as percentage reduction in emissions in the target year or period compared to the base year or period (%)

- For base year intensity targets expressed as a percentage reduction:

TargIntensity = RefIntensity * (1 – PercReductionTarget)

Where:

TargIntensity: Target emissions intensity in the target year or period (e.g. t CO_2e / USD or t CO_2e / capita)

PercReductionTarget: Percentage reduction target, expressed as percentage reduction in emissions intensity in the target year or period compared to the base year or period (%)

Note that for intensity targets, the final target emissions level can only be determined ex-post, i.e., after the target year or period, because only by then the actual denominator (e.g. the GDP) in the target year or period will be known. In the other cases, the target level can be determined already ex-ante when the NDC is communicated, or further clarified or updated.

Further note that for multi-year intensity targets the average emissions intensity may be calculated as the average emissions over the multi-year period divided by the average GDP or population over the multi-year period.

Lastly, countries shall assess target achievement by comparing the indicator value for the applicable single-year or multi-year period with the target level for the applicable single-year or multi-year period. If the indicator is the GHG emissions covered by the NDC, the assessment compares the emissions in the applicable period with the target emissions level (both in t CO_2e). If the indicator is a GHG emissions intensity, the intensity is compared with the target intensity level (e.g. both in t CO_2e / USD). If the indicator level is smaller or equal to the target level, the target has been achieved. If the indicator level is above the target level, the target has not been achieved. Mathematically, the result of the assessment of target achievement may be captured by a Boolean parameter *TargAchievement* that can only assume the value true or false. If its value is 'true' the target is achieved, if the value is 'false' the target is not achieved:

- For indicators in GHG emissions:

TargAchievement = Emissions ≤ TargEmissions

Where:

TargAchievement: Binary (Boolean) (true / false)

- For indicators expressed as emissions intensity:

TargAchievement = Intensity ≤ TargIntensity

Where:

TargAchievement: Binary (Boolean) (true / false)

5.3. Accounting for baseline scenario targets

This section provides guidance on how the four steps for NDC accounting can be applied in the specific context of baseline scenario targets.

5.3.1. Action i: Identification of the indicator

The indicator must be relevant for the NDC as specified in ***Step 2*** of this Guidance. This Guidance focuses on GHG emission targets. The indicator should thus be the GHG emissions covered by the NDC in the relevant reporting

year, expressed in t CO_2e. It is hereinafter referred to as *Emissions*:

> ***Emissions:*** GHG emissions covered by the NDC in the relevant reporting year (t CO_2e)

In determining the emissions covered by the NDC, countries have to take into account which greenhouse gases, sectors, categories, and activities and carbon pools in the LULUCF sector are included in the NDC.

If the GHG emissions target is economy-wide, the total GHG emissions as reported in the national GHG inventory must be used. Where the GHG emission target is not economy-wide, the relevant emission categories and gases from the national GHG inventory must be added together to determine the GHG emissions covered by the NDC. This ensures consistency between the national GHG inventory and the indicator used to track progress towards the NDC target.

In the case of intensity targets, countries have two options: First, they may use the GHG emissions covered by the NDC as indicator. In this case, the target level, as determined in action iv, needs to be expressed in GHG emissions. This requires converting the target level expressed as GHG emissions per unit of GDP or capita ex-post into an absolute GHG emissions level (see further guidance under action iv below). Alternatively, countries may use the GHG emissions covered by the NDC divided by the relevant intensity denominator as indicator. The metric of this indicator would be t CO_2e per unit of GDP or per capita (or relevant other denominators), hereinafter referred to as *Intensity*:

> ***Intensity:*** GHG emissions covered by the NDC per unit of GDP in the relevant reporting year (e.g. t CO_2e / USD)

or

> ***Intensity:*** GHG emissions covered by the NDC per population in the relevant reporting year (t CO_2e / capita)

The MPGs require that countries provide information on their GHG emissions covered by the NDC, regardless of whether they use an indicator that is in t CO_2e or not (paragraphs 77(b) and (d)). Therefore, and in order to enhance transparency, countries that use an intensity indicator (e.g. t CO_2 / GDP) should provide information on both the emissions in t CO_2e and the denominator values used to determine the intensity level. In this Guidance, the denominator values are referred to as the parameter *Denominator*:

> ***Denominator:*** GDP or population (or other denominator used) in the relevant reporting year (e.g. USD or capita)

The GHG emissions intensity is then determined as follows:

> ***Intensity = Emissions / Denominator***

5.3.2. Action ii: Provision of the reference value for the indicator

The reference value for the indicator is the projected BAU value in the target year or period, hereinafter referred to as *RefEmissions* (if the indicator is expressed as emissions) and *RefIntensity* (if the indicator is expressed as emissions intensity). For intensity targets, we also define here the parameter *RefDenominator* as the projected value of the denominator (GDP or population) in the target year or period:

> ***RefEmissions:*** Projected BAU GHG emissions covered by the NDC in the target year or period (t CO_2e)

For intensity targets:

> ***RefDenominator:*** Projected GDP or population in the target year or period (e.g. USD or capita)
>
> ***RefIntensity:*** Projected BAU GHG emissions covered by the NDC per unit of GDP or population in the target year or period (t CO_2e / USD or t CO_2e / capita)

with

> *RefIntensity = RefEmissions / RefDenominator*

5.3.3. Action iii: Provision of a time series of the indicator value(s) and comparison of the most recent indicator value(s) with the reference value(s)

The MPGs require Parties to provide the most recent information for each selected indicator for each reporting year (paragraph 68) and information for previous reporting years of the NDC implementation period (paragraph 77(b)). This means that countries shall provide a time series of their GHG emissions covered by the NDC (*Emissions*) and, in the case of GHG intensity targets, a time series of the relevant denominator (*Denominator*) and the GHG emissions intensity (*Intensity*). Moreover, the MPGs require comparing the most recent information with the reference value (paragraph 69).

In providing time series information, it is important that methodological consistency is ensured. This means that the same methods and a consistent approach should be used for each reported year (see section II.C, paragraphs 26-28, of the MPGs for GHG inventories). Countries are encouraged to improve their emissions and other data over time, moving towards more accurate methods. In practice, national GHG inventories are often recalculated due to such methodological improvements. If new methods are applied, it is important to recalculate the entire time series of the emissions or other relevant data. This is to ensure methodological consistency and to avoid that changes in emission trends (or GDP or population data) are introduced as a result of changes in methods or assumptions across the time series (see section II.C, paragraph 27, of the MPGs for GHG inventories). Any changes in the methods and recalculations must also be applied to the projected reference value in the target year target or period (paragraph 67).

For baseline scenario targets, countries should provide a full time series starting at least from the beginning of the NDC implementation period until the most recent reporting year. If the starting point of the baseline scenario is earlier than the beginning of the NDC implementation period, it is recommended that the time series starts at least at the starting point of the baseline scenario. In order to increase transparency, it is helpful to provide a time series that goes even further back, as this aids understanding of how the baseline scenario aligns with historical emission trends. It is therefore recommended that countries strive to start the time series in the year 2000 or earlier. The time series should be provided for all relevant parameters. For intensity targets, this includes both the GHG emissions covered by the NDC and the denominator.

In the case of baseline scenario targets, comparing the most recent information (e.g. emissions in 2024) with the reference value (e.g. BAU emissions in 2030), as required by paragraph 69 of the MPGs, only provides limited information for assessing progress towards the target. This is because this provision does not compare the emissions and the BAU projection for the same year but for different years. Comparing different years may be misinterpreted, though, since the development between the years (e.g. economic growth) is not considered. We therefore recommend that baseline values for each year be provided to fulfil the requirement in paragraph 69 of the MPGs, but that this data be not further interpreted in terms of progress towards the target. When providing this information, countries could determine the absolute and/or the relative change of the respective values:

- The **absolute** difference in GHG emissions can be determined as follows:

> ***AbsCompEmissions = Emissions – RefEmissions***

Where:

> ***AbsCompEmissions:*** Absolute difference in GHG emissions covered by the NDC between the relevant reporting year and the projected BAU value for the target year or period (t CO_2e)
>
> ***Emissions:*** GHG emissions covered by the NDC in the relevant reporting year (t CO_2e)

- The **relative** difference in GHG emissions can be determined as follows:

> ***RelCompEmissions = (Emissions / RefEmissions – 1) * 100***

Where:

> ***RelCompEmissions:*** Relative difference in GHG emissions covered by the NDC between the relevant reporting year and the projected BAU value in the target year or period (%)

- For **intensity targets**, the **absolute** difference in GHG emissions intensity can be determined as follows:

> ***AbsCompIntensity = Intensity – RefIntensity***

Where:

> ***AbsCompIntensity:*** Absolute difference in GHG emissions covered by the NDC per unit of GDP or population between the relevant reporting year and the projected BAU value in the target year or period (t CO_2e / USD or t CO_2e / capita)
>
> ***Intensity:*** GHG emissions covered by the NDC per unit of GDP or population in the relevant reporting year (e.g. t CO_2e / USD or t CO_2e / capita)

- For **intensity targets**, the **relative** difference in GHG emissions intensity can be determined as follows:

> ***RelCompIntensity = (Intensity / RefIntensity – 1) * 100***

Where:

> ***RelCompIntensity:*** Relative difference in GHG emissions covered by the NDC per unit of GDP or population between the relevant reporting year and the projected BAU value in the target year or period (%)

5.3.4. Action iv: Assessment of target achievement

The MPGs require countries to assess whether the NDC target has been achieved (paragraph 70). This means that the indicator value in the target year or period is compared with the target level in that year or period.

The first consideration relates to the time frame of the target. If the target is for a single year, target achievement is determined for this single year, noting that countries still need to report their emissions for other years. In the case of multi-year targets (e.g. covering the period from 2021 to 2030), the comparison of the indicator value with the target level applies to the entire period, meaning, for example, the aggregate of emissions over the period.

The second consideration relates to whether the NDC already specifies the target as a GHG emissions level or a GHG emissions intensity level. For example, if the target is specified as a 25% deviation from projected BAU emissions in 2030, then the target emissions level is the projected BAU emissions level minus 25%. The target emissions level can thus be determined as follows:

- For baseline scenario targets expressed as a percentage reduction:

> ***TargEmissions = RefEmissions * (1 – PercReductionTarget)***

Where:

> ***TargEmissions:*** Target emissions level in the target year or period (t CO_2e)
>
> ***PercReductionTarget:*** Percentage reduction target, expressed as percentage reduction in emissions in the target year or period compared to the projected BAU emissions (%)

- For baseline scenario intensity targets expressed as a percentage reduction:

> ***TargIntensity = RefIntensity * (1 – PercReductionTarget)***

Where:

TargIntensity: Target emissions intensity in the target year or period (e.g. t CO_2e / USD or t CO_2e / capita)

PercReductionTarget: Percentage reduction target, expressed as percentage reduction in emissions intensity in the target year or period compared to the projected BAU value (%)

Note that for intensity targets, the final target emissions level can only be determined ex-post, i.e., after the target year or period, because only by then the actual denominator (e.g. the GDP) in the target year or period will be known. In the other cases, the target level can be determined already ex-ante when the NDC is communicated, or further clarified or updated.

Further note that for multi-year intensity targets the average emissions intensity may be calculated as the average emissions over the multi-year period divided by the average GDP or population over the multi-year period.

Lastly, countries shall assess target achievement by comparing the indicator value for the applicable single-year or multi-year period with the target level for the applicable single-year or multi-year period. If the indicator is the GHG emissions covered by the NDC, the assessment compares the emissions in the applicable period with the target emissions level (both in t CO_2e). If the indicator is a GHG emissions intensity, the intensity is compared with the target intensity level (e.g. both in t CO_2e / USD). If the indicator level is smaller or equal to the target level, the target has been achieved. If the indicator level is above the target level, the target has not been achieved. Mathematically, the result of the assessment of target achievement may be captured by a Boolean parameter TargAchievement that can only assume the value true or false. If its value is 'true', the target is achieved, if the value is 'false' the target is not achieved:

- For indicators in GHG emissions:

$$TargAchievement = Emissions \leq TargEmissions$$

Where:

TargAchievement: Binary (Boolean) (true / false)

- For indicators expressed as emissions intensity:

$$TargAchievement = Intensity \leq TargIntensity$$

Where:

TargAchievement: Binary (Boolean) (true / false)

5.4. Accounting for conditional and unconditional targets

Many developing countries have communicated mitigation targets for which the achievement is conditional upon the provision of international support. Such support may be in the form of finance, capacity building, or technology transfer. The Paris Agreement, the MPGs and the Katowice mitigation decision do not include provisions that specifically address conditionality of mitigation targets. This means that countries can apply the accounting approaches described in the previous section to any target, irrespective of whether it is a conditional or unconditional target.

Hence, countries with conditional and unconditional targets in their NDCs account separately for both targets, applying the same rules. In most cases, they can use the same indicators for both targets, and the only difference between the two approaches is the target value used. The transparency guidance adopted in Glasgow provides clarity on how to report on the progress towards conditional vs. unconditional targets (cf. ***Section 5.6*** below).

Countries in which mitigation policies or measures are implemented with international support could also pursue efforts to determine the GHG emissions reductions that they would have achieved without international support. Irrespectively of whether they have submitted only an unconditional target or only a conditional target or both, this would provide them with useful information on the

emissions reductions achieved with and without international support.

Determining the emission reductions with and without international support requires isolating the GHG impacts that are associated with the international support received. A prerequisite for this is that this support can be assigned to certain policies and measures (PaMs). Countries could then estimate the GHG emissions impact of these PaMs in order to estimate the emissions level that would have been achieved without international support, as follows:

EmissionsWithoutSupportedPaMs = Emissions + EmissionRedSupportedPaMs

Where:

Emissions: GHG emissions covered by the NDC in the relevant reporting year (t CO_2e)

EmissionsWithoutSupportedPaMs: GHG emissions covered by the NDC excluding GHG impacts from supported PaMs in the relevant reporting year (t CO_2e)

EmissionRedSupportedPaMs: GHG emission reductions covered by the NDC that result from from supported PaMs in the relevant reporting year (t CO_2e)

In applying this formula, it is important that only those emission reductions are considered that are covered by the NDC. If a policy or measure addresses emissions that are not covered by the NDC (e.g. because the greenhouse gas is not included in the NDC), then this policy or measure should not be included in the above formula. If a policy or measure partially addresses emissions that are covered and partially emissions that are not covered by the NDC, then only those emission reductions covered by the NDC should be considered.

The key challenge of this approach is to estimate the emission reductions achieved through the supported PaMs. To this end, countries could use the information they report on the GHG emission reductions and removals from PaMs as set out in section III.D of the MPGs. However, the quantification of emission reductions from PaMs is associated with significant uncertainties, which are typically much larger than the uncertainty of GHG inventory emissions. The challenges are structural and methodological such as overlapping policies and measures; interfering policies and measures; and drivers not controlled by the PaMs themselves (e.g. international fuel prices, natural disturbances, economic growth, technological developments; or large sets of assumptions due to counterfactual circumstances). Also, PaMs are often implemented with both national efforts and international support, such that a clear division of corresponding GHG impacts is difficult. A further challenge is the necessity to create a (often hypothetical) direct link between international support received and the mitigation outcomes. These challenges are further discussed in ***Chapter 6***. In short, estimating the emission level that would have been achieved without international support is associated with considerable uncertainties. Caution is thus needed in interpreting the results.

5.5. Accounting for cooperative approaches under Article 6

5.5.1. Overview of Article 6

Article 6 of the Paris Agreement provides countries with the opportunity to use cooperative approaches, such as international carbon market mechanisms, to achieve their NDCs. Article 6 includes three distinct approaches:

- Article 6.2 establishes a framework for countries to count the international transfer of emission reductions towards their NDCs.
- Article 6.4 establishes a new carbon crediting mechanism under international oversight which is commonly viewed as a successor to the Kyoto Protocol's Clean Development Mechanism (CDM).
- Article 6.8 establishes a framework for using non-market-based approaches.

Table 6 provides an overview of the main features of these three approaches.

Table 6: Overview of Article 6 approaches

Approach	Main features/characteristics of each approach as defined in Article 6 and Decision 1/CP.21
6.2. Cooperative approaches	• Countries are allowed to use Internationally Transferred Mitigation Outcomes (ITMOs) to achieve their NDC • When cooperating, Parties shall: promote sustainable development and environmental integrity; ensure transparency, including in governance; and apply robust accounting and avoid double counting on the basis of corresponding adjustments • Use of ITMOs for achieving an NDC requires authorization by the cooperating Parties
6.4. Mechanism under CMA authority	• The mechanism is established to contribute to the mitigation of greenhouse gas emissions and support sustainable development • The mechanism stands under the authority of the CMA and is supervised by a body designated by the CMA • Participation is voluntary • Participating entities (public or private) require Party authorisation • The mechanism aims to deliver overall mitigation in global emissions • A share of proceeds from activities will be levied to cover administrative expenses and support adaptation actions in developing countries
6.8. Framework for non-market approaches	• The framework promotes integrated, holistic and balanced non-market approaches that assist Parties in NDC implementation • The context of the framework is sustainable development and poverty eradication • The approaches aim to promote mitigation and adaptation ambition, enhance participation, and enable coordination

For the purpose of this Guidance, the accounting provisions under Article 6.2 are most relevant. Article 6.2 requires Parties engaging in cooperative approaches to "apply robust accounting, to ensure, inter alia, the avoidance of double counting". Double counting means that the same emission reduction would be accounted by more than only one country to achieve its NDC. The provisions under Article 6.2, and the Article 6.2 guidance adopted at COP26 in Glasgow, provide a framework for avoiding such double counting. Double counting is avoided through a form of double-entry bookkeeping, referred to as "corresponding adjustments". As with bank transfers, an entry in one account requires a corresponding, opposite entry to another account. The country selling emission reductions makes an addition to its emission level, and the country acquiring the emission reductions makes a subtraction. As part of the Enhanced Transparency Framework, both countries prepare an emissions balance in which the country's target level is compared with its emissions adjusted for international transfers of emission reductions. These rules ensure that the acquiring country can count the transferred emission reductions towards its mitigation target, while the transferring seller country cannot count them any longer (Schneider et al. 2019).

According to the Article 6.2 guidance adopted at COP26, countries are allowed not only to transfer emission reductions among themselves but also to authorize the use of emission reductions by third parties, in particular airlines under the *Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA)* or entities wishing to voluntarily offset emissions. If emission reductions are authorized by the transferring country to be used (by third parties) for such purposes, the country also has to apply corresponding adjustments.

Countries that wish to engage in Article 6 need to fulfil several additional requirements in relation to accounting for their NDC. These include four broad elements that are summarized in more detail below:

1. Fulfilling Article 6 participation requirements;
2. The authorization of ITMOs;
3. The tracking of ITMOs; and
4. The reporting and accounting for ITMOs.

5.5.2. Fulfilling Article 6 participation requirements

According to the Article 6.2 guidance, countries must fulfil various participation requirements and make certain decisions that must be communicated to the UNFCCC Secretariat in order to use Article 6. The main requirements are:

- **Selection and specification of ITMO metrics:** The Article 6 guidance allows countries to use different metrics of ITMOs (i.e. t CO_2e or other metrics such as hectares of land afforested). Countries need to choose and communicate the ITMO metrics (paragraph 18c of the Article 6.2 guidance).
- **Clarification and quantification of the NDC in t CO_2e metrics:** For ITMOs in t CO_2e, double claiming is avoided by applying corresponding adjustments to the emission reductions for the sources and GHGs covered by the NDC (paragraph 8 of the Article 6.2 guidance, paragraph 77d(i) of the MPGs). Countries are therefore required to define which emission sources and GHGs are covered by the NDC and to quantify them in GHG emission metrics, i.e. in t CO_2e, or alternatively provide a methodology for accomplishing this (paragraph 18d of the Article 6.2 guidance). In doing so, it is important that *all* mitigation information in the NDC (e.g. different types of targets) be considered when quantifying the NDC in t CO_2e.
- **Selection and specification of the accounting approach in relation to single-year and multi-year targets:** The Article 6.2 guidance provides specific provisions for how countries may account for single-year targets. It provides two main options: the establishment for a multi-year trajectory or budget, turning the single-year target into a multi-year approach, or the use of averaging, which means that the average use of ITMOs over the NDC implementation period is accounted for in the single-year target. The Article 6 guidance requires countries to choose and communicate which approach for the corresponding adjustments for multi-year or single-year NDC targets they use (paragraph 18c of the Article 6.2 guidance). The approach chosen must be applied consistently throughout the NDC's implementation period (paragraphs 7 and 18c of the Article 6.2 guidance).

5.5.3. ITMO authorization

Article 6 of the Paris Agreement requires the countries participating in a cooperative approach to authorize the use of ITMOs. This requires establishing a process and institutional arrangements and to enable private or public entities, where appropriate, to engage in a cooperative approach. Key questions that must be addressed in this process include how decisions on authorization are made, what use of ITMOs is authorized, and how authorization letters or other evidence of authorization are formulated.

5.5.4. ITMO transfers and tracking

The Article 6.2 guidance requires countries to have processes and institutional arrangements in place (or to use international systems) to track ITMOs, including the authorization, issuance, transfer, acquisition and use of ITMOs (paragraph 4d of the Article 6.2 guidance). These may include a national or international registry (paragraphs 29–31 of the Article 6.2 guidance).

5.5.5. Article 6 reporting and NDC accounting

The Article 6 guidance and the MPGs require countries to regularly report on their ITMO activities and to account for ITMOs through the application of corresponding adjustments in an accounting balance, referred to as "structured summary" in the MPGs (paragraph 77 of the MPGs). Countries engaging in Article 6 need to provide relevant information in an initial report, annual reports, and biennial transparency reports. This requires relevant institutional arrangements and processes for regular reporting to be in place. Non-submission of relevant reports, in particular on the application of corresponding adjustments, can pose serious threat to ensuring that double claiming is avoided. The following type of accounting information needs to be provided:

- In an **initial report**, communicated "no later than authorization of ITMOs from a cooperative approach or where practical (in the view of the participating Party), in conjunction with the next Biennial Transparency Report", countries need to communicate inter alia their accounting choices, as set out above (paragraph 18 of the draft Article 6.2 guidance). The term "first transfer"

refers to the first time that a specific ITMO is transferred; subsequently, an acquired ITMO could be further transferred to another country.

- In **annual reports**, countries need to provide information on "authorization of ITMOs for use towards achievement of NDCs, authorization of ITMOs for use towards other international mitigation purposes, first transfer, transfer, acquisition, holdings, cancellation, voluntary cancellation, voluntary cancellation of mitigation outcomes or ITMOs towards overall mitigation in global emissions and use towards NDCs" (paragraph 20 of the Article 6.2 guidance).
- In their **BTRs**, countries need to provide comprehensive information on their engagement in cooperative approaches. For accounting purposes, a key requirement is the reporting on the application of corresponding adjustments. For each year, countries need to make additions and subtractions to their net emissions and removals covered by the NDC. The resulting balance is then compared with the target emissions level (necessarily in t CO_2e) (paragraph 70 of the MPGs). This approach is further described in the next section.

5.6. Completing the relevant reporting tables

The MPGs and the transparency guidance require all countries to report information on tracking progress and accounting for NDCs in common tabular formats. This section describes how the results of the accounting exercise described above are to be entered in these common tabular formats. This information constitutes part of the Biennial Transparency Report. The first such report is due by 31 December 2024 at the latest.

The following elements of the biennial transparency submission are related to NDC accounting:

- Common tabular format: Description of selected indicators
- Common tabular format: Tracking progress

In the following, guidance is given on how to complete these tables. Besides these two main tables, other elements are also addressed, namely the common tabular formats for definitions and for methodologies, and information which is to be provided in the Biennial Transparency Report.

5.6.1. Common tabular format: Description of selected indicators

The common tabular format for the description of selected indicators can be found in Annex II to the transparency guidance. It is entitled '1. Structured summary: Description of selected indicators". This simple table consists of four rows, as follows:

- 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 the NDC

Parties that use more than one indicator in their NDC can add rows to the table, to accommodate these additional indicators. This applies, for example, when countries complement a GHG emissions target with targets in other metrics, such as renewable power generation. Where countries have communicated only a GHG emissions target, one single indicator (the GHG emissions covered by the NDC) can be used. If Parties distinguish between conditional and unconditional targets and if these targets are expressed in the same metric (e.g. GHG emissions) and cover the same emission sources, they can use the same indicator for both targets.

In ***Table 7***, a filled-in example of the common tabular format is provided. In this table, the terms introduced in ***Section 5.2***, above, are shown in red.

Table 7: Example of a completed common tabular format: Description of selected indicators

Indicator(s) selected to track progress	Description
GHG emissions covered by the NDC	Total economy-wide greenhouse gas emissions and removals in the relevant reporting year (t CO_2e) — *Emissions*
Information for the reference point(s), level(s), baseline(s), base year(s) or starting point(s), as appropriate	Reference level: 100 Mt CO_2e — *RefEmissions* Base year: 2005
Updates in accordance with any recalculation of the GHG inventory, as appropriate	Due to recalculations of the national GHG inventory, which were carried out after the communication of the NDC, the reference level changed from 101 Mt CO_2e to 100 Mt CO_2e.
Relation to the NDC	The NDC consists of an absolute economy-wide emission reduction target. Hence, total economy-wide greenhouse gas emissions and removals are the most appropriate indicator for this type of NDC.

As shown above, the table requires the entering of textual and numerical information. The reason why there are no distinct fields for numerical information (e.g. for the reference level or for the base year) is that one template was developed which accommodates all types of NDCs. Therefore, this table is rather simple and allows for entering both textual and numerical information. If needed, additional explanations can be provided in a documentation box and in the Biennial Transparency Report.

5.6.2. Common tabular format: Tracking progress

The common tabular format for tracking progress can also be found in Annex II to the transparency guidance. It is entitled "4. Structured summary: Tracking progress made in implementing and achieving the NDC under Article 4 of the Paris Agreement". This table is used for displaying the results of the accounting process.

In the following, three examples of completed tables are provided:

- ***Table 8*** contains an example of the information provided together with the first Biennial Transparency Report in the year 2024.
- ***Table 9*** is another example of the information provided with the first Biennial Transparency Report, but it contains additional information for Parties that participate in cooperative approaches under Article 6 of the Paris Agreement.
- ***Table 10*** contains an example of the information be provided after the end of the NDC implementation period. This information will in most cases be provided as part of the fifth Biennial Transparency Report in 2032.

In ***Table 8***, the first row contains the indicator and available values for the indicator. This example shows greenhouse gas emissions as an indicator. At the time of the first Biennial Transparency Report submission, the reference value (the value in the base year) is available. In addition, values are available for the years 2021 and 2022, but not for later years. The target level is also provided, which in this example is an emissions level of 80 Mt CO_2e in the target year 2030. The progress made in the most recent year is briefly described in in the last column. In this example, this progress amounts to a 14% reduction between the reference value (100 Mt CO_2e) and the most recent value (86 Mt CO_2e).

Table 8: Example of a completed common tabular format for tracking progress, reported with the first Biennial Transparency Report

	Unit, as applicable	Reference point(s) […]	2021	2022	…	2030	Target level	Target year or period	Progress made […]
Indicator(s) selected […]									
GHG emissions covered by the NDC	Mt CO_2e	100 *RefEmissions*	88	86			80 *TargEmissions*	2030	14% below the reference level
Where applicable, total GHG emissions and removals consistent with the coverage of the NDC	Mt CO_2e	100	88	86					
Contribution from LULUCF […]									
Each Party that participates in cooperative approaches […]									
[…]	Relevant for Parties using cooperative approaches. See *Table 9*								
Assessment of the achievement of the Party's NDC under Article 4 of the Paris Agreement									
Relate the target of the Party's NDC:									
[…]	Relevant after the end of the NDC period. See *Table 10*								

The next row lists the total greenhouse gas emissions and removals consistent with the coverage of the NDC. In this example, they are identical to the indicator. They would be different if another indicator, such as greenhouse gas intensity, were used.

The next row, the contribution from LULUCF, does not need to be filled in because it is already included in the time series of total greenhouse gas emissions and removals. This row becomes relevant if a specific LULUCF accounting approach is used which is different from using annual net emissions and removals.

The next section of the table consists of rows which are relevant for Parties that use cooperative approaches. An example is shown separately, in ***Table 9*** below.

In the last rows of the table, the achievement of the NDC is assessed. This section is only filled in after the end of the NDC implementation period, in 2032. An example of a filled in table is shown in ***Table 10***.

The common tabular format to be submitted with the first Biennial Transparency Report is relatively concise. Nevertheless, it is important to provide this information because it provides information about the most recent values of the indicator (such as greenhouse gas emissions) and on the progress made so far towards the NDC target.

Parties that have both a conditional and an unconditional target proceed as follows:

- Duplicate the table.
- In one version of the table, enter the unconditional target level (e.g. 80 Mt CO_2e) in column "Target level".
- In the other version of the table, enter the conditional target level (e.g. 70 Mt CO_2e) in the column "Target level".
- In the documentation box below the table, specify which target is the conditional target and which target is the unconditional target.

All other entries remain the same for conditional and unconditional targets. ***Table 10*** below shows how conditional and unconditional targets are dealt with after the end of the NDC implementation period.

Table 9 provides an example of how the table should be completed for Parties that engage in cooperative approaches under Article 6 of the Paris Agreement. This additional information must be provided by Parties that

- participate in cooperative approaches which involve the uses of internationally transferred mitigation outcomes (ITMOs) towards an NDC (e.g. if two countries engage in the transfer of carbon credits or link their emissions trading systems), or
- authorizes the use of mitigation outcomes for international mitigation purposes other than achievement on the NDC (e.g. where countries authorize the use of credits under the Carbon Offsetting and Reduction Scheme for International Aviation – CORSIA).

In this example, the Party has selected the option of providing an emissions trajectory to account for ITMOs (see paragraph 7 of the Article 6.2 guidance) and engages in ITMOs expressed in greenhouse gas metrics. Therefore, only some of the rows are filled in, as follows:

- Trajectory, trajectories or budget (see paragraph 7 of the Article 6.2 guidance): The Party defined a trajectory, starting with 89 Mt CO_2e in 2021 and decreasing linearly down to 80 Mt CO_2e in 2030. This trajectory will be taken into account for assessing compliance at the end of the NDC implementation period; it is not sufficient to just achieve the target value in the year 2030.
- Annual quantity of ITMOs first transferred (see paragraph 23c of the Article 6.2 guidance): The Party generates ITMOs and effectuates a "first transfer". This means that the ITMOs are either internationally transferred to other Parties, which may use them towards their NDC, or they are "first transferred" for other international mitigation purposes, such as the use under CORSIA. In the latter case, the transferring Party must clarify how "first transfer" is defined (paragraph 2 of the Article 6 guidance). In this example, ITMOs amounting to 2 Mt CO_2e are first transferred in 2021 and in 2022.
- Annual quantity of mitigation outcomes authorized for other international mitigation purposes (see paragraph 23d of the Article 6.2 guidance): In this example, from the 2 Mt CO_2e first transferred in 2021 and 2022, 1 Mt CO_2e has been authorized for other international mitigation purposes, such as for use under CORSIA.[2]
- Net annual quantity: This row establishes a balance of the ITMOs first transferred and used towards NDCs. In this case, the Party first transferred a total of 2 Mt CO_2e each in 2021 and in 2022. If the Party had also acquired ITMOs from other Parties for use towards the achievement of its own NDCs, such ITMOs would be subtracted from the net annual quantity. This is not the case in this example.
- Total quantitative corresponding adjustment used: In this example, this parameter is the same as the net annual quantity of ITMOs.
- Annual emissions balance: This is the sum of the rows "total greenhouse gas emissions and removals" and "Total quantitative corresponding adjustment used". In this example, the total emissions are adjusted upwards, to account for the ITMOs that have been first transferred. In 2021, the resulting annual emissions balance (90 Mt CO_2e) is above the value for the trajectory in that year (89 Mt CO_2e). In order to achieve the NDC target, the Party has to ensure that its emissions balance is equal to or below the trajectory (not in each single year, but when looking at the overall NDC implementation period).

2 Note that there is an editorial mistake in paragraph 23d of the Article 6.2 guidance. The total net quantity should be calculated using the annual quantity of ITMOs first transferred (paragraph 23c) and the annual quantity of ITMOs used (paragraph 23e), but not the quantity authorized for other international mitigation purposes (paragraph 23d). This is because the latter is already included in the annual quantity of ITMOs first transferred.

Table 9: Example of a completed common tabular format for tracking progress, including information on cooperative approaches

	Unit, as applicable	Reference point(s) […]	2021	2022	…	2030	Target level	Target year or period	Progress made […]
Indicator(s) selected […]									
GHG emissions covered by the NDC	Mt CO_2e	100 *RefEmissions*	88	86		*TargEmissions*	80	2021 to 2030	14% below the reference level
Where applicable, total GHG emissions and removals consistent with the coverage of the NDC	Mt CO_2e	100	88	86					
Contribution from LULUCF […]									
Each Party that participates in cooperative approaches […]									
[…] indicative trajectory, trajectories or budget […]									
[…] trajectory, trajectories or budget […]	Mt CO_2e		89	88		80			
[…] emissions/ removals (non-GHG metrics)									
[…] emissions/ removals (PaMs NDC)									
[…] non-GHG indicator									
Annual quantity of ITMOs first transferred	Mt CO_2e		2	2					
Annual quantity of mitigation outcomes authorized	Mt CO_2e		1	1					
Annual quantity of ITMOs used towards achievement of the NDC									
Net annual quantity of ITMOs	Mt CO_2e		2	2					
[…] cumulative amount of ITMOs […]									
Total quantitative corresponding adjustments used […]	Mt CO_2e		2	2					
[…] cumulative information									
[…] annual emissions balance	Mt CO_2e		90	88					
[…] annual adjusted indicator									
Any other information									
Assessment of the achievement of the Party's NDC under Article 4 of the Paris Agreement									
Relate the target of the Party's NDC:									
[…]	Relevant after the end of the NDC period. See *Table 10*								

Finally, ***Table 10*** shows an example of a completed table for the tracking of progress after the end of the NDC period.

In this table, greenhouse gas emissions values are entered until the year 2030, and this allows the assessment of the achievement of the NDC in the four last rows of the table as follows:

- In the first of these rows, the information on the reference point is entered. In the example of a greenhouse gas reduction target, the reference point is the emissions level in the base year or, in the case of a baseline scenario target, the emissions level of the projected business-as-usual GHG emissions for the target year.
- In the next row, the final information for the indicator is entered, which is an emissions time series, with an emissions level of 79 Mt CO_2e in the year 2030 (not all years are shown in this example).
- In the row "Comparison", the level in the target year is compared to the reference level and to the target level.
- In the row "Achievement of NDC", a brief explanation is provided as to whether and why the target has been achieved.

Table 10: Example of a completed common tabular format: Tracking progress (after the end of the NDC period)

	Unit, as applicable	Reference point(s) […]	2021	2022	…	2030	Target level	Target year or period	Progress made […]
Indicator(s) selected […]									
GHG emissions covered by the NDC	Mt CO_2e	100 *RefEmissions*	88	86		79	80 *TargEmissions*	2030	21% below the reference level
Where applicable, total GHG emissions and removals consistent with the coverage of the NDC	Mt CO_2e	100	88	86		79			
Contribution from LULUCF […]									
Each Party that participates in cooperative approaches […]									
[…]	**Relevant for Parties using cooperative approaches.**								
Assessment of the achievement of the Party's NDC under Article 4 of the Paris Agreement									
Relate the target of the Party's NDC:									
Information for reference point(s) […]	Mt CO_2e	100							
Final information for the indicator […]	Mt CO_2e		88	86	…	79			
Comparison	The level in the target year is 79 Mt CO_2e. It is 21% below the reference level and it is below the target level.								
Achievement of NDC	Yes. The target has been achieved because the level in the target year is below the target level. *TargAchievement*								

Parties that have a separate conditional and unconditional target proceed as follows:

- Fill in the table as shown in the example in ***Table 10***.
- Duplicate the table.
- In one version of the table, enter the unconditional target level (e.g. 80 Mt CO_2e) in column "Target level".
  - If the condition (e.g. the provision of support) has been fulfilled, write in the last row of the table under "Achievement of the NDC": "The condition has been fulfilled, therefore the comparison with the unconditional target is shown for information only."
  - If the condition has not been fulfilled, assess the achievement of the NDC in the last row of the table. An example would be: "Yes. The unconditional target has been achieved because the level in the target year is below the level of the unconditional target."
- In the other version of the table, enter the conditional target level (e.g. 70 Mt CO_2e) in the column "Target level".
  - If the condition (e.g. the provision of support) has been fulfilled, assess the achievement of the NDC in the last row of the table. An example would be: "Yes. The conditional target has been achieved because the level in the target year is below the level of the conditional target."
  - If the condition has not been fulfilled, write in the last row of the table: "The condition has not been fulfilled; therefore the comparison with the conditional target is shown for information only."

Additional information on the status of fulfilment of the condition(s) can be provided in the documentation box below the table and in the Biennial Transparency Report.

5.6.3. Other elements related to the tracking of progress

Besides the two common tabular formats discussed in the previous sections, other elements have to be submitted with the Biennial Transparency Report. These elements provide background information on the tracking of progress, but they are not part of the actual accounting process. These elements are described briefly below.

- Common tabular format 2: This table is for definitions related to the indicators used, sectors and other elements which are needed to understand the NDC.
- Common tabular format 3: This table is for the description of methodologies and accounting approaches. As this may include lengthy textual information, Parties may describe the methodologies and accounting approaches in the Biennial Transparency Report and enter references to these descriptions in the table.
- Chapter on tracking progress in the Biennial Transparency Report: Chapter II, section C of the outline of this report provides for "Information necessary to track progress made in implementing and achieving NDCs". Here, any explanations can be added which are needed to understand the information provided in the common tabular formats.
- Annex 4 to the Biennial Transparency Report: In this annex, Parties participating in cooperative approaches have to provide additional information, such as how they fulfil defined participation responsibilities or how environmental integrity is ensured. The information to be provided in this annex is specified in paragraphs 21 and 22 of the Article 6.2 guidance.

To summarize, Parties have to report a wide range of information together with their biennial transparency reports, to ensure that the progress towards their NDC targets becomes transparent. The information on accounting is a subset of this information. The tables to be filled in by Parties that do not engage in cooperative approaches are more concise.

6. Step 4: Assess synergies with tracking of policies and measures

The integration of existing elements of MRV of policies and measures (PaMs) with NDC accounting was a core element of the project from which the first edition of this Guidance evolved. Section III.D of the MPGs addresses information on PaMs "related to implementing and achieving" NDCs. This information on PaMs features elements of the pre-Paris guidance on MRV. Furthermore, even though the MPGs keep tracking of policies and measures separate from NDC accounting, the information required by the MPGs on PaMs may inform discussions on NDC target achievement, an element of NDC accounting.

6.1. The MPGs' requirements for PaMs tracking

The MPGs specify not only the information necessary to track progress made in implementing and achieving NDCs but also PaM tracking as well as information on adaptation actions that entail mitigation co-benefits. Corresponding requirements are set out in Section III.D of the MPGs. These requirements are generally less rigorous than those for tracking NDC progress. For example, Section III.D focuses on those PaMs "that have the most significant impact on GHG emissions and removals and those impacting key categories in the national GHG inventory", while tracking NDCs progress is mandatory to all targets included in the NDC. Yet, section III.D also requests quantitative information on GHG emissions and removals, including on the overall impact on longer-term GHG trends, while providing flexibility to those developing country Parties that need it (paragraphs 85 to 89).

6.2. Link between NDC accounting and PaMs tracking

Chapter 5 highlighted that a key element of accounting for GHG emissions targets is the emissions covered by the NDC. These can be read from the relevant parts of the national GHG inventory. The development of emissions covered by the NDC over time is influenced by PaMs but also by a series of other factors (e.g. GDP). In the following, the linkages between NDC emissions targets, national GHG inventories and PaMs are highlighted and explained.

Implementing PaMs is essential for achieving NDC targets. To assess whether and how an NDC is achieved, policy makers need information about the performance of single PaMs. The mitigation impact of PaMs can be quantified using guidelines such as the World Resources Institute's (WRI) *Policy and Action Standard* (WRI 2014) or the methodologies provided by the Initiative for Climate Action Transparency (ICAT). The former provides general guidance on how the mitigation impact of policies can be quantified and may be combined with sector-specific methodologies. Implementing PaMs is essential for achieving NDC targets. To assess whether and how an NDC is achieved, policymakers need information about the performance of single PaMs. The mitigation impact of

PaMs can be quantified using guidelines such as the World Resources Institute's (WRI) *Policy and Action Standard*[3] or the methodologies provided by the Initiative for Climate Action Transparency (ICAT)[4]. The first provides general guidance on how the mitigation impact of policies can be quantified and may be combined with sector-specific methodologies.

When assessing the contribution of individual PaMs to an NDC target, a key challenge is the inherent uncertainties in quantifying the PaMs' GHG impacts. The contribution of an individual PaM to an NDC target is its mitigation impact. The assessment of the mitigation impact requires a counterfactual[5] baseline scenario, which may be difficult to establish. Furthermore, the mitigation impact might be affected by potential (and often inevitable) overlaps of GHG impacts of different PaMs.

Furthermore, it is important to bear in mind that changes in GHG emissions might occur which are not a result of PaMs. For instance, they may result from changes in consumer behaviour or consumer patterns. Changes in GHG emissions which do not occur because of PaMs, or uncertainties in PaMs' impact assessment are possible reasons for a deviation between the emissions in the national GHG inventories and emission levels that are expected to be achieved through the implementation of PaMs. Nevertheless, since national GHG inventories do not provide information on emissions drivers, the GHG impact assessment for PaMs is still an important tool, as it provides insights on the development of GHG emissions and emissions drivers.

Figure 1 illustrates this context based on an example of an NDC baseline scenario target for 2030. The figure shows the annual BAU emission projection starting from the base year 2015 to the target year 2030 (orange line) and the mitigation scenario with projected annual emissions (green line) leading to the NDC target emissions level in 2030 (red bar). The difference between the BAU projection for 2030 and the mitigation scenario for 2030 represents the targeted emission reduction (left bracket) corresponding to the country's NDC commitment. The right bracket corresponds to the actual emission reduction achieved. The actual emission reduction is the difference between the BAU projection for 2030 and the NDC-covered GHG inventory emissions in 2030 (green bar). Since NDC-covered inventory emissions (green bar) are below the NDC target emissions level (red bar), the NDC target would be deemed achieved.

If a policymaker, the international community or other stakeholders want to understand why the NDC target has been achieved, they could analyze the GHG impact of all PaMs implemented to achieve the NDC. In the figure, the GHG impacts of four PaMs are represented by blue bars for the year 2030. The sum of all GHG impacts is smaller than both targeted and achieved emission reductions. The GHG impact from the implemented PaMs therefore does not fully explain why the NDC target has been (over-)achieved. There may be several reasons for this discrepancy between the sum of GHG impacts of PaMs and achieved emission reductions. Such reasons are important to be understood by policy makers and are discussed in the following.

First, there may be uncertainties in the quantification of the PaMs' GHG impacts which are illustrated in the figure by the scattered area between P&M1 and P&M2. These uncertainties may arise, for instance, from potential overlaps between P&M1 and P&M2 (e.g. since they address the same emission source) or due to methodological uncertainties (e.g. definition of the baseline for the PaM assessment). The blue bars therefore have a certain error margin. These aspects may be one reason why the actual emission reductions do not correspond to the aggregate of GHG impacts of the PaMs.

Second, there may also be changes in GHG emissions that occur due to drivers outside of the control of PaMs (e.g. economic growth or fuel prices). For instance, there may have been a smaller economic growth than initially expected, which leads to lower GHG emissions and thus to a smaller green bar. However, this effect is not related to the implementation of policies and measures.

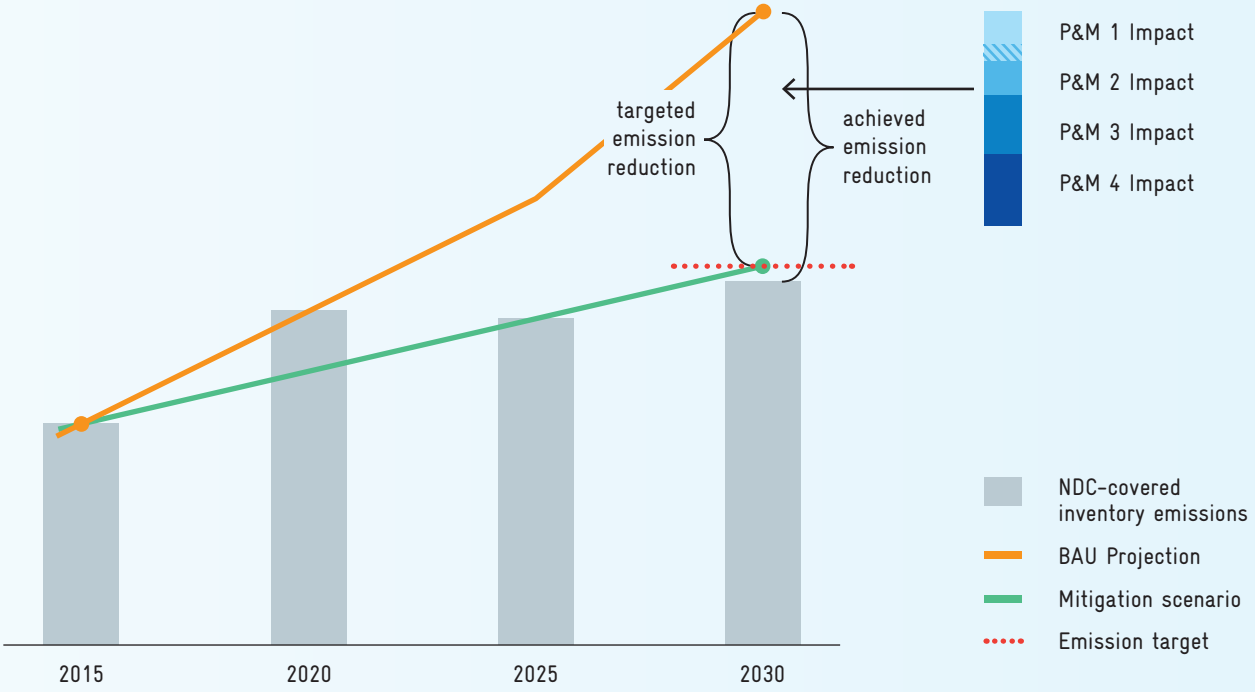
---

3 https://www.wri.org/research/policy-and-action-standard

4 https://climateactiontransparency.org/icat-toolbox/policy-assessment-guides/

5 According to the Policy and Action Standard, a baseline scenario "represents the events or conditions most likely to occur in the absence of the policy or action being assessed." Since the policy assessed is in place, assumptions need to be made about the conditions which would prevail without the policy. For instance, in the context of a renewable support programme, the counterfactual scenario would reflect the renewable capacity that would have been installed even without the support programme.

Figure 1: Comparison of NDC Accounting (III.C) and PaM-Tracking (III.D)



6.3. Improvement of PaM tracking and NDC accounting

Paragraph 85 of the MPGs requires all Parties to provide information on the expected and achieved GHG emissions impact of their PaMs. This impact may be reflected in the NDC-covered emissions of the national GHG inventory. In the case of baseline scenario targets, a comparison between the actual emissions reductions relative to the business-as-usual scenario and the emission reductions that were expected to be achieved with the implementation of all implemented PaMs may provide useful insights that may help to improve both the quantification of emissions impact of PaMs and, in some instances, the accuracy of the national GHG inventory. For this comparison, the following parameters are introduced:

GHGImpactPaM: Sum of GHG emission reduction impacts of all PaMs addressing emissions covered by the NDC in the reporting year (t CO_2e)

AchievedEmRed: Achieved emission reductions in the reporting year i.e. the absolute difference between the GHG emissions covered by the NDC and the projected BAU value for the reporting year (t CO_2e)

GHGImpactPaM and *AchievedEmRed* may have a similar size or one of the two may be greater and the other smaller, respectively. The reason for one variable being smaller or greater than the other may lie in both variables. Therefore, general conclusions are difficult to draw from this comparison. However, several actions may be carried out to increase the understanding of the differences and to improve PaM assessment, BAU projections and, in some instances, the accuracy of GHG inventories:

- **Improve the GHG inventory to ensure that GHG impacts of PaMs are visible:** Depending on the methodology used, GHG inventories may not capture GHG impacts of certain PaMs. If those PaMs are significant, this may result in underestimating *AchievedEmRed*. For instance, N_2O emissions from nitric acid production may be calculated based on a default emission factor in the GHG inventory. A corresponding policy related to abating N_2O emissions in nitric acid plants significantly lowers the emission factor per unit of production in the country. The improved emissions efficiency in the nitric acid production only becomes visible if the improved emission factor is used instead of the default emission factor. In this way, the policy may be better reflected in the inventory and thus become visible.
- **Understand changes of GHG emissions which are triggered by other factors than policies and measures (e.g. GDP):** *AchievedEmRed* may be smaller or greater than expected from the implemented PaMs. This is because of factors not controlled by the PaMs. For instance, the effect of a transport PaM may be assessed by the number of electric vehicles replacing cars with diesel or gasoline engines. However, the effect estimated based on this method may differ from the one observed in the GHG inventory. A significant increase of fuel prices may have led to reduced usage of cars independent of the PaM assessed. Vice versa, a decrease of fuel prices may lead to more traffic even though the transport policy works as expected. A sensitivity analysis can help assess the prevalence of factors not controlled by certain PaM. It simulates GHG impacts under different variations of core assumptions. In the previous example, fuel prices may be varied to assess their impact on emissions in the transport sector. If GHG emissions remain unaffected by varying fuel prices, this may give a hint on the prevalence of other drivers. One other driver could be a decreasing population which may lead to a lower consumption of fuels. To identify relevant emission drivers, a decomposition analysis may be carried out.[6] Information on other drivers may be used, for instance, to increase the ambition of the NDC (in case emissions drop independently of the policy) or to improve climate policies to make up for an increase of emissions due to other circumstances.
- **Check *GHGImpactPaM* for potential double counting, overlaps and uncertainties:** *GHGImpactPaM* may be larger than *AchievedEmRed.* This may be due to double counting of two or several policies addressing the same issue (e.g. feed-in tariff for renewable electricity vs. grants for the installation of wind or PV plants). There may also be methodological uncertainties, for instance the emission factor for estimating the effect of the policy may not correspond to the circumstances in the electricity sector in the country. To improve the estimation of the effect of policies and measures, existing guidance for PaM assessment (e.g. from WRI or from the Clean Development Mechanism) may be applied to PaMs to reduce the impact of double counting, overlaps or uncertainties.

When discussing the differences between effects observed in the GHG inventory and the assessment of PaMs, it should be borne in mind that different aspects may overlap. It is therefore difficult to assess which aspect caused a certain difference between both sources. For instance, differences may arise both from the emission factors used in the inventory and from disregarding other emission drivers in the PaMs.

In addition to using *GHGImpactPaM* for informing the interpretation of NDC achievement, PaMs tracking may be used to improve the national GHG inventory and vice versa. Such improvements may result in i) an increase of the congruency of underlying parameters (e.g. activity data in certain sectors, emission factors, baseline assumptions of PaM baselines and of the NDC's BAU scenario), ii) an alignment of the coverage of sources/entities between the PaMs and the national GHG inventory (e.g. covering the same power plants or industrial facilities), and/or iii) an improvement of the completeness and accuracy of data (e.g. PaMs that address a very specific industry may share data for this specific industry with the national agency producing the GHG inventory, if approved by the industry). An approach that investigates these aspects and was tested on a Colombian case study was published by RALI in 2019 and can be downloaded from the NDC Partnership website (NDC Partnership)[7]. Reporting tables for policies and measures were agreed at COP26 in Glasgow in 2021.

6 Methodological guidance on how to conduct a decomposition analysis can be found in Renders et al. (2020).
7 https://ndcpartnership.org/toolbox/rali-ghg-mrv-harmonization-framework

7. References

ICAT: Policy Assessment Guides. Initiative for Climate Action Transparency (ICAT). Online available at https://climate-actiontransparency.org/our-work/icat-toolbox/assessment-guides/.

NDC Partnership: RALI GHG MRV Harmonization Framework. Online available at https://ndcpartnership.org/toolbox/rali-ghg-mrv-harmonization-framework.

Renders, N.; Dauwe, T.; Pasquel Garcia, T.; Förster, H.; Gores, S.; Schumacher, K. et al. (2020): Guidance document for ex-post evaluation of climate policies in Effort Sharing sectors. Online available at https://effortsharing.ricardo-aea.com/sites/default/files/inline-files/Guidance_ExPostEvaluation_EffortSharing_Sept2020_0.pdf.

Schneider, Lambert; Duan, Maosheng; Stavins, Robert; Kizzier, Kelley; Broekhoff, Derik; Jotzo, Frank et al. (2019): Double counting and the Paris Agreement rulebook. In: *Science* 366 (6462), pp. 180–183. DOI: 10.1126/science.aay8750.

WRI (2014): Policy and Action Standard. An accounting and reporting standard for estimating the greenhouse gas effects of policies and actions. Unter Mitarbeit von D. Rich, P. Bhatia, J. Finnega, K. Levin und A. Mitra. World Resources Institute. Online available at https://www.wri.org/research/policy-and-action-standard, last accessed on 18.09.2019.

Deutsche Gesellschaft für
Internationale Zusammenarbeit (GIZ) GmbH

Registered offices
Bonn and Eschborn

Friedrich-Ebert-Allee 36 + 40
53113 Bonn, Germany
T +49 228 44 60-0
F +49 228 44 60-17 66

Dag-Hammarskjöld-Weg 1 - 5
65760 Eschborn, Germany
T +49 61 96 79-0
F +49 61 96 79-11 15

E info@giz.de
I www.giz.de