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Designing and Preparing Intended Nationally Determined Contributions (INDCs)

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THIS DOCUMENT IS A DRAFT FOR CONSULTATIONS WITH REPRESENTATIVES FROM PARTIES. ITS CONTENTS REFLECT INFORMATION SHARED DURING THE UNDP TECHNICAL REGIONAL DIALOGUES ON INTENDED NATIONALLY DETERMINED CONTRIBUTIONS.

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Introduction

Parties to the United Nations Framework Convention on Climate Change (UNFCCC) are negotiating a new international agreement for the post-2020 period, to be adopted by 2015. At the 17th Conference of the Parties (COP 17) in December 2011, the Ad Hoc Working Group on the Durban Platform for Enhanced Action (ADP)[1] was established with a mandate to “develop a protocol, another legal instrument or an agreed outcome with legal force under the Convention applicable to all Parties” to come into effect and be implemented from 2020.

The establishment of the ADP was in recognition of the need to fulfill the ultimate objective of the Convention, which is to achieve, in accordance with the relevant provisions of the Convention, stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. Parties have recognized the need to take urgent action to meet the long-term goal of holding the increase in global average temperature below 2°C above pre-industrial levels.[2] The ADP process will plan its work around mitigation, adaptation, finance, technology development and transfer, capacity-building and transparency of action and support.

At COP 19 in Warsaw in 2013, the COP decision invited Parties to initiate or intensify preparation of intended nationally determined contributions (INDCs) towards achieving the objective of the Convention and to communicate the INDCs by the first quarter of 2015, by Parties ready to do so, or at least well in advance of the 21st session of the Conference of the Parties (COP 21) at the end of 2015.[3] Because the new agreement will likely establish a long-term process for future climate action, it is likely that subsequent contributions by Parties will be communicated in the future.

Many Parties are taking steps to prepare their INDCs. Because Parties are invited to put forward their contributions well before Paris, it is important that INDCs are designed through a process that rapidly facilitates decision-making and action rather than adding unnecessary burden. Without prejudice to the outcome of the UNFCCC negotiations, this document provides examples of good practice and outlines key technical issues to consider for countries seeking guidance on how to prepare their INDCs to be communicated in 2015. It is our hope that it supports countries in responding to existing COP decisions in a timely manner.

This document was developed in response to requests from countries participating in the UNDP-UNFCCC Regional Technical Dialogues held in Latin America and the Caribbean, Africa and Asia-Pacific & Eastern Europe for more specific guidance on INDCs. It attempts to reflect the ideas shared during these regional dialogues, reflecting the current state of negotiations, and puts forward options and encouragement for the preparation of INDCs based on research from recent literature and relevant UNFCCC documentation.

The document is organized as follows. It is divided into two parts, with Part I giving a general overview regarding INDC preparation and design and Part II providing technical guidance on INDC design. Part I first provides an overview of what an INDC is and the benefits of preparing an INDC. It then explores how to organize a national

[1] See Decision 1/CP.17.
[2] See para 1 of FCCC/CP/2009/L.7 and para 4 of FCCC/CP/2010/7/Add.1.
[3] See para 2 of FCCC/CP/2013/10/Add.1 at http://unfccc.int/resource/ docs/2013/cop19/eng/10a01.pdf.

process to prepare a contribution. The document then turns to an overview of what types of data and analysis can help in the preparation of an INDC, what options exist for designing an INDC, and how an INDC can be communicated transparently. Part II goes into detail regarding the various choices Parties can make to design their contribution, such as the coverage of greenhouse gases and sectors, the target level, if relevant, how to quantify the GHG impact of the INDC, among others.

This document aims to assist national governments with the preparations of their intended nationally determined contributions. The authors recognize the importance of not preempting the result of the negotiations process as well as the need to provide guidance on issues that are immediate and for which there is a certain degree of political and substantive clarity. For these reasons, this document addresses mitigation in view of the latest version of the draft decision text available indicating that the scope of contributions is to be nationally determined in the context of Article 2 of the Convention and that all Parties should include a mitigation component in their INDC. This document will be updated following the decision made at COP 20 in Lima related to INDCs.

See Figure 1.1 for an overview of the document. While the paper provides an overview of various INDC preparation and design choices, Parties may need to turn to additional technical resources for a comprehensive overview of ways to design domestic interventions. There are also ongoing efforts to provide support for INDC preparation and design. [*Placeholder: Annex to be created on mapping of INDC support*].

Figure 1.1 Overview of document

Overall steps	Detailed steps	Chapter
Part I	**Overview of INDC preparation and design**	**1 - 5**
Identify objectives	**Why should an INDC be prepared?**	**1**
Prepare and initiate process	**How can a national process to prepare a contribution be organized?** • *Secure political commitment and leadership* • *Engage stakeholders* • *Enhance coordination* • *Clearly define roles, responsibilities and timeline* • *Build capacity*	**2**
	What data and analysis can inform an INDC? • *Take advantage of existing data and use proxy data gaps where necessary to understand:* ○ *National objectives and priorities* ○ *Current and future GHG emissions* ○ *Current mitigation activities* ○ *Mitigation potential* ○ *Relationship to 2°C goal*	**3**
Choose broad design	**What are the broad options for designing an INDC?**	**4**
Communicate	**How can an INDC be transparently communicated?**	**5**
Part II	**Technical guidance on INDC design**	**6**
Choose detailed design	**What options exist for the detailed design of the INDC?** *Choose gases, sectors, define actions/way of expressing target, choose timeframe, choose target level, participation in international transfer of emissions units, if applicable*	**6.1, 6.2**
Resource needs	**What additional mitigation can be achieved with additional resources (for developing countries)?**	**6.3**
Quantify impact	**What is the expected GHG impact of the INDC?**	**6.4**

Part I: Overview of INDC Preparation and Design

1 Why should an INDC be prepared?

1.1 Background on INDCs

INDCs are the contributions Parties will make toward achieving the objective of the Convention. While the term INDC is not defined by any decision of the COP, and there still remains significant ambiguity surrounding the scope of INDCs, the language "intended nationally-determined contribution" provides some indications of the anticipated process that can inform Parties' preparation (see Box 1.1).

Box 1.1 Intended nationally-determined contributions

Intended: The term "intended" relates to the fact that the legal status of the contributions and their final form under the 2015 agreement are yet to be decided. Also, it suggests that the contribution may be subject to review and/or adjustment, for example, if future rules change the assumptions (e.g. about land use accounting) that Parties made when preparing their INDC, or if Parties communicate final contributions at a later date. Thus, the contributions that Parties first come forward with may be finalized through a process to be defined by the negotiations.

Nationally determined: The language "nationally determined" underscores that contributions will be developed by countries rather than collectively determined.

Contribution: INDCs were defined in Warsaw as contributions "towards achieving the objective of the Convention as set out in its Article 2." That objective is "to achieve the stabilization of greenhouse gas (GHG) concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. Such a level should be achieved within a time-frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner."[4] INDCs may also contribute to numerous domestic objectives associated with the shift to a low-carbon economy, including gains in energy efficiency, reduced deforestation, curbing of air quality, among others as further described below. In addition, INDCs allow Parties to demonstrate their national contribution to the broader global effort which will involve all Parties. The term "contribution" is used without prejudice to the legal nature of the contribution or type of contribution.

1.2 Benefits of putting forward an INDC

As a result of the risks that high temperatures pose on communities and ecosystems around the world, the international community has adopted a goal under the UNFCCC to limit global warming to 2°C compared to pre-industrial temperatures.[5] While AR5 suggests that it's still possible to limit average global temperature rise to 2°C, it will require rapid reductions of emissions and changes to our current energy mix. Emissions through 2030 will determine how realistic it is for the world to shift to a low-emissions pathway.[6]

The longer we delay emissions reductions, the more difficult it will be to stay within the 2°C target. Poor choices on infrastructure developments (e.g. buildings and the ways in which cities are built) and will lock societies into emissions-intensive pathways that may be impossible or very expensive to change in time to limit warming. Delay will also necessitate unprecedented rates of emissions decline later and a greater reliance on potentially risky

[4] http://unfccc.int/essential_background/convention/background/items/1349.php
[5] There is also a process to review this goal in the context of the overall objective of the Convention, with the consideration of adoption of a 1.5°C goal.
[6] http://report.mitigation2014.org/drafts/final-draft-postplenary/ipcc_wg3_ar5_final-draft_postplenary_chapter6.pdf

technologies which currently face major challenges regarding financing and testing at scale.[7] Preventing undue economic and environmental hardships, then, requires ramping up international climate action—this decade and beyond. See Annex A for more information on necessary emissions reductions to limit warming to 2°C.

Against the backdrop of rising emissions and an increased urgency for action, there are significant domestic and international benefits that can be realized through the development and implementation of an INDC, including:

- Staying on track toward the 2°C goal: First, the greater the number of countries that put forward a contribution, the greater chance we may have to limit warming to 2°C. There will be more emissions reductions covered and tracked globally, and political momentum can be built, incentivizing others and catalyzing further action. Much greater ambition, particularly from Parties that are significant GHG emitters - or will be in the decades to come - is required. There is no one formula for how the world can equitably and efficiently achieve the necessary global emissions reductions. However, what is clear is that it will require international cooperation, as countries have varying capacities and responsibilities to reduce emissions and adapt to climate impacts. If collective actions are perceived to be fair, further cooperation and action can be gained.

- Demonstration of a political commitment: Second, putting forward an INDC can demonstrate a political commitment to limiting warming and, in turn, to limiting future risks posed by higher temperatures. The Durban decision to launch a process to develop the 2015 Agreement noted its applicability to all Parties. Climate change is a problem of the global commons, and, therefore, every country should participate in its solution. And given the significant risks posed by higher temperatures, as outlined above, the costs of inaction are too high for our global community to accept. The INDC process is an opportunity for countries around the world to come forward with their best efforts, regardless of whether their mitigation potential is high or low.

- Realization of non-climate benefits associated with mitigating climate change: INDCs can be an opportunity to design policies that can make economic growth and climate objectives mutually reinforcing and that at least half of the measures that could drive the necessary emissions reductions needed by 2030 could have multiple economic benefits.[8] For example, policies that lower emissions not only reduce countries' vulnerability to energy price volatility and supply disruptions, but they also produce significant benefits for human health and ecosystems by curbing air pollution. Climate action can also advance rural development as a result of better land management practices and can lead to avoided congestion and accidents from shifts in transport modes. Significant new investments will be made in the next decades and today's decisions will determine whether inefficient infrastructure and systems are locked in or there is a transition to a low-carbon path that strengthens resilience.[9]

- The INDC preparation and implementation process itself: If done well, the INDC preparation and implementation process has the potential to strengthen institutional capacity and transfer knowledge to sectoral institutions. As progress is tracked towards INDCs over time, the capacity of technical staff will increase and a foundation will be built for tracking progress for not only the contribution but also other interventions.

- Policy integration: The process to develop an INDC can enable climate change to be linked to other national priorities such as sustainable development and poverty reduction. Furthermore, sending a credible signal regarding future plans to mitigate can stimulate investment, promote technological innovation and engage the private sector. Submission of an INDC may also allow for access to possible

[7] http://report.mitigation2014.org/drafts/final-draft-postplenary/ipcc_wg3_ar5_final-draft_postplenary_chapter6.pdf
[8] http://static.newclimateeconomy.report/TheNewClimateEconomyReport.pdf
[9] http://www.globalcarbonproject.org/carbonbudget/14/hl-full.htm; http://static.newclimateeconomy.report/TheNewClimateEconomyReport.pdf

incentives, such as access to market mechanisms, created under the 2015 Agreement, as well as capacity building support.

- Advancement of communication to stakeholders: The communication of INDCs can be in regard to expected emissions reductions that may result from a Party's actions, including the mitigation benefits of polices and measures that may not explicitly target emissions, and how the contribution is fair. Transparent communication can also help enable an understanding of expected global emissions in the future, which is critical for understanding whether the global community is on track to limit warming to 2°C. In addition, preparation of an INDC can provide the opportunity to clearly communicate a country's contribution and means of implementation, as well as possibly highlight needs and priorities.

2 How can a national process to prepare a contribution be organized?

A national process to prepare an INDC can facilitate national leadership on climate change and build trust and mutual accountability[10] with domestic and international stakeholders. The process should be an efficient one, leading to credible political decisions, and facilitative, without creating additional burden. Ideally, the process can contribute to building long-term institutional arrangements that can also be useful for a future implementation phase. The process should also provide legitimacy to the INDC.

In general the INDC preparation and design process will follow the typical stages of the policy process:[11]

- Initiation: Before planning and policy options are considered, officials should consider and engage the public in defining the needs that an INDC must address. Given the political nature of INDCs, it can be highly beneficial to secure a mandate to initiate the preparation process from high-level decision makers.

- Data and analysis: As Chapter 3 describes, gathering relevant data and analysis can be helpful in the design of the mitigation contribution. Taking advantage of existing data, and using proxy data gaps where necessary, can help ensure that this process is efficient and not resource intensive. Data and analysis that can be helpful to the INDC preparation and design process include: national objectives and priorities, current and future GHG emissions, current mitigation activities, mitigation potential, relationship to the 2°C goal, and financing requirements to achieve that potential.

- Analysis of options: Decision makers, with the support of experts and the public, will formulate options and analyze their effectiveness.

- Design of INDCs: Decision makers will design the INDC and choose which option(s) they will pursue, including communicating and building upon existing or planned activities, based on criteria they have decided are important. See Chapters 4 and 6 for further information on the advantages and disadvantages of various design choices. The public should be engaged in this step in order to build support for the INDC's implementation.

- Communication: INDCs should be communicated in a manner that facilitates transparency, clarity and understanding. Chapter 5 describes information can be provided with an INDC to fulfill these objectives.

While every national circumstance will be different, the following elements may prove helpful to those initiating or intensifying an INDC process:[12]

- National leadership: Securing a political commitment at the highest level can help give the process legitimacy, thereby ensuring that all relevant stakeholders come together to carry out the necessary technical work and political cooperation necessary to formulate an INDC in a timely manner. Strong leaders often not only define the process activities but also maintain momentum and quality of the analysis and process outputs.[13] It will be critical for high-level political commitments to be sustained over time. The choice of government institutions to lead and coordinate the INDC process could make a significant difference in the efficiency and prioritization of the process. If the process does not engage

[10] See http://www.oecd.org/environment/cc/46553489.pdf.
[11] (Brewer and deLeon 1983) (deLeon and Kaufmanis 2001)
[12] This list is drawn from the regional INDC dialogues, well as the literature (e.g. see World Resources Report 2010-2011; http://cdkn.org/wp-content/uploads/2013/02/CDKN_Working_Paper-Climate_Compatible_Development_final.pdf; http://www.ggbp.org/report/green-growth-practice-lessons-country-experiences; http://report.mitigation2014.org/drafts/final-draft-postplenary/ipcc_wg3_ar5_final-draft_postplenary_chapter15.pdf)
[13] National Research Council of the National Academies 2010a.

the president's or prime minister's office or departments that have broad national responsibilities for development and other targets, weak outcomes may result,[14] although it may be possible to foster and build leadership from the bottom up. Some Parties may find that it is easier to engage and sustain leadership if contributions are approached in the context of development and poverty eradication, linking climate change to other domestic priorities.

- Stakeholder engagement: Early and ongoing stakeholder engagement, including with all relevant public sector actors, civil society, academia and the private sector, can lay the groundwork for successful outcomes. Public engagement should not be treated as a "rubber stamp" on predetermined activities, as lack of engagement throughout the decision-making process can cause costly investments to fail. Rather, if engagement is built into all steps of the decision-making process, it can build support for choices and improve the effectiveness and long-term viability of the contribution. Affected communities and experts are often most aware of the needs that exist locally, and by consulting with the public first, decision makers can increase the likelihood that plans serve the needs of those who will be affected by them.

- Coordination: Government institutions most relevant to INDC preparation include economic development and finance ministries; sectoral ministries such as those responsible for environment, water, energy, planning agriculture, and transport. National climate change coordination agencies may also play important roles.[15] Coordination among these bodies will be essential and can result in improved efficiency and problem solving. In some countries coordination around the INDC process may require a shift in or new institutional alignment as planning for climate change is often divided among different ministries and may lack a coordinating authority.[16] New committees or institutional structures may be necessary in some countries to develop and approve INDCs. However, in some countries, it may be easier and more effective over the long run to integrate the decision-making process into existing institutional arrangements if possible. The INDC preparation process may also benefit from a third-party, neutral facilitator who can mediate discussions if there are conflicting priorities among agencies.

- Clearly defined roles, responsibilities and timeline: Regardless of the choice of the institutional arrangement for coordination, clearly defined roles and responsibilities, as well as a clear detailed timeline for INDC process, will be very helpful for setting expectations and ensuring efficiency.

- Capacity: Building knowledge and technical capacities and securing and managing the right resources for preparing an INDC cannot be neglected. Donors and governments should promote and fund technical training and strengthen human resources, which can enable more informed decision making. Decision makers can also enlist the assistance of technical institutes and universities in such efforts.

[*Placeholder: Case studies of good practice*]

[14] OECD 2009.
[15] 2010-2011 World Resources Report.
[16] Yet many countries lack inter-ministerial committees and/or leadership at the highest level. For example, a 2010 survey of 45 countries by UNDP found that only 46 percent had inter-ministerial committees or councils to manage climate issues. Of these countries, 52 percent of these committees sit under the Ministry of Environment, 43 percent under the President, Premier or Prime Minister's office, and 5 percent under the Ministry of Planning and Development. Overall, many of them lacked high-level political support. (UNDP 2010).

3 What data and analysis can inform an INDC?

In general, the development of an INDC should be informed by data and analysis regarding several elements, listed in Table 3.1. The table explains the purpose of each type of information and examples of data sources.

Parties may already have significant amount of data and analysis that can be used when preparing the INDC. Existing information may be sufficient, so collecting new data or conducting new analysis may not be necessary.

The information listed in the table can be useful when designing the INDC (in Chapter 4 and 6) to help ensure that the INDC is achievable and realistic, clear and concrete, ambitious, aligned with national priorities, and a contribution to the objective of the Convention. This information will also help Parties understand the extent to which they are collectively on the emissions trajectory required to achieve the 2°C goal. Specifically, the information can help answer questions such as which sectors and gases should be covered by the contribution, what should be the peaking year and level for emissions (if applicable), and what should be the target level of emissions in the target year or period.

If certain types of information are not available, Parties should use whatever information does exist, and use proxy data to fill data gaps where necessary.

Table 3.1 Types of information useful for developing a mitigation contribution

Type of information	Purpose of information	Examples of data sources
Pre-2020 GHG reduction actions	Provide a starting point for the post-2020 contribution	Submissions to the UNFCCC under the Copenhagen Accord, Cancun Agreements, Kyoto Protocol[17]
National objectives and priorities	Ground the contribution in the broader national context and ensures the contribution is "nationally determined"	Laws, climate change strategy, economic development strategies, energy planning and policies, transportation plans, water plans, coastal zone plans, agriculture plans, electricity plans, green growth plans, five year budget documents
Current GHG emissions profile of the country	Identify which sectors and gases contribute most to national emissions	Latest national GHG inventory (based on IPCC *Guidelines for National Greenhouse Gas Inventories*)
Current mitigation activities	Identify current efforts that can form part of the INDC and which can be built upon further to develop an INDC that builds on but goes beyond existing mitigation efforts	Clean Development Mechanism (CDM) projects, nationally appropriate mitigation actions (NAMAs), technology needs assessments (TNAs), climate change plans, economic development plans; laws/strategies (national climate change laws, national climate funds, low emission development strategies (LEDS), green growth strategies) Sources may include: National Communications, Biennial Reports or Biennial Update Reports
Projected future emissions under a business-as-usual	Understand expected growth in emissions by sector in the future, taking into account current mitigation activities	National Communications, Biennial Reports or Biennial Update Reports, national energy or environmental

[17] The UNFCCC website lists Parties' targets and actions at: http://unfccc.int/focus/mitigation/items/7169.php.

scenario (or other scenarios)		reports; International Energy Agency (IEA),[18] U.S. Energy Information Administration (EIA),[19] Climate Action Tracker[20]
Assessment of mitigation potential	Identify additional mitigation technologies, opportunities, policies, and actions that are technically and economically feasible, as a basis for determining the scale of GHG reductions that could be feasibly be achieved	National mitigation assessment studies, IEA reports,[21] Climate Action Tracker[22]
Relationship to global 2°C goal	Understand the scale of GHG reductions needed to limit warming and avoid the most dangerous climate change impacts	IPCC Fifth Assessment Report,[23] IPCC Fourth Assessment Report, fairness indicators and principles[24]
Resource mobilization strategies	Facilitate the assessment of the feasibility of mitigation scenarios, taking into account resource requirements (including budgetary, technological and human resources), and strategies to mobilize public and private, national and international investments in support of the implementation of actions	An estimation of financing needs to mitigate at different levels Domestic budgetary expenditures for business-as-usual (brown) projects and programmes in key sectors and estimated investments for mitigation (green) options Current and planned investments by the private sector in key sectors Data on bilateral and multilateral financial support provided to the country Types of capacity needs, including human, technical, institutional, and financial capacity

[Placeholder for further exploration of how to use data and analysis to inform INDC design]

[18] Available at http://www.iea.org/
[19] Available at http://www.eia.gov/
[20] Available at http://climateactiontracker.org/
[21] Available at http://www.iea.org/publications/freepublications/.
[22] Available at http://climateactiontracker.org/
[23] Available at http://www.ipcc.ch/report/ar5/.
[24] Factors Parties may wish to consider may include responsibility; capability; equality; responsibility, capability, and need; equal cumulative emissions per capita; staged approaches; equal marginal abatement costs (IPCC AR5, WGIII, Chapter 6, Table 6.5 and Figure 6.28)

4 What are the broad options for designing an INDC?

It will be up to each individual Party to decide what will be packaged as its contribution, and there are several different options for designing an INDC.

A primary choice will be the form of the contribution that is put forward. Countries could, for example, put forward actions, or an intent to implement specific means of achieving GHG reductions, such as policies or mitigation actions. For this type of contribution, a Party may decide to package its existing, planned, and/or potential future mitigation actions and present them to the international community. Actions provide clarity on specific means of achieving GHG reductions and they offer implementing Parties more certainty that the contribution will be achieved, since it is a commitment to implement an action rather than obtain a certain outcome. However, actions pose challenges to aggregate GHG reductions across Parties' contributions since the contribution is not stated in terms of GHG emissions, unless the effect of the actions on emissions is quantified.

A Party could go one step further and assess the collective impacts of possible actions and put forward outcomes, or an intent to achieve a specific result, such as reduce GHG emissions to a specific level. Outcomes can be framed as GHG outcomes—a commitment to reduce GHG emissions by a certain quantity by a certain date—or non-GHG outcomes—a commitment to achieve non-GHG outcomes, such as quantity of renewable energy generated or share of electricity generated with renewable sources.

Non-GHG outcomes provide flexibility on how to achieve the outcome, but restrict the flexibility to a certain sector (such as energy efficiency or renewable energy generation). They also are relatively simple to track progress by tracking key performance indicators, such as energy efficiency of sectors, renewable energy generation. However, non-GHG outcomes pose challenges to aggregating GHG reductions across Parties' contributions, unless the GHG impact of non-GHG outcomes are also stated.

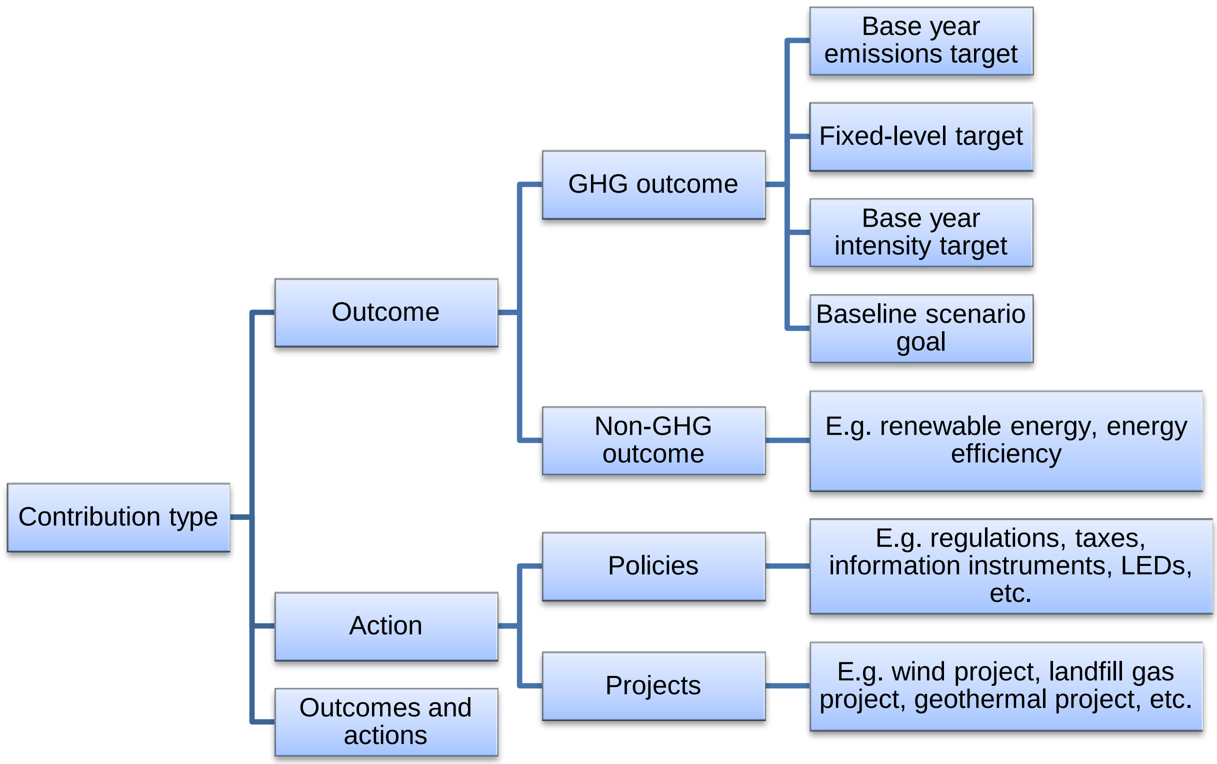
GHG outcomes offer the most flexibility on how to achieve GHG reductions—through any policies or actions in any sectors, to be decided based on domestic circumstances, which may change over time, rather than committing to specific policies or actions internationally. They are easier to track progress toward compared to actions, since GHG targets typically only require the national GHG inventory as the basis, rather than more detailed sector-level data.[25] They also enable aggregation of GHG reductions across Parties' contributions. Contributions with GHG outcomes can be framed in several different ways, including: a base year emissions target; a fixed-level target; a base year intensity target; and a baseline scenario goal. Section 6.2 in Part II explains these options in greater detail.

Where possible, Parties should commit to quantified outcomes, which offer several benefits, including enabling future emissions and emission reductions associated with the contribution to be determined, which enables an assessment of global emissions to be aggregated across all Parties' INDCs. They also enable progress in achieving the INDC to be tracked, offer more credibility for receiving finance and access to markets, and enable comparability between Parties' INDCs.

See Figure 4.1 for a representation of various types of INDCs.

[25] Baseline scenario targets and base year intensity targets require additional data, explained in Section 6.2.3.

Figure 4.1 Types of INDCs



During the pre-2020 period, Parties put forward project- and policy-level actions, as well as non-GHG and GHG outcomes (including base year emissions targets, fixed-level targets, base year intensity targets, and baseline scenario targets (see Table 4.1). It remains to be seen what types of interventions will be put forward for the INDCs. [*Placeholder box on applying no backsliding principle to type of intervention choice]*

Table 4.1 Diversity of pre-2020 mitigation interventions

Examples of actions	
Project-level actions	
Ethiopia	Hydro power capacity; wind projects
Ghana	Reductions in methane emission due to improvement of waste management at landfill sites
Tajikistan	Improvement of energy efficient technologies in buildings
Policy-level actions	
Chad	Promotion of the use of biofuels in the transportation sector
Madagascar	REDD+ policy
Examples of outcomes	
Non-GHG outcomes	
Cook islands	100% renewable energy by 2020
GHG outcomes	
Base year emissions targets	
European Union	20-30% reduction below 1990 levels
Russia	15-25% reduction below 1990 levels
Fixed level targets	
Costa Rica	Carbon neutrality by 2021
Maldives	Carbon neutrality by 2020

Base year intensity targets	
China	40-45% reduction in intensity by 2020 compared to 2005 levels
India	20-25% reduction in intensity by 2020 compared to 2005 levels
Baseline scenario targets	
Brazil	Between 36.1% and 38.9% below projected emissions in 2020
Republic of Korea	30% reduction from business-as-usual emissions by 2020
South Africa	34% deviation below business-as-usual emissions by 2020

Countries could also put forward a combination of action(s) and outcome(s). Parties that put forward individual actions as INDCs could also communicate the expected outcomes associated with the specific actions, where possible, either in terms of estimated GHG reductions or in terms of non-GHG outcomes. This information helps other Parties understand the ambition and fairness of the contribution and enables aggregation of global effort across Parties' INDCs.[26] There are several advantages to communicating quantified outcomes associated with actions. Doing so enables future emissions and emission reductions associated with the contribution to be determined, which enables an assessment of global emissions to be aggregated across all Parties' INDCs. It also enables progress in achieving the INDC to be tracked, offers more credibility for receiving finance and access to markets, and enables comparability between Parties' INDCs. However, it is more resource-intensive than tracking progress toward outcomes alone.

Conversely, Parties that put forward INDCs in the form of outcomes may also communicate a list of key policies and actions, where possible, to indicate specific ways they intend to implement the target. This information helps other Parties understand how the contribution will be implemented and achieved. In this case, the policies and actions may be viewed as a means toward the contribution but perhaps not the primary contribution itself.

Parties may also choose to put forward both outcome(s) and action(s) as part of the INDC, where both elements are part of the contribution itself, rather than as information only. Actions and outcomes can be combined in a complementary manner in terms of scope, such that the INDC can further describe actions undertaken in economic sectors or geographical regions not covered by the intended target.

Once the broad form of the INDC has been decided, there are numerous design choices, such as the choices of covered greenhouse gases and sectors, the more specific type of action or outcome, the target level (if applicable), use of market mechanisms, among other choices, as detailed in Part II in Chapter 6. See Section 6.4 for a description of how the GHG effect of INDCs can be quantified.

[26] For example, a Party that proposes to implement a feed-in tariff as part of its policy package might communicate that the policy is expected to lead to the construction of a certain quantity of wind turbines, which is expected to lead to a certain quantity of renewable energy generation, which is expected to lead to GHG reductions of X Mt CO_2e by a given year as wind generation displaces fossil fuel generation.

5 How can an INDC be transparently communicated?[27]

Once the INDC is developed, the next step is to communicate the INDC by providing upfront information. Without specific information describing INDCs and the assumptions and methodologies that underpin them, it will be difficult for others to understand the contribution and for the global community to understand the aggregate ambition of contributions in reducing global GHG emissions.

The specific list of "upfront information" needed depends on the purpose of the information. The purposes of communicating upfront information include facilitating the clarity, transparency and understanding of the intended contributions. Upfront information is also critical for enabling an understanding of individual and aggregate impacts, and an assessment of whether global emissions are in line with the goal to hold the increase in global average temperature below 2°C above pre-industrial levels, consistent with the latest scientific information as documented in the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. Comparing the collective impact of all Parties' INDCs to the global 2°C goal requires an understanding of Parties' intended accounting approaches for international market mechanisms and the land sector.[28] Providing upfront information can also be useful to enhance domestic implementation by clarifying assumptions needed to implement the contribution and communicating those assumptions to domestic stakeholders.[29]

It should be noted that as Parties make decisions on the contours of their INDCs, the categories of upfront information will be decided upon. Therefore, it should not add additional burden to Parties' preparation and can be viewed as an exercise to communicate decisions to the international community.

A list of upfront information to be provided by Parties will be decided at COP 20 in Lima. In the meantime, this section provides guidance on how Parties can be transparent in communicating their INDCs, including the types of information that may be expected, as well as additional information that Parties may wish to provide in order to provide additional transparency beyond the minimum expectations. This list is not intended to prejudge the decision in Lima.

The following is a list of upfront information to explain the INDC design choices made in Chapters 4 and 6. The starting point for this list is the Draft Text by the Co-Chairs on ADP 2-6 agenda item 3.[30] The list is also informed by the two international GHG accounting and reporting standards developed by the Greenhouse Gas Protocol:

[27] This chapter is adapted from Levin, K. et al. "*Ex-Ante Clarification, Transparency, and Understanding of Intended Nationally Determined Mitigation Contributions*." Working Paper. World Resources Institute, Washington, DC. Available online at: www.wri.org/publication/ex-ante-clarification-transparency

[28] This section is not intended to prejudge the outcome of negotiations related to accounting rules. If there is a common approach to accounting in the land sector, for example, the need for some of the information requirements regarding treatment of the sector will no longer be relevant because Parties will be using the same approach. Indeed, accounting rules would eliminate the need for many upfront information requirements because there would be less divergence among Parties' assessment of emissions reductions. Moreover, in the absence of agreement on accounting (particularly regarding the land sector, use of transferable emissions units, and rules for accounting for such units to avoid double counting), information provision alone may not be sufficient for clear, transparent, and understandable contributions. However, given the timing of the development of such rules, and the existing mandate to identify the upfront information for INDCs, this section outlines recommended upfront information for a diversity of approaches.

[29] Providing upfront information, especially before a contribution has been finalized, enables national decision makers to consider, ex-ante, each of the parameters that define their target (e.g., base year, target year, use of transferable emissions units). Without domestic clarity on these parameters, it would be difficult for policymakers to plan, design, and implement the mitigation strategies needed to achieve the goal.

[30] Draft Text by the Co-Chairs on ADP 2-6 Agenda Item 3, Intended nationally determined contributions of Parties in the context of the 2015 agreement, Annex on Information on intended nationally determined contributions of Parties, 7 July 2014. Available at http://unfccc.int/resource/docs/2014/adp2/eng/7drafttext.pdf.

the *Mitigation Goal Standard* and *Policy and Action Standard*. The list is also consistent with the Co-Chairs draft text as of November 11, 2014, which invites Parties to communicate INDCs providing information on "the type of contribution, time frames and periods, scope and coverage, expected outcomes and, if relevant, any references, methodologies and accounting approaches used" in accordance with national circumstances. The list will be updated based on the decision on upfront information made in Lima.

Not all items on the list below are relevant for every contribution type. Parties should include those that are relevant.

[*Placeholder for list of upfront information agreed in Lima. The document will be updated after a decision is Lima to reflect and decision on upfront information.*]

1. Description of mitigation contribution (such as target type and level), including the base year or period, if applicable, and the target year or period, including both short-term and long-term contributions, if applicable
2. Coverage in terms of:
    a. Sectors
    b. Greenhouse gases
    c. Percentage of national emissions covered
3. Anticipated national emissions in the target year/period
4. Peaking year and level if known
5. Expected sale and/or retirement of transferable emissions units, including how they will ensure environmental integrity and avoid double counting of units, and the types and years of units to be used, if applicable
6. Assumed inventory methodologies and GWP values to be used to track progress
7. Assumed accounting approach for the land sector, including coverage of land-use activities and categories and method (gross-net, net-net, forward-looking baseline), if applicable
8. Additional information for specific contribution types:
    a. For baseline scenario targets: Projected baseline emissions in the target year/period and related assumptions and methodologies, including the cut-off year for policies included and whether the baseline scenario is fixed or dynamic
    b. For intensity targets: base year emissions intensity, projected emissions intensity in the target year/period, and data sources used
    c. For policies and mitigation actions put forward as contributions: description of specific interventions; legal status, implementing entity/entities, and implementation timeframe; estimated effect on emissions (ex-ante) over a defined time period; and methodologies used
9. Additional information, explanation, or context, including a description of how the contribution relates to the objective of the Convention, including how it is fair[31] and is aligned with the global 2°C target, as well as, for developing countries, additional mitigation action that could be achieved through other sources of finance, if applicable

Annex B provides an illustrative example of providing the information in the proposed list for a hypothetical INDC. Parties may elaborate on the list of upfront information, by providing additional information for each item to provide additional transparency. For more information, see Annex C.

[31] Factors Parties may wish to consider when considering what represents a fair national contribution could include emissions responsibility (e.g., historical, current, or projected future emissions per capita or total emissions), economic capacity and development indicators (e.g., GDP per capita), vulnerability and capacity to adapt to physical and social impacts of climate change, relative costs of action and mitigation potential, and benefits of action (e.g., co-benefits). Consideration of fairness in the design and assessment of INDCs should be based on multiple criteria, rather than just one, given that different indicators can have very different implications for what constitutes a fair contribution. Parties may also use a weighted average of several indicators.

Part II: Technical Guidance on INDC Design

6 What options exist for the detailed design of an INDC?

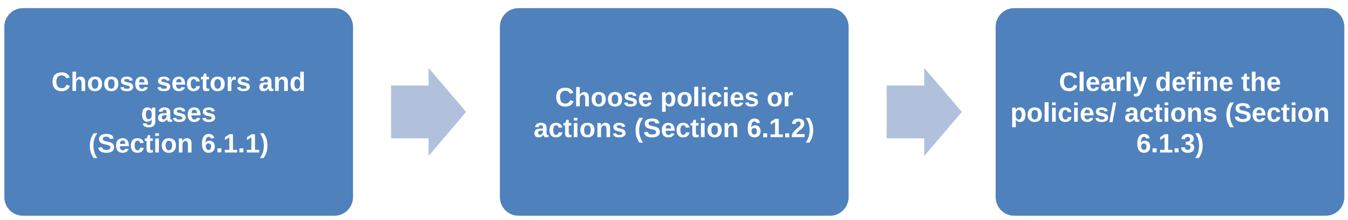
As described in Chapter 4, INDCs can be put forward as actions, including policies and projects, and outcomes, including non-GHG and GHG outcomes. This chapter describes further design choices for each type of contribution. Section 6.1 outlines the design choices regarding actions, while Section 6.2 describes the design choices regarding outcomes. Sections 6.3 and 6.4 are common for both actions and outcomes and address what additional mitigation could be achieved with additional resources (for developing country Parties) and how to determine the expected impact of the INDC on GHG emissions.

[*Placeholder box on applying no backsliding principle]*

6.1 Actions put forward as contributions[32]

Parties that choose to put forward specific actions as their INDC should consider several decisions, outlined in Figure 6.1. Each step is described below.

Figure 6.1 Overview of steps for actions put forward as contributions



6.1.1 Choose sectors and gases targeted

First, it is important to consider which sectors, subsectors, and source/sink categories are targeted by the one or more policies or mitigation actions to be put forward. Sectors and subsectors may be based on the most recent IPCC *Guidelines for National Greenhouse Gas Inventories* or other sector classifications. If applicable, Parties should also determine which greenhouse gases the policies or actions aim to control.

6.1.2 Choose policies or mitigation actions

A variety of policies, actions, or projects may be chosen. Table 6.1 provides categories of policy instruments. In general, policies and mitigation actions should target key emitting sectors and gases (based on the national GHG inventory).

Table 6.1 Types of policies and actions

Type of policy or action	Description
Regulations and standards	Regulations or standards that specify abatement technologies (technology standard) or minimum requirements for energy efficiency, pollution output, or other activities (performance standard). They typically include penalties for noncompliance.
Taxes and charges	A levy imposed on each unit of activity by a source, such as a fuel tax, carbon tax, traffic congestion charge, or import or export tax.
Subsidies and incentives	Direct payments, tax reductions, or price supports from a government for implementing a specified practice or performing a specified action.

[32] The guidance in this section is adapted from the GHG Protocol *Policy and Action Standard* (WRI, 2014).

Emissions trading programs	A program that establishes a limit on aggregate emissions from specified sources, requires sources to hold permits, allowances, or other units equal to their actual emissions, and allows permits to be traded among sources. These programs may be referred to as emissions trading systems (ETS) or cap-and-trade programs.
Voluntary agreements or measures	An agreement, commitment, or measure undertaken voluntarily by public or private sector actors, either unilaterally or jointly in a negotiated agreement. Some voluntary agreements include rewards or penalties associated with participating in the agreement or achieving the commitments.
Information instruments	Requirements for public disclosure of information. These include labeling programs, emissions reporting programs, rating and certification systems, benchmarking, and information or education campaigns aimed at changing behavior by increasing awareness.
Research, development, and deployment (RD&D) policies	Policies aimed at supporting technological advancement, through direct government funding or investment, or facilitation of investment, in technology research, development, demonstration, and deployment activities.
Public procurement policies	Policies requiring that specific attributes (such as GHG emissions) are considered as part of public procurement processes.
Infrastructure programs	Provision of (or granting a government permit for) infrastructure, such as roads, water, urban services, and high-speed rail.
Implementation of new technologies, processes, or practices	Implementation of new technologies, processes, or practices at a broad scale (for example, those that reduce emissions compared to existing technologies, processes, or practices).
Financing and investment	Public or private sector grants or loans (for example, those supporting development strategies or policies).

Source: Adapted from IPCC 2007.

The IEA policy database provides specific examples of policies and measures—including climate change, renewable energy, and energy efficiency policies and measures—available at: http://www.iea.org/policiesandmeasures/.

Various criteria may be used to select policies and actions. For examples of criteria, see Box 6.1.

Box 6.1 Criteria for selecting policies and actions

The choice of policies and actions should be based on national priorities and criteria. Possible criteria include:[33]

GHG reduction potential

- Facilitate transformational impacts (i.e., long-term, significant changes) that enable a shift to a low-emissions economy over the long term
- Achieve significant GHG reductions relative to a baseline scenario
- Target key emitting sectors and gases (based on the national GHG inventory)
- Target reductions in key decarbonization metrics, such as CO_2 per kilometer travelled by vehicles, CO_2 per megawatt hour of electricity production, or GHG per ton of cement or steel produced[34]
- Eliminate key barriers to GHG reduction

Feasibility

- Are aligned with national economic and development priorities and objectives
- Can feasibly be implemented and enforced, given political, legal, and regulatory context
- Have stakeholder support

Benefits and costs

- Deliver multiple benefits, including GHG reduction and various economic, social, and environmental benefits

[33] Adapted from U.S. EPA, "Identifying and Evaluating Policy and Program Options," available at http://www.epa.gov/statelocalclimate/local/activities/policy-options.html.

[34] Ecofys 2014

(such as reduced energy costs, improved air quality, improved public health and reduced health care costs, job creation in new sectors, reduced traffic congestion, etc.)

- Deliver a positive economic return (for example, through financial savings from reduced energy costs, reduced costs of energy subsidies, job growth through new industries, productivity gains that increase GDP and create jobs, reduced health care costs from air pollution)[35]
- Are cost-effective in reducing GHG emissions and achieving other benefits for a given amount of resources (for example, as determined through GHG abatement cost curves or MAC curves).
- Leverage private-sector investment in low-carbon development/technologies

Other

- Have been shown to be effective in other jurisdictions
- Are measurable, in order to enable monitoring and evaluating on their performance over time
- Are expected to have a fair distribution of impacts across society, such as the distribution of costs and benefits across different geographic regions, income groups, or industry sectors
- Are expected to expand and entrench support by domestic constituencies and lock in low-emissions technologies and behavior

6.1.3 Clearly define the policies or mitigation actions

Once selected, it is useful to clearly define the policies or actions. See Table 6.2 for a list of information that may be used to clearly define the policy or action.

Table 6.2 Information to define the policy or action assessed

Information	Explanation
The title of the policy or action	Policy or action name
Type of policy or action	The type of policy or action, such as those presented in Table 6.1
Description of specific interventions	The specific intervention(s) carried out as part of the policy or action
The status of the policy or action	Whether the policy or action is planned, adopted, or implemented (in effect)
Date of implementation	The date the policy or action comes into effect (not the date that any supporting legislation is enacted)
Date of completion (if applicable)	If applicable, the date the policy or action ceases, such as the date a tax is no longer levied or the end date of an incentive scheme with a limited duration (not the date that the policy/action no longer has an impact on GHG emissions)
Implementing entity or entities	Which entity or entities implement(s) the policy or action, including the role of local, subnational, national, international, or any other entities
Objective(s) of the policy or action	The effects(s) or benefit(s) the policy or action intends to achieve (for example, the purpose stated in the legislation or regulation)
Geographic coverage and specified exceptions	The jurisdiction or geographic area where the policy or action is implemented or enforced, which may be more limited than all the jurisdictions where the policy or action has an impact
Sectors and subsectors targeted	Which sectors, subsectors, and source/sink categories are targeted, using sectors and subsectors from the most recent IPCC *Guidelines for National Greenhouse Gas Inventories* or other sector classifications
Greenhouse gases targeted (if applicable)	If applicable, which greenhouse gases the policy or action aims to control, which may be more limited than the set of greenhouse gases that the policy or action affects
Other related policies or actions	Other policies or actions that may interact with the policy or action assessed

Source: GHG Protocol *Policy and Action Standard* (2014).

[35] For examples of mitigation policies that have a positive economic return, see *Better Growth, Better Climate: The New Climate Economy Report* (2014), available at http://newclimateeconomy.net.

6.2 Outcomes put forward as contributions[36]

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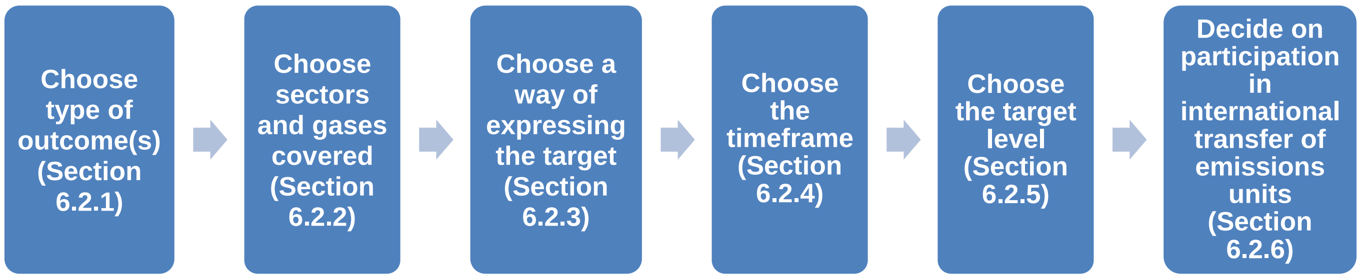
Parties that choose to put forward outcomes as their INDC should consider several decisions, outlined in Figure 6.2. Each step is described below.

Figure 6.2 Overview of steps for outcomes put forward as contributions



6.2.1 Choose type of outcome(s)

The first step is to consider the type of outcome(s) the Party wishes to put forward. As mentioned in Chapter 4, outcomes are a commitment to reduce GHG emissions or achieve other outcomes by a certain amount, and may include national greenhouse gas reduction targets, energy targets (such as energy efficiency targets or renewable energy targets), or other non-GHG targets (such as forest cover targets).

An example of a renewable energy target is a commitment to generate 25% of electricity from renewable sources by 2025 and to generate 100% from renewable sources by 2050. An example of an energy efficiency target is a commitment to increase national energy efficiency by 30% by 2030 compared to 2010 levels. An example of a forest cover target is a commitment to increase forest coverage by 50 million hectares and forest stock volume by 1 billion cubic meters by 2020 compared with 2005 levels.

This first basic step entails deciding whether a GHG outcome or non-GHG outcome (and if so, what kind of non-GHG outcome) is being targeted. (Section 6.2.3 will further describe choices related to the form of the contribution.)

6.2.2 Choose sectors and gases covered

The second step is to consider which sectors and greenhouse gases are covered by the mitigation contribution.

Choose sectors

The IPCC *2006 Guidelines for National Greenhouse Gas Inventories* groups GHG emissions and removals[37] into five main sectors: (1) energy; (2) industrial processes and product use (IPPU); (3) agriculture, forestry and other land use (AFOLU); (4) waste; and (5) other.

In general, Parties seeking to set a comprehensive target should set an economy-wide target by including all sectors within the target. Incomplete sectoral coverage may compromise the emissions reductions by excluding significant emissions sources and may cause leakage, whereby activities (such as policies, actions, and projects) implemented to meet the target cause an increase in emissions from sectors not included in the target boundary.

[36] The guidance in this section is adapted from the GHG Protocol *Mitigation Goal Standard* (WRI, 2014).
[37] Emissions are releases of greenhouse gases into the atmosphere, while removals are removals of GHG emissions from the atmosphere through sequestration or absorption.

Instead of including all sectors within the target boundary, Parties may instead choose to set a sectoral target. Sectoral targets are mitigation targets that cover one sector and may be adopted as a way to focus mitigation efforts and resources on a high emitting sector. Setting a sectoral target for a high-emitting sector may be preferable if one sector dominates the national GHG inventory and if data limitations in smaller sectors make regular monitoring through the national inventory difficult.

Parties adopting non-GHG targets can adopt one or more sectoral targets. Renewable energy targets and energy efficiency targets apply to the energy sector only. Forest cover targets apply to the AFOLU sector only.

Choose approach for the land use sector

Accounting approaches for the land use sector differ in some ways to those of other sectors because of the significance of natural-disturbance-related emissions, and because of the size and arbitrariness of legacy effects, where past management has an effect on carbon stocks to cause stocks to vary even in the presence of sustainable management. As a result, accounting for the land sector may differ from national and subnational GHG inventory accounting methods due to its unique characteristics.

The land use sector refers to the following land-use categories: forestland, cropland, grassland, wetland, and settlement, and includes emissions and removals from land in agricultural production and grazing lands/grasslands (IPCC, 2006). These categories are collectively referred to as LULUCF in the 2003 IPCC *Good Practice Guidance* and in the common reporting format used for reporting emissions to the UNFCCC. Users including AFOLU in the goal boundary should separately report agriculture and land use because of the special accounting rules that may apply to the latter.

Benefits of including the land use sector in the target boundary include: (1) maximizing mitigation opportunities by ensuring that land sector emissions and removals are included in economy-wide mitigation strategies; and (2) minimizing the potential for leakage of emissions from covered sectors to the land use sector (such as the use of biomass for energy production).

The way in which the land use sector is treated may have significant implications for the target coverage, emissions reductions achieved by implementing the target, and the ability to meet the target. Parties may treat emissions and removals from the land sector in one of four ways:

- <u>Include in the target boundary</u>: The land use sector is included in the target boundary, like other sectors. Emissions and removals in the sector are accounted for in a manner consistent with the target type.
- <u>Sectoral target</u>: A sectoral target for the land use sector is separately designed and assessed, apart from any other mitigation targets. If the land sector is treated as a sectoral target, only emissions and removals in the land sector are included within the sectoral target boundary.
- <u>Offset</u>: The land use sector is not included in the target boundary. Instead, net land sector emissions added to emissions from sectors included in the target boundary. If net land sector emissions are negative (removal) then this value will offset emissions from sectors within the target boundary. (The use of the term “offset” here does not refer to using project-level accounting methods to generate offset credits, but instead refers to applying the total change in net land sector emissions over the target period to emissions in other sectors.)
- <u>Do not account for the land use sector</u>: The land use sector is not included in the target boundary. This carries the risk of not reducing emissions in the sector, which could be especially problematic for developing countries in which the sector is one of the most emissions intensive.

The way in which land use sector emissions and removals are treated may have a significant impact on the emissions reductions generated under the target. Table 6.3 outlines advantages and disadvantages of each approach.

Table 6.3 Advantages and disadvantages of ways to treat the land use sector in a mitigation target

Treatment of land sector	Advantages	Disadvantages
Included in the target boundary	• Consistent with other sectors covered by the target • Provides a signal to reduce land use sector emissions • May lead to a more efficient distribution of mitigation effort across sectors	• May require additional land sector data • Provides less flexibility to design a specialized target for the land sector, unless special rules are applied
Sectoral target	• Provides a signal to reduce land use sector emissions • Enables Parties to design a specialized target for the land sector • Special circumstances of the sector may be easier to explain.	• May require additional land sector data • Having multiple targets (one for the land use sector, and one for other sectors) may be difficult to communicate to stakeholders • May reduce efficiency of mitigation across sectors
Offset	• Provides flexibility to treat the land use sector differently from other sectors covered by the target • Allows Parties to choose land sector accounting method	• May not provide a signal to reduce land use sector emissions • Depending on accounting approach chosen, may account for emission reductions or enhanced removals that would have occurred in the absence of the target, which would enable the target to be met without additional effort • May require additional land use sector data
Not accounted for	• Appropriate for Parties with insignificant land use sector emissions	• Does not provide a signal to reduce land use sector emissions

Although inclusion in the target is preferred, Parties may instead choose to adopt a separate sectoral target for the land use sector in a few cases. Parties with base year intensity targets based on a unit of economic output should consider removing the land sector from the target boundary, accounting and reporting progress separately using a more appropriate metric, such as emissions per hectare of land.

See the GHG Protocol *Mitigation Goal Standard* for further guidance on how the land sector can be accounted for under a target, including accounting method, treatment of natural disturbances, inclusion of harvested wood products, among other information.

[Placeholder for further guidance on accounting relative to a base year (net-net), forward looking baseline, or no reference level (gross-net)]

Choose greenhouse gases

Seven greenhouse gases are covered under UNFCCC and Kyoto Protocol: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF_6), and nitrogen trifluoride (NF_3).

Parties seeking to set a comprehensive target should include all seven greenhouse gases covered under UNFCCC and Kyoto Protocol. Parties may include fewer greenhouse gases depending on objectives, data quality, mitigation opportunities, and capacity to accurately measure and monitor each greenhouse gas. At a minimum, Parties should include the gases that contribute most to the national GHG inventory.

Non-CO_2 gases (CH_4, N_2O, HFCs, PFCs, SF_6, and NF_3) require metrics to convert gases to common units. Global warming potential (GWP) are metrics for converting one unit of a given GHG relative to a unit of carbon dioxide.[38] Parties should communicate their assumed accounting methods when putting forward their INDCs.

Non-GHG outcomes may not directly target any specific greenhouse gases.

[*Placeholder section on geographic coverage]*

6.2.3 Choose a way of expressing the target

A GHG reduction target may be expressed in multiple ways. See Table 6.4. Figures 6.3—6.6 illustrate these four ways to frame a target. Renewable energy targets are typically in the form of a base year target. Energy efficiency targets are typically in the form of a base year intensity target.

Most types of targets can be translated and framed as a different type of target. For example, a base year emissions target could be converted to a fixed level target by framing the target in terms of expected emissions in the target year(s), rather than in reference to historical emissions. Similarly, static baseline scenario targets fix expected emissions in the target year, so a static baseline scenario target could be reframed as either a base year emissions target, fixed level target, or base year intensity target, using simple equations. Section 6.4 provides equations for calculating expected emissions in the target year.[39]

Table 6.4 Four ways to express a GHG reduction target

Type of target	Description	Reductions in what?	Reductions relative to what?
Base year emissions target	A commitment to reduce, or control the increase of, emissions by a specified quantity relative to a historical base year. For example, a 25% reduction from 1990 levels by 2020. These are sometimes referred to as “absolute” targets.	Emissions	Historical base year
Fixed-level target	A commitment to reduce, or control the increase of, emissions to a specified emissions quantity in a target year/period. Fixed-level target include carbon-neutrality targets of phase-out targets, which aim to reach zero net emissions by a specified date. For example, zero net emissions by 2050. They also include “peak-and-decline” targets, such as emissions peaking at a specified level in 2020 and declining thereafter.	Emissions	No reference level
Base year intensity target	A commitment to reduce emissions intensity (emissions per unit of another variable, typically GDP) by a specified quantity relative to a historical base year. For example, a 40% reduction below 1990 base year intensity by 2020.	Emissions intensity	Historical base year
Baseline scenario target	A commitment to reduce emissions by a specified quantity relative to a projected emissions baseline scenario. A baseline scenario is a reference case that represents future events or conditions most likely to occur in the absence of activities taken to meet the mitigation target. For example, a 30% reduction from baseline scenario emissions in 2020. These are sometimes referred to as business-as-usual or BAU targets.[40]	Emissions	Projected baseline scenario

[38] For more information, see http://www.ipcc.ch/publications_and_data/ar4/wg1/en/ch2s2-10.html.
[39] Using projections for the unit of output from the baseline scenario target.
[40] In this standard, baseline scenario is used as a general term to refer to any type of emissions projection. The term business-as-usual (BAU) scenario is often used to refer to a type of baseline scenario that includes already implemented and adopted policies. Section 6.2.3 provides more information on including policies in the baseline scenario.

Figure 6.3 Example of a base year emissions target

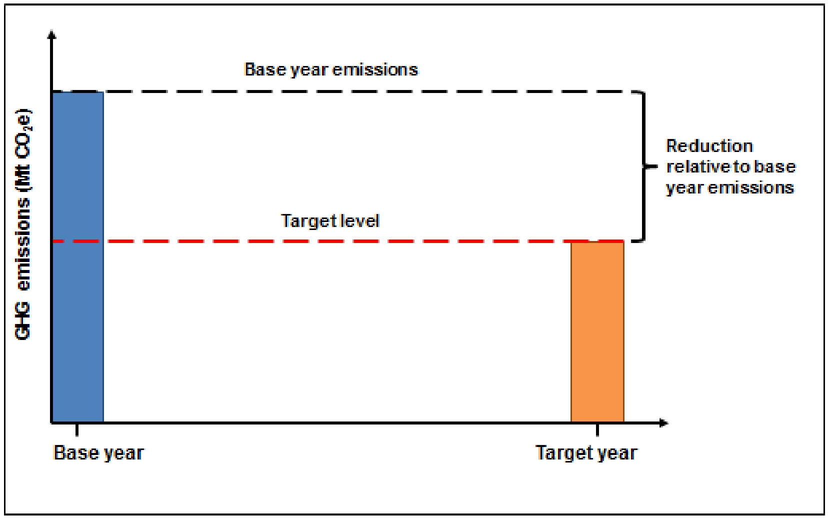


Figure 6.4 Example of fixed-level target

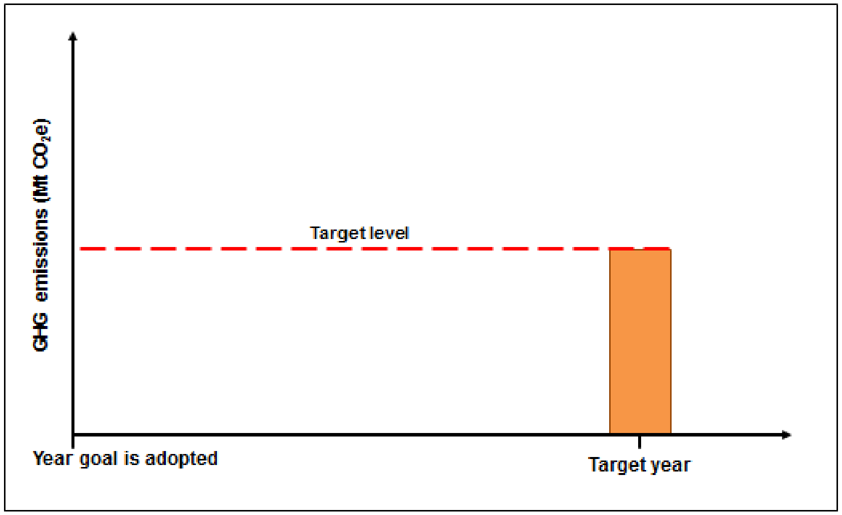


Figure 6.5 Example of a base year intensity target

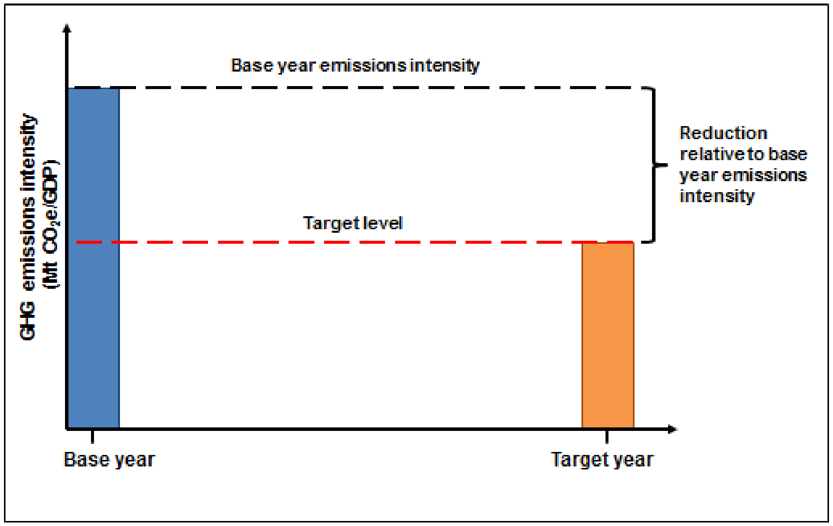
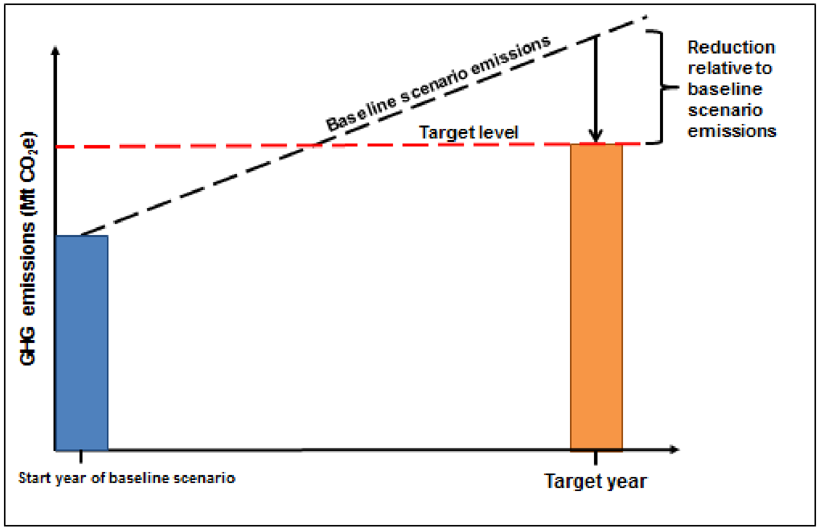


Figure 6.6 Example of a baseline scenario target



Guidance for choosing a way of expressing the target

The way a target is framed is a decision independent of the level of effort or ambition of a target, or the extent of GHG reductions associated with a target. A single target could be expressed in any of the four ways. Any of the types of targets could lead to emissions increases or decreases over the target period.

Base year emissions targets and fixed-level targets are simpler to account for and track progress, more certain, and more transparent than base year intensity targets and baseline scenario targets, because expected emissions in the target year(s) can be easily calculated at the beginning of the target period. This gives clarity both for domestic planning and increases transparency. Also with base year emissions targets and fixed-level targets, progress can be tracked using the GHG inventory alone without the need for additional models, socioeconomic data, or assumptions, which makes these target types the most practical and least resource-intensive to track progress toward.

Parties seeking to accommodate short-term emissions increases should consider adopting base year emissions targets or fixed-level targets that are framed as a controlled increase in emissions from a base year (for example, limiting emissions in 2025 to 5% above 2010 emissions). Such Parties could still communicate that the target represents a reduction in emissions intensity or a reduction relative to business-as-usual emissions, even if the form of the adopted target is a controlled increase from a base year.

Base year intensity targets introduce uncertainty, since expected emissions in the target year are unknown, which hinders both transparency and domestic planning. To estimate future emission levels associated with intensity targets, projections are needed regarding the level of output (such as GPD) in the target year, which are very uncertain. From a transparency perspective, it may be difficult to determine whether a reduction in emissions intensity translates to an increase or decrease in absolute GHG emissions, and by how much, given that the level of output is not fixed.

Baseline scenario targets are the most difficult to implement and assess. They introduce many practical challenges and are the most resource-intensive to implement. The development of baseline scenarios requires a large amount of data, advanced modeling techniques, specialized technical capacity, and assumptions about the likely development of various emissions drivers. In addition, projections of the future are inherently uncertain and can vary widely based on underlying methods, models, and assumptions. If the baseline scenario is dynamic and changing over the goal period, the expected emissions level in the target year is difficult to determine, which can hinder domestic planning and decision making. It may be difficult to determine whether a reduction relative to a baseline scenario translates to an increase or decrease in absolute emissions. It may also be difficult to determine whether baseline scenario emissions are overestimated, which would compromise the environmental integrity of the target. This also compromises transparency for stakeholders and the international community.

Parties that wish to adopt a target that is independent of changes in output (such as GDP or population), should consider adopting a base year intensity target rather than a baseline scenario target, given the practical challenges involved in accounting for baseline scenario targets.

Given the disadvantages of baseline scenario targets, as described above and below, Parties should consider reframing baseline scenario targets as another type of target, such as a base year emissions target or fixed level target even if the target level limits the increase in emissions.

Additional guidance on baseline scenario targets

For Parties that adopt baseline scenario targets, baseline scenarios may either be static or dynamic. A static baseline scenario is developed and fixed at the start of the target period and not recalculated over time. A dynamic baseline scenario is developed at the start of the target period and recalculated during the target period based on changes in emissions drivers such as GDP or energy prices.

To have greater certainty and transparency regarding intended future emissions levels, Parties should choose static baseline scenario targets, since they represent a fixed point against which to calculate expected emissions in the target year(s) and assess progress. In comparison, dynamic baseline scenario targets represent a "moving target" where emissions in the target year are unknown ahead of time, which poses significant transparency and clarity challenges. The lack of a fixed target level makes developing interim milestones difficult, which can hinder planning and decision-making. Static baseline scenario targets also introduce fewer practical challenges related to tracking progress than dynamic baseline scenario targets, which are more resource-intensive due to the need to recalculate baseline emissions periodically. See Table 6.5 for an outline of advantages and disadvantages of static and dynamic baseline scenario targets.

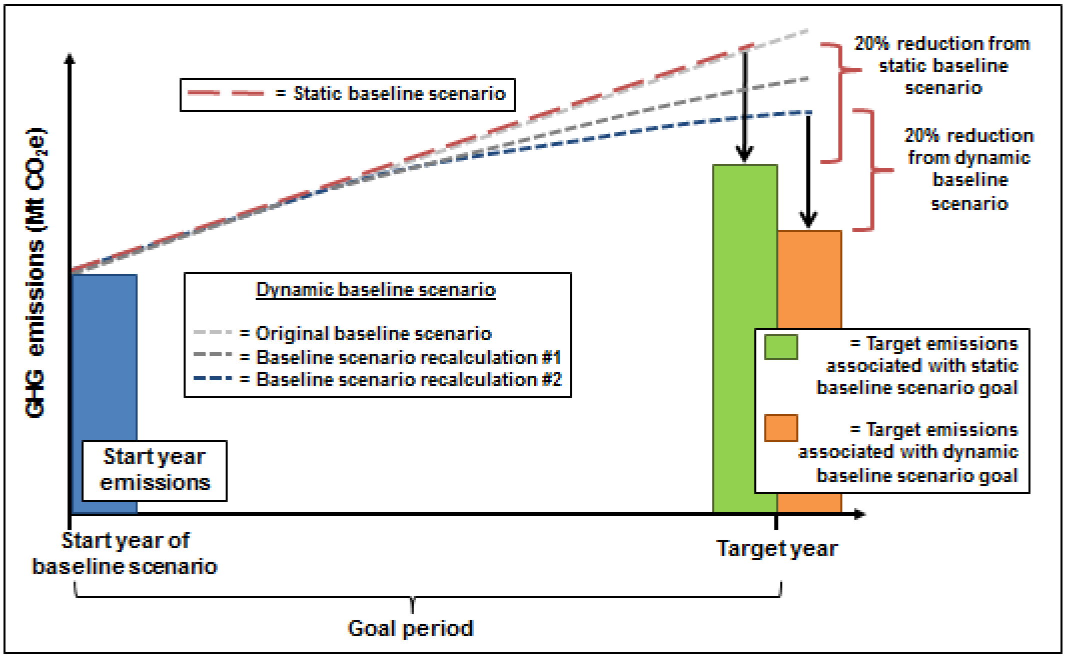
Parties adopting either static or dynamic targets should provide the projected value of baseline emissions in the target year (against which the contribution is being measured), as well as assumptions and methodologies, as part of the upfront information in order to provide transparency on future intended emissions.

Table 6.5 Advantages and disadvantages of static and dynamic baseline scenario targets

	Advantages	Disadvantages
Static baseline scenario target	• The emission level to be achieved by the target year is fixed, which offers decision makers more certainty on the target and offers stakeholders more transparency about the target level of emissions to be achieved • Easier to implement, since recalculation is not necessary	• Cannot easily isolate the level of effort associated with meeting the target. For example, it combines changes in emissions due to mitigation efforts with those resulting from changes in emissions drivers such as GDP or energy prices (assuming these drivers are not directly affected by mitigation policies).
Dynamic baseline scenario target	• Can more easily isolate the level of effort associated with meeting a target, since it is recalculated to account for changes in exogenous drivers • Can accommodate unforeseen changes in exogenous factors through recalculation	• The intended emissions level in the target year is more uncertain, as it is subject to change, which creates more uncertainty for decision makers and other Parties and less transparency for stakeholders • More challenging and resource-intensive to implement, given the need to recalculate emissions for changes in drivers

Figure 6.7 illustrates the difference between static and dynamic baseline scenario targets. In the figure, expected emissions in the target year change depending on whether a static or dynamic baseline scenario is chosen. In this example, the dynamic baseline scenario is recalculated downward over the target period, which lowers expected emissions in the target year. Dynamic baseline scenarios can also be recalculated upward, which would have the opposite effect.

Figure 6.7 Example of static versus dynamic baseline scenarios



Parties with dynamic baseline scenario targets should develop and report a baseline scenario recalculation policy at the start of the target period. If a dynamic baseline scenario target is chosen, the baseline scenario recalculation policy at the start of the target period, including which exogenous drivers—emissions drivers that are unaffected by mitigation policies or actions implemented to meet the target—will trigger a recalculation. Parties should apply the recalculation policy in a consistent manner.

Which existing policies and actions are included in the baseline scenario can have a significant effect on the estimate of baseline scenario emissions. For both static and dynamic baseline scenario targets, the baseline scenario should be developed by including the effects of all currently implemented and adopted policies and actions that have a significant effect on GHG emissions, either increasing or decreasing. Parties should identify the cut-off year after which no new policies or actions are included in the baseline scenario.

6.2.4 Choose contribution timeframe

A decision has not yet been made under the UNFCCC on whether there will be commitment periods and, if so, what length they will be. In the absence of a decision, the choice of timeframe of the contribution should be based on several factors, including:

1. Whether to set a long-term target in addition to a short-term target
2. The base year for the contribution (for Parties with base year emissions targets and base year intensity targets)
3. Whether to adopt a single-year or multi-year target
4. The end date of the contribution—i.e., the target year or period

Whether to set a long-term target in addition to a short-term target

In addition to setting a short-term target, Parties may also choose to set long-term targets. Short-term targets tend to be more concrete and are achieved in the near term (for example, by 2025 or 2030). Long-term targets tend to be more aspirational or visionary and may take the form of reducing emissions by, for example, 85% by 2050 relative to 1990 levels, or phasing out net greenhouse gas emissions over the long term. Long-term targets can facilitate long-term mitigation planning and investment. For example, a longer term target may provide signals for capital investments spanning many decades and provide greater certainty for businesses and other stakeholders about the longer-term policy and investment context if supporting policies are put in place. Long-term targets provide long-term direction, while short-term targets enable countries to meet the vision over regular milestones.

There can be benefits to adopting a combination of short-term targets (e.g., 2025, 2030) and long-term targets (2050). Coupled short-term and long-term targets provide more clarity for long-term planning and better ensure a decreasing emissions pathway over time such that the long-term target is achieved. Coupled targets can also reveal realistic and cost-effective emissions reduction pathways by defining regular and plausible milestones on a path toward a long-term target. See Box 6.2 for an example of coupled targets adopted by the United Kingdom.

An example of setting multiple targets over time may be a 20% reduction from 1990 base year emissions by 2020, followed by a 30% reduction from 1990 base year emissions by 2025, and followed by a 40% reduction from 1990 base year emissions by 2030.

Parties that need to accommodate short-term increases in emissions should consider adopting a "peak-and-decline" target, which specifies a target year in which emissions peak and a subsequent target year in which emission decline relative to the target year. To facilitate accounting, Parties with a series of single-year targets should specify the target year for each single-year target as well as the emissions levels in the peak year and long-term target year. A "peak-plateau-and-decline" target can also be designed in which peak year emissions are held for several years before declining. In practice, this type of target is similar to a fixed-level target, since a peak level of emissions is specified without reference to a base year or baseline scenario.

The base year for the contribution

A base year is a year of historical emissions (or emissions intensity) data against which current emissions (or emissions intensity) are compared. Base years are needed for base year emissions targets and base year intensity targets. Base years are not needed for fixed level targets and baseline scenario targets. Examples of base years are 1990 and 2005.

A base period should be chosen if emissions fluctuate significantly from year to year in order to smooth out fluctuations and track progress against a more representative emissions level. Parties should avoid picking a year or years with uncharacteristically high or low emissions. A base year or base period for which representative, reliable, and verifiable emissions data are available enables comprehensive and consistent tracking of emissions over time.

Whether to adopt a single-year or multi-year target

Single-year targets aim to reduce emissions by a single target year, while multi-year targets aim to reduce emissions over a defined target period in consecutive years. For example, a single-year target might aim to reduce emissions by 2025, whereas a multi-year target would aim to reduce emissions over the five-year period from 2021-25. See Figures 6.8 and 6.9.

Figure 6.8 Example of a single-year target

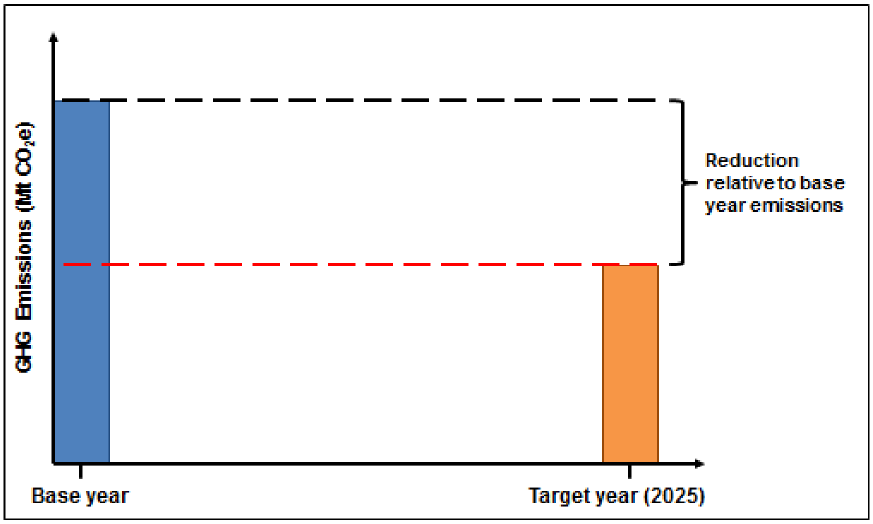
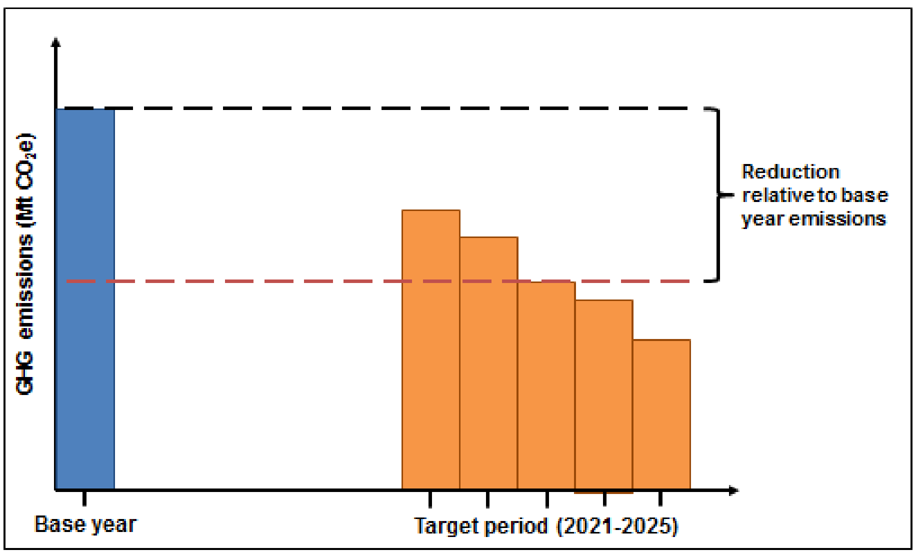
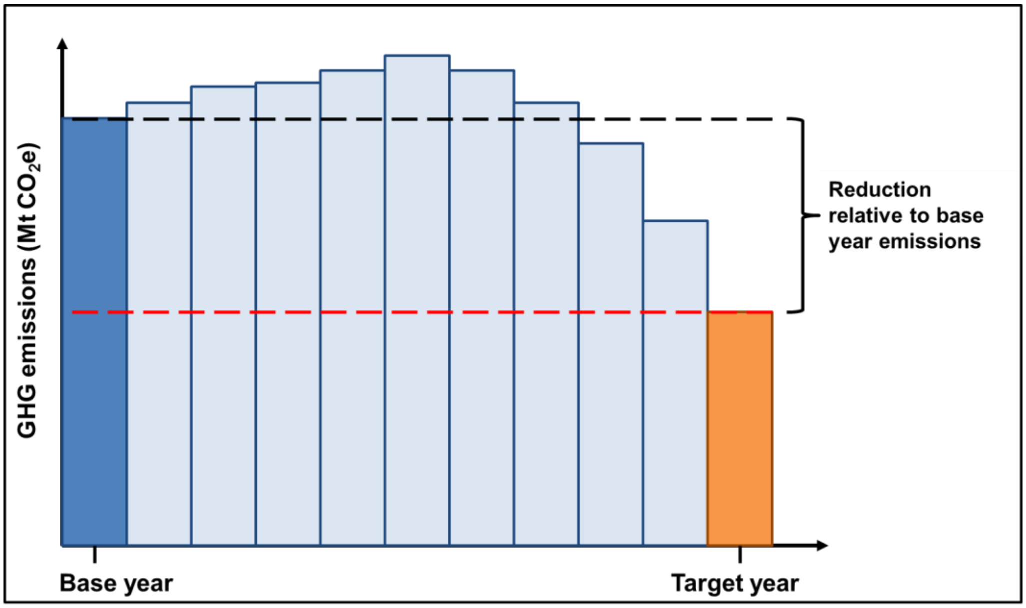


Figure 6.9 Example of a multi-year target



Multi-year targets help enable a better understanding of anticipated emissions levels over multiple years, rather than only a single year. Unless milestones are established with a single year target, multi-year targets have a better chance of limiting cumulative emissions over the target period, as emissions may fluctuate more with single year targets over the target period. See Figure 6.10. Several recent studies have shown that climate change is closely related to the total cumulative amount of CO_2 emissions released over a time period, rather than the timing of those emissions (see Allen et al. 2009; Matthews et al. 2009; Meinshausen et al. 2009; and Zickfeld et al. 2009). The IPCC Fifth Assessment Report (AR5) summarizes the scientific literature and estimates that cumulative carbon dioxide emissions related to human activities need to be limited to 790 PgC since the beginning of the industrial revolution in order to have a likely chance of limiting warming to 2°C (IPCC 2013).

Figure 6.10 Risk of cumulative emissions growth over the target period with single-year target



Multi-year targets provide more clarity about the expected emissions pathway and reveal whether cumulative emissions are limited sufficiently to meet temperature targets. It is also likely that multi-year targets will lead to transformed emissions pathways in which emissions continue to be reduced after the target period, as opposed to with single year targets which may be met more easily without requiring necessary transformations in emissions-intensive sectors. Multi-year targets are also less vulnerable to inter-annual fluctuations than single-year targets. Therefore, they are less subject to the risk that single year targets face in which emissions increase during the target period then to be reduced only shortly before the target year, which results in a larger amount of cumulative emissions than if emissions were capped year-over-year by a multi-year target.

It should also be noted that, unless there is a restriction on the vintages, or years, of transferable emissions units that can be applied in the target year, it is possible that purchasers of units collect vintages of offset credits from multiple years during the goal period and retire them only in the target year(s) in an effort to meet the target. While from an accounting perspective this is not problematic, as it is easy to account for such units in the evaluation of achievement of the goal, the Party could engage in very minimal mitigation within its boundary by choosing instead to retire a large volume of units in the target year. This is a particular risk with single-year targets, as fewer units need to be retired in order to meet the goal (as emissions limits are only for one year). With multi-year goals, the volume of units that would have to be retired would be so large that this risk may not be as large. For further explanation, see Lazarus, Kollmuss, and Schneider 2014; and Prag, Hood, and Martins Barata 2013.

If a multi-year target is selected, it may be defined as an average, annual, or cumulative multi-year target. An average multi-year target is a commitment to reduce, or control the increase of, annual emissions (or emissions intensity) by an average amount over a target period. An annual multi-year target is a commitment to reduce, or control the increase of, annual emissions (or emissions intensity) by a specific amount each year over a target period. A cumulative multi-year target is a commitment to reduce, or control the increase of, cumulative emissions over a target period to a fixed absolute quantity.

Box 6.2 provides an example of a cumulative multi-year target in the United Kingdom.

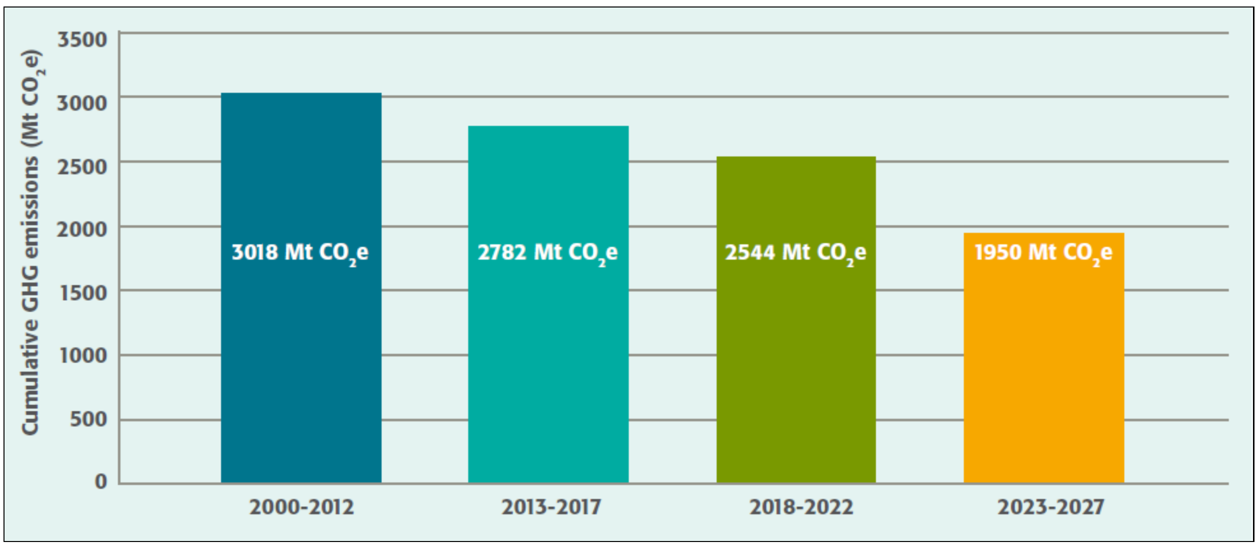
Box 6.2 The United Kingdom's fixed-level, cumulative multi-year targets

The United Kingdom has adopted a series of fixed-level, cumulative multi-year targets. These targets, referred to as carbon budgets, are required under the UK Climate Change Act 2008 and have been developed in an effort to meet a long-term target of reducing emissions by at least 80 percent below 1990 levels by 2050. This long-term target was chosen based on the most recent climate science and was determined to constitute a fair contribution toward global emission reductions necessary to limit warming to 2°C above pre-industrial levels (CCC 2008).

The first multi-year target has a target period of 2008-12, with expected emissions in the target period of 3,018 Mt CO_2e (equivalent to average annual emissions of 603.6 Mt CO_2e). The second has a target period of 2013–17, with expected emissions in the target period of 2,782 Mt CO_2e (equivalent to average annual emissions of 556.4 Mt CO_2e). The third has a target period of 2018-22, with expected emissions in the target period of 2,544 Mt CO_2e (equivalent to average annual emissions of 508.8 Mt CO_2e). Last, the fourth target period runs from 2023-27, with expected emissions in the target period of 1,950 Mt CO_2e (equivalent to average annual emissions of 390 Mt CO_2e). Figure 6.11 shows the cumulative emissions targets for each target period.

The UK has designed the series of targets so that it can gradually reduce emissions to meet its long-term target in 2050. The use of multi-year targets was preferred over single-year targets since they are designed to limit cumulative emissions over time and allow some year to year flexibility.

Figure 6.11 Cumulative emissions targets for each target period



Choosing the end date of the contribution (target year or period)

Target years or periods are needed for all types of targets, for both short-term and long-term targets. A target year (or period) represents the year (or consecutive years over a period) by which a Party commits to achieving the target. Examples of target years are 2025, 2030, and 2050. Examples of target periods are 2021-2025 and 2026-2030. Long-term target years could include 2050, 2070, and 2100.

A decision has not yet been made under the UNFCCC on whether there will be commitment periods and, if so, what length they will be. For the time being, Parties can decide on their timeframes but in the longer term this may be agreed under the UNFCCC.

Parties should consider which timeframe is best aligned with domestic policy and planning processes; which is most likely to lead to effective implementation consistent with reaching long-term GHG reduction targets; which provides the right signals to implementers; which will lead to the greatest policy stability; and which provides time for planning the next set of contributions; among other considerations.

6.2.5 Choose target level

Defining the target level is the final step in the target design process. The target level represents the quantity of emission reductions or other outcome that the country commits to achieving. For GHG reduction targets, what the target level represents varies by the type of target (see Table 6.6).

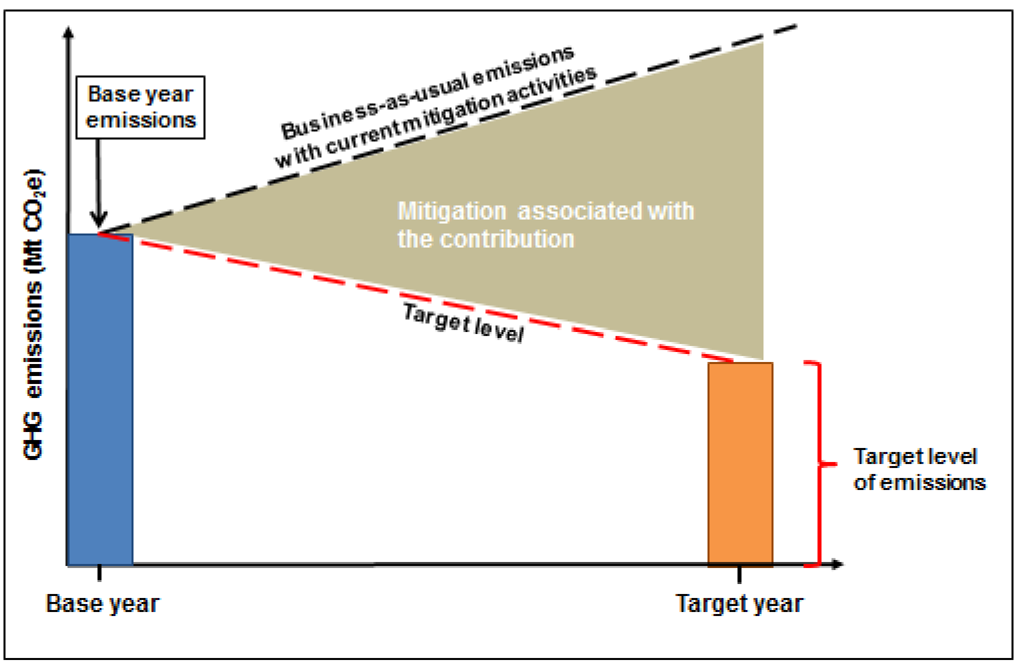
Table 6.6 What the target level represents, by target type (for GHG reduction targets)

Type of target	What the target level represents
Base year emissions target	The percentage reduction or controlled increase in emissions to be achieved relative to base year emissions
Fixed-level target	The absolute quantity of emissions and removals to be achieved in the target year or period
Base year intensity target	The percentage reduction or controlled increase in emissions intensity to be achieved relative to base year emissions intensity
Baseline scenario target	The percentage reduction or controlled increase in emissions to be achieved relative to baseline scenario emissions

For renewable energy targets the target level typically represents the percentage of renewable energy generation in the target year. For energy efficiency targets the target level typically represents the percentage reduction in energy efficiency to be achieved relative to base year energy efficiency.

Figure 6.12 provides an illustration of setting the GHG target level.

Figure 6.12 Setting the GHG target level



Guidance for defining the target level

Parties should seek to develop a contribution that is realistic and achievable, while also being ambitious and contributing to the efforts to achieve the global 2°C goal.

In general, the target level should be:

- Realistic and achievable: The contribution should be informed by considering the feasibility of emission reductions based on an assessment of mitigation potential in key sectors (such as renewable energy potential), costs and co-benefits of mitigation, political feasibility, and national circumstances and objectives, in the context of common but differentiated responsibilities and respective capabilities.
- Ambitious: The IPCC notes that all major emitting regions must make "substantial reductions" below their projected baseline emissions over the century to have a likely chance of limiting warming to 2°C. An ambitious target level is substantially below the business-as-usual emissions trajectory (where BAU takes into account currently implemented and adopted mitigation policies)[41] and realizes the country's mitigation potential to the greatest extent possible.[42, 43]
- Aligned with the 2°C goal: The target should correspond to a level that is consistent with meeting the 2°C goal, informed by recent climate science. Climate science considerations for achieving the 2°C goal include: the need to limit cumulative emissions over time; peak global emissions by 2020; phase out global GHG emissions to zero or below by 2100; and ensure a feasible rate of decarbonization between when emissions peak and the long-term phasing out of emissions (see Box A.2).

Parties would need to balance tradeoffs between these three factors based on national circumstances when defining the target level. After defining a target level to be undertaken by a Party using its own resources, developing country Parties may choose to define a target level to be undertaken with additional financing (see Section 6.3).

When formulating a contribution, Parties should consider both national considerations (such as which mitigation technologies, policies, or actions can realistically be implemented, and what are the collective GHG reductions associated with that set of actions) as well as global considerations (such as what level of GHG reductions represents an ambitious and fair contribution to the global 2°C goal). Considering both national feasibility as well as global GHG reduction needs is helpful for developing an INDC that is both realistic and robust. See Figure 6.13.

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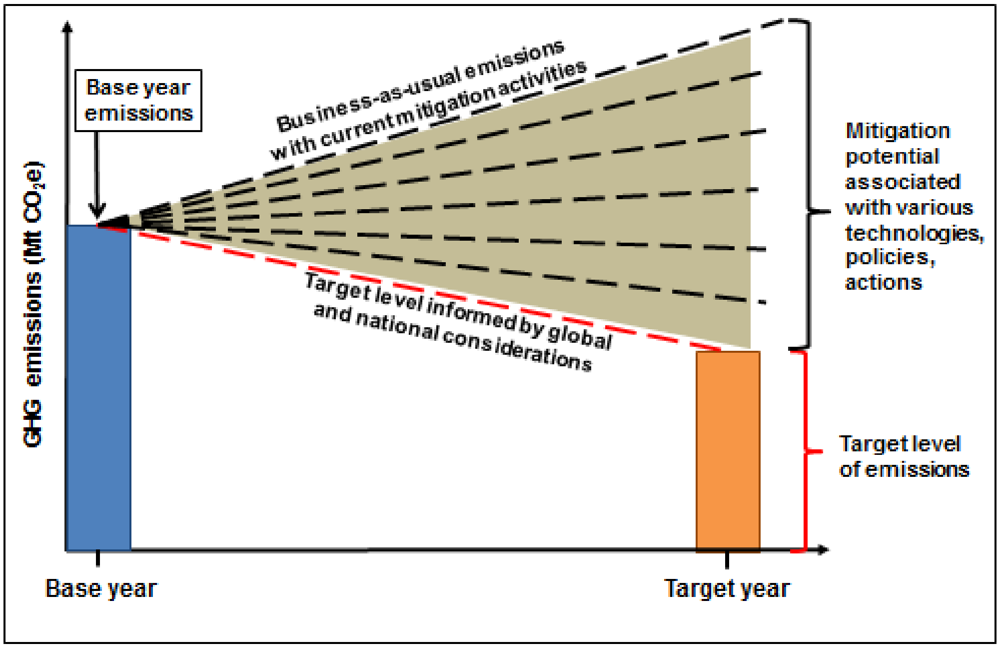
[41] Unless currently implemented and adopted mitigation policies or actions already put the Party on an emissions pathway in line with the global 2°C goal.
[42] Comparison to mitigation potential indicates the extent to which the target exploits mitigation opportunities that are considered technically and economically feasible (Ecofys 2014). Ambition in this sense depends on a country's economic development level, resource endowment, and other factors.
[43] Ambition may be also assessed in other ways, such as comparison to benchmarks for various decarbonization indicators (such as CO_2 per kilometer travelled by vehicles, CO_2 per megawatt hour of electricity production, or GHG per ton of cement or steel produced) or comparison to a good practice policy package (Ecofys 2014).

Figure 6.13 Defining the target level based on national and global considerations



Realistic and achievable

Parties should consider national circumstances and discrete mitigation actions, policies, or technologies that can feasibly be taken. This may involve packaging and converting existing, planned, and potential future mitigation actions to establish a broader national target. This could involve the following steps:

1. Identify currently implemented, adopted, and planned mitigation actions and commitments (such as current laws, plans, policies, NAMAs, LEDS, CDM or voluntary market offset projects, energy efficiency targets, and renewable energy targets), by sector
2. Identify and prioritize additional mitigation technologies, policies, and actions that are technically and economically feasible and could be implemented, by sector, based on criteria such as those in Box 6.1
    - During this step, developing country Parties can determine what mitigation options are technically and economically feasible with domestic resources and what additional mitigation options would be technically and economically feasible with additional financing (see Section 6.3)
3. Assess the aggregate mitigation potential from mitigation actions and options identified in steps (1) and (2) to determine a feasible level of GHG reductions to be achieved by the target year or period
4. Set the GHG target level at a level determined to be ambitious but realistic and achievable

This information may already be available from existing studies. If not, projections can be developed through the use of models. The following resources provide more information on tools for mitigation assessment:

- UNFCCC mitigation assessment resources[44]
- The Integrated Climate Modeling and Capacity Building Project in Latin America (CLIMACAP)[45]

[44] See http://unfccc.int/resource/cd_roms/na1/mitigation/index.htm

- MAPS (Mitigation Action Plans and Scenarios) Programme[46]
- UNEP Climate Technology Centre and Network[47]
- LEDS Global Partnership remote expert assistance on LEDs service and list of resources and tools[48]
- MARKAL[49] and TIMES modeling tools[50]
- McKinsey & Company GHG abatement cost curves[51]

Expert judgment can be used if information is scarce or unreliable, or as a means of verifying or strengthening the analysis. If a mitigation assessment is conducted, it should be undertaken in an open and transparent manner that engages relevant stakeholders and includes public review and comment periods.

Ambitious

As noted above, the IPCC Fifth Assessment Report notes that all major emitting regions must make substantial reductions below their projected baseline emissions over the century to have a likely chance of limiting warming to 2°C. An ambitious target level is substantially below the business-as-usual emissions trajectory (where BAU takes into account currently implemented and adopted mitigation policies)[52] and realizes the country's mitigation potential to the greatest extent possible. Comparison of emissions reductions to mitigation potential indicates the extent to which the target exploits mitigation opportunities that are considered technically and economically feasible (Ecofys 2014). Ambition in this sense depends on a country's economic development level, resource endowment, and other factors. Ambition may be also assessed in other ways, such as comparison to benchmarks for various decarbonization indicators (such as CO_2 per kilometer travelled by vehicles, CO_2 per megawatt hour of electricity production, or GHG per ton of cement or steel produced) or comparison to a good practice policy package (Ecofys 2014).

Aligned with the ultimate goal of the Convention and the 2°C goal

To align the INDC with the ultimate goal of the Convention and the global 2°C goal, the INDC should be informed by the level of emissions reductions needed to avoid dangerous climate change, as determined by recent climate science. Parties can better align their target with climate science by considering: the need to limit cumulative emissions over time; phase out global GHG emissions to zero or below by 2100; and ensure a feasible rate of decarbonization between when emissions peak and the long-term phasing out of emissions (see Box A.2).[53] Also, for those emissions scenarios that have a likely chance of limiting

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[45] See http://www.climacap.org/.
[46] See http://www.mapsprogramme.org/
[47] See http://www.unep.org/climatechange/ctcn/
[48] See http://ledsgp.org/assistance and http://ledsgp.org/tools
[49] See http://www.iea-etsap.org/web/Markal.asp
[50] See http://www.iea-etsap.org/web/Times.asp
[51] Available at http://www.mckinsey.com/client_service/sustainability/latest_thinking/greenhouse_gas_abatement_cost_curves
[52] Unless currently implemented and adopted mitigation policies or actions already put the Party on an emissions pathway in line with the global 2°C goal.
[53] This is for a likely chance of limiting warming to 2°C under a least cost scenario. Following these broad principles will not provide a guarantee that necessary global emission reductions would be achieved. A global assessment should be conducted regularly to ensure that national emissions trajectories are consistent with the necessary global emission reductions.

warming to 2°C, all regions peak global emissions by 2020;[54] while not all Parties will have to peak by this year, keeping the timing of emissions peak in mind in the design of the goal level can help ensure that global emissions peak in time.

An example is setting a long-term target such as zero net emissions by the end of the century or an 80% or higher reduction in emissions by 2050 below 1990 levels, and then establishing milestones along the pathway as a means of setting short-term targets for 2025 or 2030. For an example of such a target, see the United Kingdom's GHG targets (Box 6.2). Other targets may specify a peak year (such as 2025) and specify peak level of emissions in that year.

Because of the limitations in translating global GHG reduction needs to the national level, Parties may want to consider what constitutes a fair national contribution to the global 2°C goal by considering a range of factors.[55]

6.2.6 Decide on participation in international transfer of emissions units

It is critical to decide whether target will be through domestic emissions reductions only or whether to engage in international transfers of emissions units from international market mechanisms. Transferable emissions units include (1) offset credits generated from GHG reduction projects and (2) emissions allowances from emissions trading programs.

Parties should consider whether they plan to purchase transferable emissions units as a means of meeting emission reduction targets and/or plan to sell units to other Parties.

If transferable emissions units are to be purchased, the following decisions will need to be made:

- The expected quantity of units to be applied toward the target, including any limits on their use
- The types and quality of units to be used, including how they ensure environmental integrity
- The years or vintages of units to be used'

Parties should also determine what approaches will be taken to track transfers of units and prevent double counting or units sold to/and or purchased from other Parties.

Any future rules under the 2015 agreement may dictate which units could be applied towards targets for compliance purposes and how double counting of units is to be avoided. However, in the absence of such rules, the following sections provide some guidance on the quantity, quality, vintages of units, and means for avoiding double counting.

[54] See Table 6.4 in http://www.ipcc.ch/pdf/assessment-report/ar5/wg3/ipcc_wg3_ar5_chapter6.pdf
[55] Factors Parties may wish to consider when considering what represents a fair national contribution could include emissions responsibility (e.g., historical, current, or projected future emissions per capita or total emissions), economic capacity and development indicators (e.g., GDP per capita), vulnerability and capacity to adapt to physical and social impacts of climate change, relative costs of action and mitigation potential, and benefits of action (e.g., co-benefits). Consideration of fairness in the design and assessment of INDCs should be based on multiple criteria, rather than just one, given that different indicators can have very different implications for what constitutes a fair contribution. Parties may also use a weighted average of several indicators.

Deciding on quantity of units for purchase and sale

For sellers, the sale of units can bring additional public and private finance and catalyze emissions reductions. However, in order to avoid double counting, a selling Party will have to engage in additional mitigation to meet its target, as sold units will no longer count towards the seller's target.

For purchasers, using transferable emissions units to achieve a mitigation target has both advantages and disadvantages. Using units enables access to a wider pool of emission reduction opportunities that may lead to an increased target level, more cost-effective mitigation efforts, directly involve the private sector in mitigation, provide flexibility, increase technology transfer, provide benefits for sustainable development, and build technical capacity in jurisdictions where emissions reductions for offset credits are generated. On the other hand, relying on transferable emissions units, especially from outside of the jurisdiction, to achieve mitigation targets may lead to fewer domestic mitigation policies and actions, reduced action in the target boundary necessary to meet the mitigation target, which may limit co-benefits of GHG mitigation that would otherwise accrue. To meet long-term targets, it may be more cost-effective to take early domestic mitigation action, rather than rely on purchased units in later years, since prices can be volatile and lead to overall higher costs. In addition, if the units used toward the target are low quality and do not represent additional emission reductions, their use would compromise the environmental integrity of the target and may lead to net global emissions increases.

Parties should consider how their expected participation in international transfers of units fits with their proposed target type (e.g., base year emissions, fixed-level, base year intensity or baseline scenario target, and whether the target is single- or multi-year) in a manner that ensures environmental integrity.

Deciding on types and quality of units

Types of credits may include Certified Emission Reductions (CER) from the Clean Development Mechanism (CDM), Emission Reduction Units (ERU) from the Joint Implementation (JI) program Gold Standard Voluntary Emissions Reductions (VERs), or Verified Emission Reductions (VER) from the Verified Carbon Standard, among others.

Types of allowances may include European Union Allowances (EUA) from the European Union Emission Trading System (EU ETS) or Assigned Amount Units (AAU) from the Kyoto Protocol International Emissions Trading program, among others.

To safeguard environmental integrity, transferable emissions units applied toward the target must be equivalent to emissions reductions that would have been undertaken within the target boundary. To demonstrate this equivalency, offset credits applied toward the target should be: real, additional, permanent, transparent, verified, owned unambiguously, and address leakage. Allowances applied toward the target should come from emissions trading systems with rigorous monitoring and verification protocols, transparent tracking and reporting of units, and stringent caps.

Deciding on years or vintages of units

The vintage of a unit refers to the year in which the unit is generated. For example, a unit that is generated in 2014 has a 2014 vintage. It is possible that purchasers of units collect vintages of offset credits from multiple years during the target period and retire them only in the target year(s) in an effort to meet the target. This would be problematic if it led to very minimal mitigation within the target boundary by purchasers choosing instead to retire a large volume of units in the target year.

As mentioned above, this is a particular risk with single year targets, as fewer units need to be retired in order to meet the target (as emissions limits are only in one year). With multi-year targets, the volume of units that would have to be retired would be so large that it may not occur as often.

Therefore, if only target year or target period vintages are applied towards a target, it will maximize mitigation in the target year(s) and maintain consistent accounting. Under this approach, Parties purchase units at the end of the target period only if there is a shortfall between target year emissions and the maximum emissions associated with meeting the target. Doing so maximizes domestic mitigation during the target period. If Parties apply non-target year or period vintages, ambition during the target period will be maximized units with vintages that fall within a short period prior to the target year(s) during the target period.

Deciding on approach for tracking units and preventing double counting

Double counting of transferable emissions units occurs when the same transferable emissions unit is counted toward the mitigation target of more than one entity. Double counting of units undermines the environmental integrity of mitigation targets by resulting in a net increase of global emission reductions.

To prevent double counting, the following mechanisms for tracking units between buyers and sellers should be implemented:

- A registry that lists the individual serial numbers of the units, the quantity, status (canceled, retired, or banked), ownership, location and origin of transferable emissions units held by a jurisdiction
- An international transaction log that records the details of each transaction between registry accounts, including the issuance and retirement of transferable emissions units
- If not built into registries, agreements between buyers and sellers that specify which party has the exclusive right to claim each unit and specifies what percentage, if any, is shared
- Legal mandates that disallow double counting and employ penalty and enforcement systems
- Information sharing among trading programs to identify units that are already registered in other programs

6.3 What additional mitigation could be achieved with additional resources (for developing country Parties)?

Having undertaken the mitigation assessment suggested in Section 6.2, the next step is to decide what means will be used to undertake the INDC. For developing country Parties, this may require a combination of domestic financial sources (private and public) and international financing in the form of technology, capacity building and finance. This section describes some of the tools and methods Parties might consider.

6.3.1 Technology

The UNFCCC has developed a number of tools to help countries identify their technology needs and find solutions to their specific problems. The starting point for identifying technology needs is the Technology Needs Assessment (TNA) which can be the basis for identifying a portfolio of environmentally sustainable technology (EST) projects and programmes.[56] To assist countries, the UNFCCC has developed a handbook to help countries in making informed decisions on their technology choices. It offers a systematic approach for conducting technology needs assessments in order to identify, evaluate and prioritize technological means for both mitigation and adaptation.[57] It also provides processes and

[56] http://unfccc.int/ttclear/templates/render_cms_page?TNA_home
[57] Recent experiences are documented in the following document. http://unfccc.int/ttclear/templates/ttclear/misc_/StaticFiles/gnwoerk_static/HOME_carousel/ff36315120154f119f19b295f348e700/329ae298f41f40708df6344b0618d39c.pdf

methodologies for uncovering gaps in enabling frameworks and capacities and for formulating a national action plan to overcome them.

A complement to the TNA handbook is the technology information clearing house (TT:CLEAR)[58] which aims to provide information about ongoing technology transfer activities under the Convention, as well as reliable technical, economic, environmental and regulatory information relating to the development and transfer of environmentally sound technologies.

The most recent development under the UNFCCC is the initiation of the Technology Mechanism[59] which represents a step toward a more dynamic arrangement geared towards fostering public-private partnerships, promoting innovation, catalyzing the use of technology road maps or action plans, responding to developing country Party requests on matters related to technology transfer; and facilitating joint R&D activities. The Climate Technology Centre and Network (CTCN)[60] is one element of this mechanism.

Mitigation assessment (described in Section 6.2.5) can be used to understand what mitigation options are technically and economically feasible with domestic resources and what additional mitigation options would be technically and economically feasible with other sources. For example, a Party could set a target to reduce emissions by 15% with domestic resources and an additional 5% with other resources in the form of technology, capacity building and financing. For relatively simple INDCs this would enable a country to gain insights about the investment costs associated with a shift from a "brown" option to a "green" INDC. However, determining the difference in investment cost needed to shift an entire economy from brown to green would be quite complex as it would require estimating how much a country is currently expending on coal, oil and gas exploration, development, transport, processing and conversion and how much is likely to be spent by both the government and the private sector in the future.

6.3.2 Capacity building

Many countries lack the domestic resources to support projects and innovations that would, for example, help stave off agricultural disasters or ease the transition to a clean energy economy. Capacity building is therefore crucial to help advance the objective of the Convention and can assist in furthering an INDC. Capacity building under the Convention takes place on three levels:

- Individual level: developing educational, training and awareness raising activities;
- Institutional level: fostering cooperation between organizations and sectors, as well as the development of organizations and institutions, including their missions, mandates, cultures, structures, competencies, and human and financial resources;
- Systemic level: creating enabling environments through economic and regulatory policies and the accountability frameworks in which institutions and individuals operate.[61]

It can be undertaken directly through specialized workshops, training and educational programmes or as part of projects that aim to develop policies or implement emission-reduction technologies. There is no "one size fits all" formula for capacity-building. It must always be country-driven, addressing the specific needs and conditions of countries and reflecting sustainable development strategies, priorities, and initiatives.

[58] http://unfccc.int/ttclear/pages/home.html
[59] http://unfccc.int/ttclear/templates/render_cms_page?TEM_home
[60] http://unfccc.int/ttclear/templates/render_cms_page?TEM_ctcn
[61] http://unfccc.int/cooperation_and_support/capacity_building/items/7061.php

6.3.3 Finance

Three pieces of information are needed to determine the financial needs for an INDC: an estimate of the total cost of the INDC (described in Section 6.2.5), an assessment of the domestic expenditures (national budgetary and private) available to implement the INDC, and a determination of the current finances for mitigation from international sources. Conceptually subtracting the last two from the first should reveal the finance gap needed to be filled (either domestically or internationally from a combination of public and private sources) to achieve particular goal. The next section provides information on how to address the latter two elements noted above.

There is no single way to estimate how additional resources can be used to further ambition or to determine the form that financial support should take.[62] First, as determined by the Climate Policy Initiative,[63] most climate finance is mobilized in the country where it is deployed.[64] Second, the financing of any given intervention is usually accomplished by blending a combination of loans (and loan guarantees), grants from governments budgets and international institutions, domestic banks, international banks and credit agencies, as no single source wants to assume the entire risk of a project.[65] There is, therefore, no simple formula that can be prescribed to estimate the amount and type of finance needed to accelerate or deepen the level of mitigation or to determine where domestic funding stops and international finance begins. Instead, Parties should be as transparent as possible in identifying assumptions and methodologies that determine their estimates of finance needed to achieve different goals.[66] That being said, the initiatives described below provide methodological guidance, but it should be noted that gathering the requisite data could take some time. (Also see Table 3.1 for sources of data related to resource mobilization strategies.)

6.3.3.1 Useful references for methods to estimate domestic climate finance

The UNFCCC Standing Committee on Finance has done a survey of methods used by international institutions to estimate and report on finance provided to developing countries.[67] The same methods can be applied to estimating domestic public expenditures in developing countries. Of the ones used, the Multilateral Development Banks (MDBs)[68] and International Development Finance Club (IDFC)[69] method

[62] For example assistance may be required to help incorporate climate change objectives into private and government bank loan criteria, develop a legal framework to encourage investing in perceived higher risk renewable projects, develop the institutional framework for fiscal and tax reforms and other measures to allocate capital efficiently, create and issue green bonds, build a venture a capital community for emerging mitigation technologies or assess the feasibility of a climate change bank or trust fund.
[63] Buchner B., A. Falconer, M. Hervé-Mignucci, and C. Trabacchi (2013). The Landscape of Climate Finance 2012. Climate Policy Initiative, Venice, Italy. Available at: http://climatepolicyinitiative.org/publication/global-landscape-of-climate-finance-2013/.
[64] The CPI estimates that of approximately $359 billion in total global finance, most climate finance (USD 273 billion = 76%) is mobilized and deployed in the same country; this is the case for both developed (80% of funds deployed) and developing (71% of funds deployed) countries. A small amount of climate finance (less than USD 1 billion) flows from developing to developed countries.
[65] Also see the section on market mechanisms
[66] http://www.norden.org/en/news-and-events/news/practical-methods-for-assessing-private-climate-finance-flows
[67] Biennial Assessment and Overview of Climate Finance Flows Report 2014, Standing Committee on Finance, UNFCCC, Bonn. http://unfccc.int/files/cooperation_and_support/financial_mechanism/standing_committee/application/pdf/2014_biennial_assessment_and_overview_of_climate_finance_flows_report_web.pdf
[68] Joint Report On MDB Climate Finance 2013 http://www.eib.org/projects/documents/joint-report-on-mdb-climate-finance-2013.htm

for estimating and reporting mitigation finance is the one that can be most easily applied by developing countries to estimate their domestic expenditures and the level of incoming international support.[70] The method uses a positive list of technologies and activities to determine if a project or a component qualifies as a climate finance project. It is therefore relatively easy for countries to determine whether their domestic or international finance counts as climate finance; a project is either on the list or it is not.

The Climate Public Expenditure and Institutional Review (CPEIR) process has also been used in a number of developing countries to estimate domestic budgetary expenditures for climate change. It aims to help Parties review how national climate change policy are reflected in public expenditures and how institutions need to adjust to ensure that financing a response to climate change is delivered in a coherent way across government. CPEIRs have been undertaken in Nepal in 2011 with UNDP and UNEP support and additional studies have followed: Bangladesh, Thailand, Samoa and Cambodia, Indonesia, Morocco, and Philippines.

The CPEIR requires Parties to identify climate change expenditures within the national budget so that the most important aspects of public spending can be analyzed. It also requires that information about planned and actual spending on climate change related activities at a disaggregated level, that is, expenditure codes across the whole of government. In addition to a review of the central government expenditures, the financial analysis examines local government spending and other sources of public expenditure, including international support, that lie outside the national budget are identified. The CPEIR is intended to facilitate the national response to climate change by identifying those actions that are needed to response to climate change and to help prioritize and guide public investment (UNDP/ODI 2012). In determining domestic funding, care needs to be taken to count national trust funds (e.g., Amazon Fund) established by the country and national development banks (e.g., China Development Bank). The best place to start the search for data is likely to be the national budget office, usually in the finance ministry.

6.3.3.2 Useful references for methods to determine international financial support

As in the case of domestic finance, the use a positive list of technologies and activities will help to determine if a project or a component from an international source qualifies as a climate finance project. There are several possible starting points to collect such data.[71] Depending on the country, this may vary depending on whether the data are for loans and grants, for bilateral and multilateral activities, or for specific sectoral programmes. Examples are as follows:

- A national climate change coordinating committee or council may be responsible for approving all external support provided to the country for climate change
- The individual office(s), usually in the Ministry of Finance, may be responsible for reviewing and approving all grants and loans
- The Ministry of Foreign Affairs or the Ministry of Planning may be responsible for approving all or some forms of international finance

[69] IDFC (2013). Mapping of Green Finance Delivered by IDFC Members in 2012. International Development Finance Club (IDFC). Available at: http://www.idfc.org/Downloads/Publications/01_green_finance_mappings/IDFC_Green_Finance_Mapping_Report_2013_11-01-13.pdf.

[70] These two groups of organizations use a relatively simple definition of climate finance which nearly the same, namely that "*climate finance is that which aims to support measures that reduce emissions and enhance sinks of greenhouse gases and that which aims to reduce vulnerability of, and to enhance the resilience* of, *human and ecological systems to climate change impacts*."

[71] The approach used to classify domestic expenditures, that is the MDB approach, can be also applied to estimate international support.

- A donor coordination committee or council, responsible for exchanging information with prospective donors on development assistance priorities, may have the information
- Individual ministries may have offices responsible for international cooperation on specific technologies and sector programmes

6.3.3.3 Useful references for methods to estimate private sector finance

The Frankfurt School-UNEP Centre and Bloomberg New Energy Finance (BNEF) use data to produce an annual report on Global Trends in Renewable Energy Investment (GTREI, Frankfurt School-UNEP Centre and BNEF, 2014).[72] The GTREI provides historical data from 2004 through 2013 and disaggregates the estimate by renewable energy technology and to a limited extent energy efficiency data for both private and public investments. The BNEF gathers information, using an in-house team of analysts, on financial flows from venture capital, private equity, mergers and acquisitions, public markets, asset finance and carbon credits. BNEF focuses mainly on G20 countries and limited to clean energy: renewable energy, energy efficiency, smart grid, power storage and other new energy technologies. Their data are proprietary.

The IEA also undertakes an annual survey of energy use by sector (transport, industry, power and residential) to determine the annual energy demand and types of equipment purchased in developed countries and BRICS countries. They also do a survey to determine the cost of technologies in the same countries.

Estimating domestic private expenditures by banks, industry, and consumers at the national level is complex. As in the case of BNEF and the IEA, it will usually require a survey of expenditures on technologies by industry or household goods, such as electrical appliances by consumers. The capacity and data available in each country will determine what may be feasible. Since in many countries, energy development projects may be either solely funded or co-funded with private industry, the Ministry of Energy or the Ministry of Transport may be the best places to look for data. If the country has a national electricity company, information on investments in the power sector, both public and private, might be obtained from that source. One complicating factor is likely to be that investments in large energy projects are often made over several years and in some cases may be confidential.

A final step is putting the results of these analyses into bankable project proposal that can be supported through commercial loans, public private partnerships, and multilateral and bilateral financial sources. UNEP has developed a guidebook to assist developing countries to access international financing for climate change mitigation, including sources of both private and public finance.[73]

6.4 What is the expected GHG impact of the INDC?

The final step is to determine the expected GHG impact of the INDC. Quantifying the GHG impact of the contribution, such that future emissions and emission reductions associated with the contribution can be determined, offers several benefits. Namely it enables comparability between Parties' INDCs by translating diverse INDCs into a common metric to understand emissions reductions and fairness of Parties' INDCs, and it enables an assessment of global emissions to be aggregated across all Parties' INDCs.

[72] There are some differences between the reports. GTREI, for example, includes an estimate for small scale renewables, such as roof-top PV units, not tracked by BNEF.
[73] http://tech-action.org/media/k2/attachments/TNA_Guidebook_MitigationFinancing_13.pdf

6.4.1 Quantifying the GHG impact of actions

Policies and actions are more difficult to quantify than outcomes or targets. For policies and actions, the task is to calculate expected future GHG reductions (ex-ante) from the policies and actions relative to a baseline scenario.

Some types of policies and actions are more difficult to assess than others, since the causal relationship between implementation of the policy and its GHG effects may be less direct. For example, information instruments and research, development, and deployment (RD&D) policies may have less direct and measurable effects than regulations and standards.

The GHG Protocol *Policy and Action Standard* (WRI, 2014) provides guidance on how to estimate the GHG effects of policies and actions.[74] The main steps are:

1. Define the policy or action to be assessed
2. Map the causal chain of the policy or action to identify all potential the GHG effects, including intended and unintended effects, and define the GHG assessment boundary around significant effects
3. Define the baseline scenario—the events or conditions most likely to occur in the absence of the policy or action being assessed—and estimate baseline emissions for all affected source/sink categories included in the assessment boundary
4. Define the policy scenario— the events or conditions most likely to occur in the presence of the policy or action being assessed—and estimate policy scenario emissions for the same set of source/sink categories
5. Subtract baseline emissions from policy scenario emissions to estimate the net GHG effect of the policy or action

Parties can then estimate expected national emissions in the target year (e.g., 2025), if the policies/actions are implemented as planned, by subtracting expected GHG reductions resulting from the group of policies/actions from projected national emissions under a business-as-usual (BAU) scenario, if available. When doing so Parties should ensure consistent baseline assumptions and methodologies between the policy/action assessment and the national projection, where possible. If multiple policies/actions affect the same sector, any overlaps or interactions between the policies/actions should be accounted for, such that total GHG reductions are not over or underestimated.

If all Parties calculate their expected national emissions in the target year (e.g., 2025) assuming their contribution is achieved, then total global emissions in that year can be aggregated across countries and compared to the global emissions reductions needed in that year to be on an emissions pathway consistent with limiting warming below 2°C, as determined by the IPCC.

6.4.2 Quantify the GHG impact of outcomes [75]

Quantifying the GHG impact of the contribution, such that future emissions and emission reductions associated with the contribution can be determined, offers several benefits. Namely, it enhances the understanding of Parties' INDCs by translating a diverse range of INDCs into a common metric, thereby facilitating an assessment of global emissions through the aggregation of the effects of all Parties' INDCs. This assessment will be critical in helping Parties understand global emission levels in the context of the 2°C goal.

[74] Available at www.ghgprotocol.org/policy-and-action-standard.
[75] The guidance in this section is from the GHG Protocol *Mitigation Goal Standard* (WRI, 2014).

For targets, this involves calculating the expected emissions in the target year or period. This quantity represents maximum national emissions in the target year(s) if the target is met.

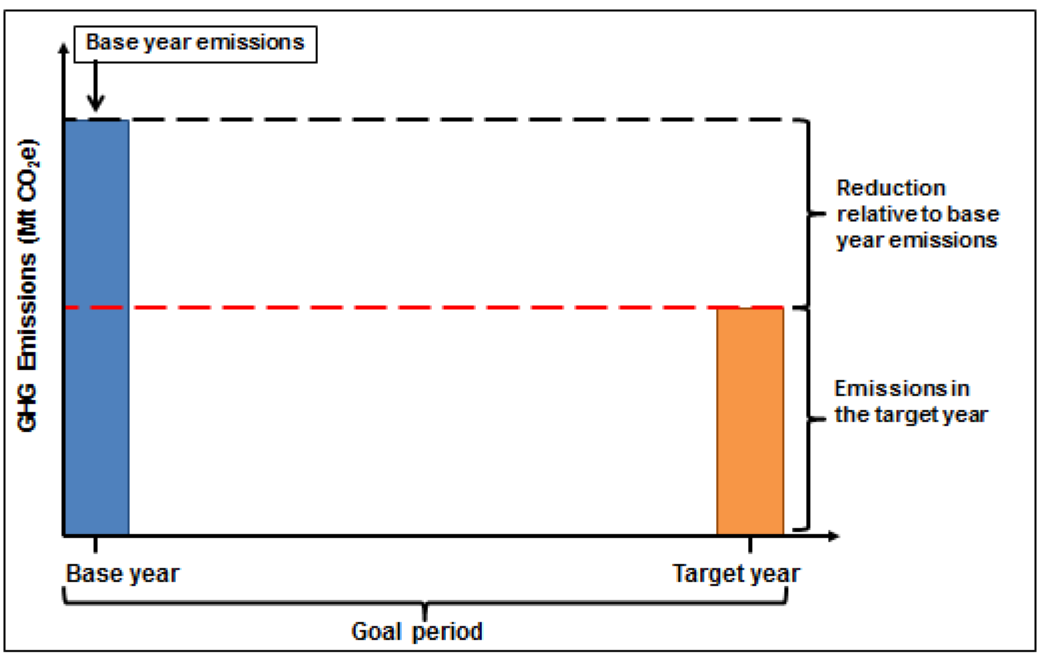
Expected emissions in the target year(s) are straightforward to calculate for base year emissions targets, fixed level targets, and static baseline scenario targets. Expected emissions in the target year cannot be calculated for dynamic baseline scenario targets, since emissions in the target year(s) are likely to change due to unexpected changes in emissions drivers over the target period. Emissions in the target year(s) are also not possible to calculate with any certainty for intensity targets, since future levels of output (such as GDP) are not known, but emissions in the target year(s) can be estimated based on projected level of output in the target year(s). Non-GHG targets (such as energy efficiency, renewable energy, or forest cover targets) also require additional steps to translate into expected emissions in the target year(s).

If all Parties calculate their expected national[76] emissions in the target year (e.g., 2025) assuming their contribution is achieved, then total global emissions in that year can be aggregated across countries and compared to the global emissions reductions needed in that year to be on an emissions pathway consistent with limiting warming below 2°C, as determined by the IPCC.

See Figure 6.14 and Figure 6.15 for examples of calculating emissions in the target year for a base year emissions target and a static baseline scenario target, respectively.

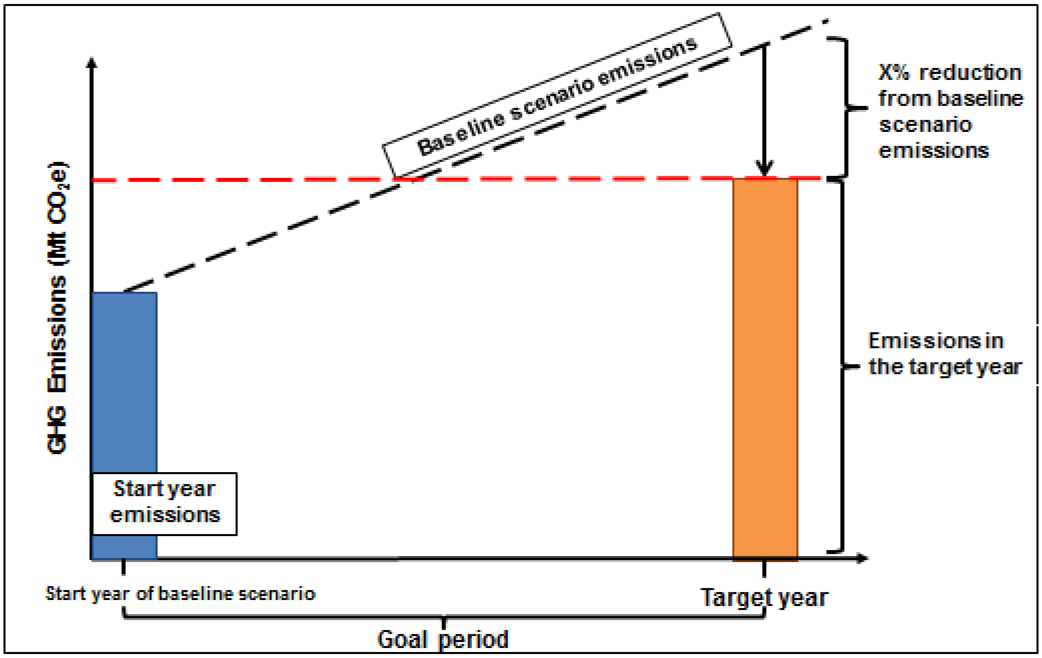
[*Placeholder: Annex with further information on how information from each contribution would be taken to calculate the overall level of ambition with different contribution types, perhaps with numerical examples from generic countries*]

Figure 6.14 Example of calculating expected emissions in the target year for a single-year base year emissions target



[76] For Parties that do not have economy-wide contributions, this would require a calculation of business-as-usual emissions for non-covered sectors.

Figure 6.15 Example of calculating expected emissions in the target year for a single-year baseline scenario target



Calculating expected emissions in the target year(s)

Parties with single-year targets should use Equation 6.1 to calculate expected emissions in the target year for the relevant type of target. Parties with annual and average multi-year targets should use Equation 6.1 to calculate expected emissions for each year of the target period.

Equation 6.1 Calculating expected emissions in the target year

Type of target	Calculation method
Base year emissions target	**Expected emissions in the target year (Mt CO_2e)** = Base year emissions (Mt CO_2e) – [Base year emissions (Mt CO_2e)) x Percent reduction]
Fixed-level target	**Expected emissions in the target year (Mt CO_2e)** = Absolute quantity of emissions specified by the target level (Mt CO_2e)
Base year intensity target	**Estimated expected emissions in the target year (Mt CO_2e)** = [Base year emissions intensity (Mt CO_2e/level of output) – Base year emissions intensity (Mt CO_2e/level of output) x Percent reduction] x Projected level of output in the target year
Baseline scenario target*	**Expected emissions in the target year (Mt CO_2e)** = Projected baseline scenario emissions in the target year (Mt CO_2e) – [Projected baseline scenario emissions in the target year (Mt CO_2e) x Percent reduction]

Notes: * For dynamic baseline scenario targets, emissions will be subject to change due to baseline scenario recalculations.

<u>For base year intensity targets:</u> While achievement of base year intensity targets will ultimately be assessed in terms of emissions intensity, it can be helpful for decision makers and other stakeholders to understand the expected emissions associated with base year intensity targets. Calculating expected emissions for base year intensity targets requires forecasts of the level of output in the target year(s). Projections of output metrics should be gathered from official data sources in order to enhance transparency and consistency of reporting. For example, GDP projections should be based on data from

national government bodies or international sources such as the International Monetary Fund (IMF), World Bank, or OECD. Unlike with other types of targets, expected emissions in the target year(s) for base year intensity targets represents an estimate only, since it requires forecasts of the level of output in the target year(s), which are likely to change over time and unlikely to accurately represent the actual value in the target year(s).

Calculating emission reductions associated with achieving the target (optional)

In addition to calculate expected emissions in the target year(s), Parties may also want to calculate the emission reductions associated with achieving the target. See Figure 6.12 for an illustration of GHG reductions associated with achieving a target.

Emission reductions associated with achieving the target are the difference between emissions in the first year of the target period and expected emissions in the target year or period. See Equation 6.2 for equations by type of target. Parties with multi-year targets should use Equation 6.2 to calculate emission reductions associated with achieving the target for each year of the target period.

Equation 6.2 Calculating emission reductions associated with achieving the target

Annual emission reductions in the target year (t CO_2e) =
(Projected baseline scenario emissions in the target year (t CO_2e)) –
(Expected emissions in the target year (t CO_2e))

Assumed accounting approaches

Part of quantifying the GHG impact of the INDC is to explain the assumed accounting approaches that will be used to track progress toward the INDC, given the absence of agreed accounting rules under the UNFCCC. These options may change in the future through decisions under the UNFCCC. In the meantime, understanding Parties' assumed accounting approaches are necessary to quantify the impacts of INDCs and determine whether they collectively align with the global 2°C goal.

Parties should explain the assumed accounting approaches for the following:

- Inventory methodologies (2006 or 1996 IPCC *Guidelines for National Greenhouse Gas Inventories*)
- Global warming potential values (GWP values from AR5, AR4, or SAR)
- Assumed approaches relating to transferable emissions units, including quantity, quality, vintages and avoiding double counting
- Land sector accounting approaches, including as much of the following as possible:
    - Land-based or activity-based accounting
    - Coverage of land-use activities and categories, if applicable
    - The baseline/reference against which emissions and removals from the land sector are accounted, and assumptions and methodologies for the reference
    - Land sector accounting method (net-net, gross-net, or forward-looking baseline)[77]

[77] There are three land sector accounting methods: (1) net-net, or comparing net emissions in the target year(s) with net emissions in the base year; (2) gross-net, or accounting without reference to base year/period or baseline scenario emissions, such that the total quantity of net land sector emissions in the target year(s) is applied toward the goal; and (3) accounting relative to a forward-looking baseline, which compares net emissions in the target year(s) with a projection of net baseline scenario emissions in the target year(s).

- Any use of the managed land proxy, including managed land definition and locations of managed and unmanaged lands
- Any inclusion of harvested wood products in accounting
- Treatment of age-class legacy/carbon sink saturation
- Any use of a natural disturbance mechanism, including: location, year, type, estimation technique, demonstration that disturbances are beyond Party's control

- Baseline scenario methodologies, for Parties with baseline scenario targets, including the following:
  - Projected target year baseline emissions, against which the contribution is calculated
  - Methodologies and assumptions for estimating baseline emissions
  - Cut-off year for policies included in the baseline scenario
  - Whether the baseline scenario will be fixed or dynamic over the target period
  - Starting year for baseline scenario
  - Any implemented or adopted policies/actions with potentially significant GHG effects that are excluded, with justification
  - Projection method
  - Data sources used
  - Emissions drivers included and assumptions and values for key drivers
  - An explanation of whether the baseline is fixed or dynamic, noting that some Parties have called for only fixed baselines
  - For dynamic baseline scenario targets, a recalculation policy used to determine whether changes in emissions drivers are significant enough to warrant recalculation of the scenario

For further guidance on the above choices, see the GHG Protocol *Mitigation Goal Standard (*2014).

Annex A: Background on necessary emissions reductions to limit warming to 2°C

Human-induced annual greenhouse gas (GHG) emissions are now higher than ever before in human history, reaching 49 $GtCO_2e$/year by 2010.[78] Current atmospheric concentrations of carbon dioxide are the highest they have ever been for at least the last 800,000 years, and more than 40% higher than at the beginning of the industrial revolution.[79]

It is extremely likely that the observed increase in warming since 1951 has been due human activities leading to increased concentrations of greenhouse gas emissions.[80] Just in that timeframe, 0.6-0.7°C of warming has occurred. [81] And over the past few decades, human-induced warming has contributed to heat waves, significant Arctic sea ice loss, retreat of glaciers, reductions of spring snow cover in the Northern Hemisphere, increase in global sea level rise, among other impacts.[82]

The UNFCCC has adopted a goal of limiting warming to 2°C. This temperature rise will still present significant risks (see Box A.1) but it avoids some of the most catastrophic impacts that are likely to manifest themselves at even warmer temperatures.

Box A.1 The impacts of a 2°C world

The impacts to date have been widespread and have impacted both natural and human systems on all continents and across the oceans,[83] and the world faces increasingly dangerous climate change impacts with every additional degree of warming. With warming greater than 2°C, we are expected to see: [84]

- Roughly 0.79 meters (2.6 feet) of sea level rise above 1980-99 by the end of the century
- Average annual runoff decreasing 20-40 percent in the Danube, Mississippi, Amazon and Murray Darling river basins
- Average annual runoff increasing about 20 percent in the Nile and Ganges basins
- Forest fires almost doubling by 2050 in Amazonia with 1.5°C to 2°C above pre-industrial levels
- The risk of crossing thresholds in tipping points in the Earth system (e.g. West Antarctic ice sheet disintegration and Amazon dieback) increase
- The frequency of bleaching events exceeds ability of coral reefs to recover
- A high risk of abrupt and irreversible changes to ecosystems like forests, which would lead to "substantial additional climate change" considering that trees sequester significant amounts of carbon dioxide[85]

Scientists have devoted considerable effort to understanding what magnitude of emissions reductions are necessary to limit warming to 2°C (see Box A.2). However, the global community is not yet on track to meet the 2°C goal. Even if all countries follow through on their current emissions reduction pledges, projections of global emissions are far from a pathway that limits global average temperature rise to 2°C above pre-industrial levels. The IPCC Fifth Assessment Report finds that as a result of this emissions gap, in the absence of efforts beyond those already in place, global mean surface warming would be 3.7-

[78] http://report.mitigation2014.org/drafts/final-draft-postplenary/ipcc_wg3_ar5_final-draft_postplenary_chapter5.pdf
[79] http://www.globalcarbonproject.org/carbonbudget/14/hl-full.htm
[80] http://www.climatechange2013.org/images/report/WG1AR5_SPM_FINAL.pdf
[81] Ibid.
[82] Ibid.
[83] http://ipcc-wg2.gov/AR5/images/uploads/WG2AR5_SPM_FINAL.pdf
[84] http://www.worldbank.org/en/topic/climatechange
[85] IPCC AR5 WG II

4.8°C above pre-industrial levels by 2100.[86] This level of warming would bring disastrous impacts.

Box A.2 Level of emissions reductions consistent to have a likely chance of limiting warming to 2°C and avoiding dangerous climate change

According to the IPCC, to have a likely chance of limiting warming to 2°C, greenhouse gas emissions would be 41-72% below 2010 levels by 2050. In the long term, the IPCC Fifth Assessment Report finds that for a likely chance of limiting warming to 2°C, GHG emissions should be zero or below zero** by 2100, requiring a phase-out of greenhouse gas emissions.

While there is a range of emissions levels in 2020 and 2030 that could be consistent with these longer term goals, higher emissions in the short term require unprecedented rates of decline and a greater reliance upon negative emissions, which remain unproven as they have yet to be tested to scale.

In addition to reaching periodic milestones, the build-up of carbon dioxide, year after year, will also need to be limited. The IPCC AR5 summarizes the scientific literature and estimates that cumulative carbon dioxide emissions related to human activities need to be limited to 790 PgC since the beginning of the industrial revolution if we are to have a likely chance of limiting warming to 2°C. The first two-thirds of the entire global carbon budget have already been exhausted, and the remaining one-third of the budget is expected to be used up in only about two decades if emissions continue unabated.[87]

Notes: * The figures are on average among modeling runs. **Negative emissions could be realized through carbon dioxide removal (CDR) technologies. The report notes significant risks associated with CDR, such as the availability of land for bioenergy and carbon, capture and storage (BECCS), potential to store such significant amounts of carbon, and the lack of BECCS plants that have been built and tested at scale.

[86] With a full range of 2.5-7.8°C when uncertainty is taken into account.
[87] Assumes RCP 8.5 scenario

Annex B: Example of providing upfront information related to a mitigation INDC

Upfront information	Example	Section Reference
1. Description of mitigation contribution (such as target type and level), including the timeframe – base year and period	40% reduction below 1990 levels over the period 2025-2030 Long-term target: 80% reduction below 1990 levels by 2050	Chapter 6
2. Coverage in terms of: a) Sectors b) Greenhouse gases c) Percentage of national emissions covered	Economy-wide (all sectors) All seven Kyoto gases 100% of emissions in national inventory covered by the target	Section 6.1.1 or Section 6.2.2
3. Anticipated national emissions in the target year/period	X Mt CO_2e for each year in the target period	Section 6.4
4. Peaking year and level if known	Emissions peaked in 2005 at X Mt CO_2e	Sections 6.2.4 and 6.2.5
5. Expected sale and/or retirement of transferable emissions units, including how they will ensure environmental integrity and avoid double counting of units, and the types and years of units to be used, if applicable	No more than 10% of emissions reductions will be achieved by acquiring transferable emissions units Types and years: CDM units, vintages restricted to target period (2025–30) All credits will be real, additional, permanent, transparent, verified, owned unambiguously, address leakage Double counting will be avoided by tracking units in domestic registry (see 2008 emissions trading system decree, found at www.ets.gov); participation in international transaction log; agreement between buyer and seller (can be provided upon request)	Section 6.2.6
6. Assumed inventory methodologies and GWP values to be used to track progress	2006 IPCC guidelines; AR4 GWP values	
7. Assumed accounting approach for the land sector, including coverage of land-use activities and categories, if applicable	The land sector will be included in the target boundary based on an activity-based accounting approach Covered categories/activities: Forest management (afforestation, deforestation), cropland management (soil carbon management, agroforestry), grassland management Accounting will be net-net for all included activities.	Sections 6.2.2 and 6.2.4
8. Additional information for specific contribution types		
For baseline scenario targets: Projected baseline emissions in the target year/period and related assumptions and methodologies, including the cut-off year for policies included and whether the baseline scenario is fixed or dynamic	X Mt CO_2e for each year in the target period Assumptions and methodologies: National energy and emissions model (detailed documentation available at [URL]) Cut-off year for policies included: 2012 The baseline will be fixed over the target period	Section 6.2.3
For intensity targets: base year emissions intensity, projected emissions intensity in the target year/period, and data sources used	Base year intensity: X Mt CO_2e / GDP (ppp) billion 2005 US$ Projected intensity in each year of the target period: X Mt CO_2e / GDP (ppp) billion 2005 US$ Data sources: IEA	Section 6.2.3

For policies and mitigation actions put forward as contributions: description of specific interventions; legal status, implementing entity/entities, and implementation timeframe; estimated effect on emissions (ex-ante) over a defined time period; and methodologies used	Policy: Carbon tax Description of specific interventions: $35/tonne applied to all sectors Legal status: Legally binding (part of domestic law) Implementing entity: Ministry of Finance Implementation timeframe: To be phased in from 2016-2020; no end date Estimated effect on emissions: Annual reduction of X Mt CO_2e per year from 2016-2030 (cumulative reduction of Mt CO_2e over 2016-2030), relative to a baseline scenario that represents national emissions without the carbon tax Methodology used: GHG Protocol *Policy and Action Standard* with national economic (CGE) model	Sections 6.1.3 and 6.4.1
9. Additional information, explanation, or context, including a description of how the contribution relates to the objective of the Convention, including how it is fair and is aligned with the global 2°C target, as well as, for developing countries, additional mitigation action that could be achieved through other sources of finance, if applicable	The 2013 UNEP Emissions Gap Report suggests that global emissions need to decline from 50 GtCO_2e in 2010 to 35 GtCO_2e in 2030 to have a likely chance of limiting warming to 2°C. This constitutes a 30% reduction in emissions from 2010 levels. Our target is also a 30% reduction from 2010 emissions levels by 2030, in line with the global requirement. We have judged the fairness of our target based on the following indicators: capability (GDP per capita; Human Development Index), and cumulative emissions from 1850–2010. We have performed a study of the fairness of our contribution, based on our select indicators; more information can be found at [URL]. N/A regarding additional mitigation action	Sections 6.2.5 and 6.3

Annex C: Additional information that may be communicated as part of the upfront information

Parties may elaborate on the list of upfront information described in Chapter 5, by providing additional information for each item to provide additional transparency. See Chapter 5 for the complete list of information to be provided, which this annex further elaborates on.

Parties may elaborate on each item in Chapter 5 with information such as:

<u>5. Expected use of international market mechanisms</u>

A. Anticipated quantity of units that will be used to meet the target, if known. If unknown, include information on any quantitative restrictions or limitations on the number of units that may be counted towards the target.
B. Certification agency/program of units eligible to be counted towards the target (e.g. CDM, JCM, etc.)
C. Issuance, registration and retirement provisions for units traded internationally
D. Quality principles applied to units purchased/transferred (such as real, additional, permanent, transparent, verified, owned unambiguously, address leakage)
E. Anticipated issuance of offset credits and the issuing agency/program that will be valid for use by another Party, if known; anticipated net transfers of emissions allowances between emissions trading systems, if known
F. Assumed provisions for banking and borrowing of units between different commitment periods, if applicable
G. Participation requirements and participating entities in market-based programs

<u>7. Accounting for the land sector</u>

A. Treatment of land sector (included in the target boundary; treated as a separate sectoral target; used to offset emissions within the target boundary; or not accounted for)
B. The baseline/reference against which emissions and removals from the land sector are accounted, and assumptions and methodologies for the reference
C. Any use of the managed land proxy, including managed land definition and locations of managed and unmanaged lands
D. Any inclusion of harvested wood products in accounting
E. Treatment of age-class legacy/carbon sink saturation
F. Any use of a natural disturbance mechanism, including: location, year, type, estimation technique, demonstration that disturbances are beyond Party's control

8. <u>Additional information for specific contribution types:</u>

Information for baseline scenario targets

A. Starting year for baseline scenario
B. Policies/actions included in baseline scenario, and a list of any implemented or adopted policies/actions with potentially significant GHG effects that are excluded, with justification
C. Projection method
D. Data sources used
E. Emissions drivers included and assumptions and values for key drivers
F. Whether it is static or dynamic

G. For dynamic baseline scenario targets, a recalculation policy and significance threshold used to determine whether changes in emissions drivers are significant enough to warrant recalculation of the scenario

Information for policies and mitigation actions put forward as contributions

A. Baseline scenario and assumptions used to estimate GHG effects
B. Uncertainty of estimated GHG effects (estimate or description)
C. Targeted outcomes in other non-GHG indicators
D. Information on potential interactions with other policies/measures
E. Whether GHG reductions from activities affected by the policy will be sold to another Party, and, if so, what quantity, and what provisions will be used to avoid double counting
F. Whether any transferable emissions units will be transferred to or acquired from another Party as part of the implementation of the policy, and, if so, provisions in place to avoid double counting

9. Additional information, explanation, or context

A. Existing or planned domestic policies or actions that will support implementation of the mitigation contribution, and their legal status
B. References to any underlying studies and reports conducted related to fairness
C. Domestic mitigation-related targets, in particular long-term targets and how the contribution is consistent with such long-term targets
D. Comparison of contributions with independent studies providing top-down analyses of emission reductions necessary to achieve the 2°C target
E. References to background information with more detailed information and studies related to global 2°C target
F. Approaches and concepts used to operationalize fairness considerations (e.g., responsibility, capability, equality, cost effectiveness)

Glossary

[Placeholder]

Acronyms

[Placeholder]

References

[Placeholder]

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