

Accounting Framework for the Post-2020 Period





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Foreword

Parties are now in a process of preparing their intended nationally determined contributions (INDCs) for the new 2015 climate agreement. For a successful 2015 agreement, Parties need to formulate commitments or contributions sufficiently in time before COP-21 in Paris in December 2015. It is necessary to understand the effects of Parties' mitigation contributions in relation to the 2°C target. This can only be done properly with the help of common principles and rules for accounting. Robust rules will help to increase transparency and help Parties to understand each other's contributions for the 2015 agreement and later, progress in the implementation.

This report discusses the importance of accounting rules to be included in the new climate agreement for the post 2020 period. It explores what kind of components would be needed for a robust accounting framework, as well as lessons learned from the existing accounting frameworks. At the end suggestions for principles and components for the accounting framework in 2015 agreement are included.

Researchers from the World Resources Institute, Get2C and the University of Eastern Finland have carried out the study for NOAK, a working group under the Nordic Council of Ministers. The aim of NOAK is to contribute to a global and comprehensive agreement on climate change with ambitious emission reduction commitments. To this end, the group prepares reports and studies, conducts meetings and organizes conferences supporting Nordic and international negotiators in the UN climate negotiations.

Oslo March 2015

Peer Stiansen

Chair of the Nordic Working Group for Global Climate Negotiations

Executive Summary

Parties to the United Nations Framework Convention on Climate Change (UNFCCC) have recognized the need to limit the rise in global average temperature to 2 °C compared with pre-industrial temperatures. Accordingly, Parties launched the Durban Platform for Enhanced Action in 2011 to reduce global GHG emissions through the development of a protocol, another legal instrument or an agreed outcome with legal force under the Convention.¹

At its nineteenth session, the Conference of the Parties to the UNFCCC (COP 19) invited Parties to initiate or intensify the preparation of their intended nationally determined contributions (INDCs) under the 2015 agreement. Parties are developing their INDCs well in advance of COP 21 in Paris in December 2015. While the scope of INDCs is to be determined, there seems to be a common understanding that mitigation will be a key element of INDCs. Work is currently ongoing to identify information that Parties will need to provide when putting forward their contributions. It is expected that this will be decided in Lima at COP 20 in December 2014, without prejudice to the legal nature of countries' contributions in the final agreement.

This report focuses on the development of greenhouse gas accounting rules for mitigation INDCs for the post-2020 period. Accounting rules and procedures will dictate how progress is tracked for various possible types of mitigation contributions that might be included in the 2015 agreement and how their achievement will be determined. Without such rules, it will be difficult, if not impossible, to accurately track progress toward individual INDCs as well as towards limiting warming to 2 °C or below.

The report, commissioned by the Nordic Working Group for Global Climate Negotiations,² explores the components of a robust and rigorous accounting framework, lessons learned from existing accounting frameworks, and how such a framework can be developed for the 2015 agreement. The objective is to support the establishment of a sufficiently

¹ UNFCCC, 2011, Decision 1/CP.17, <http://unfccc.int/resource/docs/2011/cop17/eng/09a01.pdf>

² The report represents the views of the authors, not the Nordic countries.

robust and rigorous common accounting framework for the 2015 agreement, including accounting rules for international transfers of units from market-based mechanisms and the land sector.

Main Findings

Accounting under the 2015 agreement

One key to a successful outcome of the ongoing negotiation process for a 2015 agreement is to ensure that robust and implementable accounting principles and building blocks are developed and agreed upon in tandem with the spectrum of mitigation contributions included in the agreement. These principles and building blocks should form an integral part of the agreement, much as the essential rules on flexibility were outlined in the Kyoto Protocol and then further detailed during negotiations under the Marrakesh Accords on issues such as the accounting modalities for the market mechanisms and LULUCF.

There are several aspects of accounting that should be included in the 2015 agreement:

- Common metrics and inventory methodologies, including:
 - Common methodologies for national inventories using the latest IPCC guidelines.
 - Common global warming potential values, using the latest values in the scientific literature.
 - A common definition for “economy-wide” including which greenhouse gases and sectors are covered.
 - Common base year for economy-wide goals whenever possible (taking account of national circumstance, such as by allowing for additional reference years).
- Principles for land sector accounting, including for coverage of emissions and removals in the sector.
- Principles for accounting for internationally transferable emissions units, including principles to ensure the quality of units and the prohibition of double counting.
- A mandate to further elaborate accounting rules after 2015, based on the agreed upon principles and common metrics. Additional rules will be required for certain contribution types (such as related to assumptions and methods for baseline projections for any baseline

scenario goals and data sources related to the metric of output for any intensity goals), accounting for the land sector, use of transferable emissions units, evaluation of progress and achievement, among others.

There should also be a mandate from the COP to develop detailed guidance to track progress towards contributions through an independent process or by an independent institution with the involvement of technical experts. The above four accounting aspects would also need to be complemented by user-friendly measurement, reporting and verification guidelines, and supported by access to and provision of capacity building, technical and financial support if needed to help developing countries meet such requirements.

Types of contributions and implications for accounting

Some Parties may submit INDCs in the form of emissions reduction targets or outcomes (referred to as “mitigation goals” in this report) while others may submit policy- or action-based commitments.

In general, accounting for mitigation goals is more straightforward than accounting for policy-based commitments. There is significant experience with accounting for goals under the Kyoto Protocol (specifically base year emissions goals). However, new types of goals have recently emerged, with some more difficult to account for than others. In general, *base year emissions goals* and *fixed-level goals* are straightforward to account for because the primary data input is the national GHG inventory, which Parties develop as part of their reporting obligations under the UNFCCC. Accounting for *base year intensity goals* is more difficult since they require data on the unit of output (e.g., GDP) against which the goal is defined (e.g., Mt CO₂e/unit of GDP). Accounting for *baseline scenario goals* is considerably more complex. The development of baseline scenarios is subject to uncertainties related to future emissions levels, which may affect the ambition of the goal. In addition, if baseline scenarios are not static (i.e., fixed at the start of the goal period and not changed), but are instead dynamic (e.g., recalculated throughout the goal period), allowable emissions in the target year may change during the goal period.

Key considerations for accounting for mitigation goals

Accounting rules and procedures should be developed in relation to (a) inventory methodology and metrics, (b) land sector accounting, (c) assessing progress, including the use of transferable emissions units.

Inventory methodology and metrics

Choice of national inventory methodology: If all Parties use the IPCC 2006 Guidelines for National Greenhouse Gas Inventories (or any future inventory guidelines) comparability will be greater than if Parties use different sets of guidelines. Given that not all non-Annex I Parties have been using the 2006 Guidelines, this may require capacity building accordingly.

Global warming potential (GWP) values: Comparability among Parties would be enhanced if Parties used the most recent GWP values (currently provided by the IPCC Fifth Assessment Report (AR5) based on a 100-year time horizon). If this is not possible, GWP values provided by the IPCC Fourth Assessment Report (AR4) based on a 100-year time horizon should be applied.

Land sector accounting

Treatment of emissions and removals from the land sector: A common approach for treating emissions and removals from the land sector can maximize comparability. The inclusion of the land sector in the goal boundary (as opposed to treated as a separate sectoral goal, treated as an offset, or omitted altogether) can maximize mitigation opportunities by ensuring that land sector emissions and removals are included in broader mitigation strategies and can minimize the potential for leakage of emissions from other sectors to the land sector.

Land-based versus activity-based accounting approach: The treatment of the land sector in a similar way (e.g. all activity-based or land-based) can maximize comparability. Failing agreement on a uniform accounting approach, principles would be needed to ensure comparability of effort across both approaches (e.g. with regard to coverage of land use activities or categories so there is increased convergence between the approaches).

Coverage of land-use activities, categories, carbon pools, and/or GHG fluxes: The inclusion of all significant land-use sub-categories (under a land-based approach) or suites of activities (in an activity-based approach) in accounting can maximize emissions reduction.

Land-based versus activity-based accounting approach: For those Parties that include the land sector in their contributions or treat the land sector as a sectoral goal, the alignment of the accounting with the chosen goal type (e.g., net-net accounting method for base year emissions goal

and base year intensity goal; gross-net accounting method for fixed-level goal; and forward-looking baseline accounting method for baseline scenario goal) will ensure consistency between the way in which the land sector is accounted and the way in which other sectors are accounted.

Assessing progress, including the use of transferable emissions units

Calculating allowable emissions in the target year(s): The calculation and reporting of allowable emissions (the maximum quantity of emissions that may be emitted in the target year/period that is consistent with achieving the mitigation goal) in a consistent manner across all Parties will enable consistent accounting over time.

Goal level: The use of a single value for the goal level rather than a range will enhance transparency and comparability, as it increases certainty about the level of emissions in the target year or period if the goal is achieved.

Goal timeframe: Multi-year goals rather than single-year goals enable an understanding of emissions levels throughout multiple years of a target period rather than just the single target year. A single year goal may undermine the potential for significant emissions reductions to be achieved if the emission pathway leading up to the target year is not strict.

Target year/period: The adoption of the same target year/period can enhance transparency and comparability. The choice of the target year/period should be guided by considering which goal length will lead to best facilitate long-term mitigation planning and investment. The most robust approach is to set a combination of short-term (e.g. 2025, 2030) and long-term goals (2050) that are consistent with an emissions trajectory that phases out greenhouse gas emissions in the long-term, consistent with the most recent climate science

Definition of goal boundary: A common definition for economy-wide goals can enhance comparability and, if inclusive of all significant greenhouse gases and sectors, maximize emissions reduction opportunities.

Base year emissions and emissions intensity: The calculation of base year emissions intensity in a comparable manner, based on inventory data for the base year, and the adoption of a common data source for the unit of output will enhance transparency and comparability.

Baseline scenario assumptions: The inclusion of policies that are implemented or adopted by the year the baseline scenario is developed will maximize additionality and measurable emissions reductions. Static baseline scenarios provide more transparency regarding allowable emissions and more comparability because allowable emissions are set ex-ante and can be compared across Parties. If dynamic baseline scenarios are ac-

commodated, the reporting of a baseline scenario recalculation policy at the start of the goal period is critical for enhancing transparency.

Transferable emissions units from market mechanisms: To maximize emissions reductions and comparability of mitigation efforts under the 2015 agreement, any credits that are eligible to be applied by a Party toward meeting its contribution should conform to the following quality principles: real, additional, permanent, transparent, verified owned unambiguously, and addresses leakage. Allowances that are applied towards contributions should come from emissions trading systems with the following quality features: rigorous monitoring and verification protocols, transparent tracking and reporting of units, and stringent caps. To maximize environmental integrity, only target year or target period vintages should be applied toward meeting their goal. To maximize emissions reductions and comparability and preserve the environmental integrity of the accounting system, double counting should be prevented using mechanisms such as registries and transaction logs.

Key consideration for accounting for policies and mitigation actions³

Requirement to estimate and report on the effects of policies and mitigation actions: The estimation and reporting of the greenhouse gas effects of policies and mitigation actions put forward as contributions should be conducted in order to understand potential and realized emissions reductions and enhance transparency.

Timing and frequency: To enable comparability and enhance transparency, the assessment (ex-ante and ex-post) and reporting of the effects of policies and mitigation actions should take place every two years as part of biennial reports or biennial update reports, as well as any additional reporting requirements that coincide with the commitment period.

Methodology: To maximize comparability and enhance transparency, common guidelines should be adopted for how policies and mitigation actions are accounted for, which address how to define the assessment boundary, define a baseline scenario, address interactions with other policies and actions, and estimate or describe the uncertainty of the estimates. If this approach is not possible, reporting requirements should include a disclosure of methodologies and assumptions used and the uncertainty of the results.

³ Policies and mitigation actions can include policies, mitigation actions, measures, and projects.

The set of national mitigation commitments for the post-2020 period will determine whether the world is on track toward a low-carbon economy. Our hope is that this report identifies a set of options for accounting for national commitments that can result in accountability and measurable emissions reductions, and that the next set of commitments delivers the emissions reductions needed to meet the goals of the Convention.

1. Introduction

Parties to the United Nations Framework Convention on Climate Change (UNFCCC) have recognized the need to limit the rise in global average temperature to 2 °C compared with pre-industrial temperatures. Accordingly, Parties launched the Durban Platform for Enhanced Action in 2011 to reduce global GHG emissions through the development of a protocol, another legal instrument or an agreed outcome with legal force under the Convention.⁴ In one workstream, Parties are negotiating a new international agreement, to be adopted by 2015 and applicable from 2020 onwards, and, in parallel, a second workstream focuses on identifying ways to address the pre-2020 ambition gap.

At its nineteenth session, the Conference of the Parties to the UNFCCC (COP 19) invited Parties to initiate or intensify the preparation of their intended nationally determined contributions (INDCs) under the 2015 agreement. Parties are developing their intended nationally determined contributions to the 2015 agreement well in advance of COP 21 in Paris in December 2015. Work is currently ongoing to identify information that Parties will need to provide when putting forward their contributions. It is expected that this will be decided in Lima at COP 20 in December 2014, without prejudice to the legal nature of countries' contributions in the final agreement. While the scope of INDCs is to be determined, there seems to be common understanding that they will cover mitigation.

This report focuses on key topics related to greenhouse gas accounting rules for mitigation contributions for the post-2020 period. Accounting – which are the methods, assumptions and rules related to calculating the amount of greenhouse gases emitted by a jurisdiction over a given time scale – will dictate how progress is tracked for various possible types of mitigation contributions that might be included in the 2015 agreement and how their achievement will be determined. Without such rules, it will be difficult, if not impossible, to accurately track progress toward the possible mitigation goals in the 2015 agreement as well as towards limiting warming to 2 °C or below.

⁴ UNFCCC, 2011, Decision 1/CP.17, <http://unfccc.int/resource/docs/2011/cop17/eng/09a01.pdf>

This report, commissioned by the Nordic Working Group for Global Climate Negotiations,⁵ explores: the components of a robust and rigorous accounting framework, lessons learned from existing accounting frameworks, and how such a framework can be developed for the 2015 agreement. The objective is to support the establishment of a sufficiently robust and rigorous common accounting framework for the 2015 agreement, including accounting rules for international transfers of units from market-based mechanisms and the land sector.

The report reviews existing literature, Parties' positions (see Annex C), on-going discussions under the UNFCCC, and past experiences to examine the role accounting can play in the 2015 agreement. It assesses the impacts of various accounting choices on measurable emissions reductions, comparability, transparency, and participation in the agreement. The report also draws lessons from existing regimes and explores which accounting rules are most critical for the 2015 agreement itself, and which could be developed over time between 2016 and 2020.

Recent accounting-related UNFCCC negotiations

Despite the multiple negotiating settings that have recently emerged to discuss accounting rules, progress towards defining new accounting rules for the 2015 agreement and beyond has been slow. Box 1 summarizes recent negotiations.

⁵ The report represents the views of the authors, not the Nordic countries.

Box 1. Recent accounting-related UNFCCC negotiations

Over the past few years, accounting has been discussed in, and is relevant to, a number of negotiating tracks:

- Under the negotiation of the accounting rules under the Second Commitment Period of the Kyoto Protocol (KP).
- Under the process of clarification of Parties' pledges and negotiation of the means to raise ambition under the Ad Hoc Working Group on Long-term Co-operative Action under the Convention (AWG-LCA).
- Under the negotiation of the revision of the reporting guidelines for Annex I's national inventories, using the 2006 IPCC Guidelines.
- Under the Framework for Various Approach, where Parties have been discussing what standards cost-effective approaches to mitigation (both market and non-market based) should comply with.
- More recently, the process to initiate or intensify preparation of INDCs agreed at COP19 in Warsaw, which has provided an informal opportunity to discuss the use of common metrics and accounting rules that facilitate the understanding of the nationally determined contributions.
- Under the Ad Hoc Working Group on the Durban Platform for Enhanced Action ("Workstream 2") on incentives to promote early action.

There are several reasons that this may have occurred. First, for many Annex I Parties, especially those that negotiated the first and second commitment periods of the Kyoto Protocol and those that have been directly exposed to the accounting modalities of Kyoto, accounting is viewed as an essential part of the agreement on the new regime. For other Parties, and quite understandably so, accounting is not yet seen as a priority, but rather more as a technical issue for further elaboration as the regime progresses, or it has been targeted for differentiation and has become contentious.

Accounting also relates fundamentally to Parties' compliance strategies. The level of flexibility allowed in the regime will dictate the ways in which emissions reductions can be counted towards achieving a contribution.

Lastly, accounting rules are closely related to the design of Parties' mitigation contributions. Without knowledge of the various types of Parties' mitigation contributions that might be included in the 2015

agreement, it is challenging to detail further the different components and functions of an accounting system.⁶

Importance of GHG accounting in the 2015 agreement

While little progress has been made recently, accounting rules will be fundamental for understanding post-2020 national and international progress toward meeting mitigation contributions in a comparable and transparent manner. Furthermore, how accounting rules are designed in the 2015 agreement can impact measurable emissions reductions and environmental integrity of national and international mitigation efforts. Specifically, accounting can enhance:

- *Tracking of global emissions and emissions reductions:* It is critical to determine whether global emissions and emissions reductions are in line with emissions pathways consistent with a likely chance of limiting warming to 2 °C. Robust accounting rules help to facilitate this fundamental analysis by enhancing the completeness, consistency, transparency and comparability of Parties' reported emissions and emissions reductions data.
- *Measurable emissions reductions:* The design of accounting rules can impact the overall measurable emissions reductions resulting from Parties' contributions. For example, robust accounting rules help to prevent double counting of transferable emissions units. In addition, accounting rules can create consistency across Parties for how emissions and removals from the land sector are counted toward goal⁷ achievement, and can minimize non-additional units generated from the sector.
- *Comparability:* Accounting rules are critical for comparability, or the extent to which estimates of emissions and emissions reductions can be compared across Parties and time periods.⁸ Comparability allows for the meaningful technical comparison of one Party's mitigation contribution with those of other Parties, which can foster trust and a

⁶ The Kyoto Protocol accounting system followed the definitions of essential rules on target definition and use of mechanisms.

⁷ In this report, we use the term "goal" to simply describe this type of mitigation contribution, without prejudging the legal nature of the agreement.

⁸ Note that comparability is considered in a narrow technical sense (e.g., comparable data) as opposed to in a political sense (e.g., regarding the ability to evaluate Parties' efforts and their adequacy related to their capabilities). The two are distinct, yet still related (political comparability is facilitated by technical comparability).

sense of fairness among Parties. Without comparable emissions estimates it is difficult to aggregate national efforts and understand global progress. Accounting rules can enhance comparability by ensuring that estimates of emissions and emissions reductions are calculated using similar methods and practices. For example, accounting rules can prescribe methods for estimating emissions, such as national inventory methods, and global warming potential (GWP) values for converting non-CO₂ gases to CO₂ equivalent.

- *Transparency:* Accounting rules can prescribe requirements regarding the types of information that Parties disclose, including information on the processes, procedures, assumptions, and limitations of the assessment and any exclusions of data or information. This can result in increased transparency regarding how emissions and emissions reductions are accounted for, how progress is tracked, and how goal achievement is assessed. Transparency also provides stakeholders and other Parties with clear and sufficient information to assess the credibility and reliability of reported progress, which enhances trust and accountability.

There is also an important interplay between accounting rules and a decision on upfront information for the INDCs at COP 20. Parties may view any list of information requirements as signaling flexibility insofar as choices are able to be reported. However, it could also be viewed as simply a preliminary list of anticipated assumptions, which can be constrained later once accounting rules are developed. Will accounting rules need to accommodate the diversity of approaches reported by Parties, or will that diversity of approaches be later narrowed once accounting rules are developed? It will be critically important for Parties to discuss how accounting rules interact with the upfront information list. We present a list of upfront information to accompany INDCs to enhance transparency, understanding and clarity in Annex A, which is relevant to multiple possible types of INDCs.

2. Types of nationally determined mitigation contributions and implications for accounting

Accounting rules are critical at various points of time for contributions:

- *Before implementation:* Accounting rules define “what counts” and lay out a clear framework for assessing progress and achievement.
- *During implementation:* Accounting rules define how Parties track and report progress toward their contributions in a comparable and transparent manner, which can build confidence and accountability that contributions are actually being implemented.
- *After implementation:* Accounting rules define how Parties assess whether their contributions have been achieved.

In addition to various timeframes, accounting rules will also have to be designed to accommodate the possible diversity of nationally determined mitigation contributions. Under the Kyoto Protocol, all Annex I Parties adopted base year emissions goals, which aim to limit emission relative to a base year. Under the Copenhagen Accord, and formalized in the Cancún Agreements, developed countries put forward economy-wide emissions reduction targets framed as base year emissions goals,⁹ while developing countries put forward nationally appropriate mitigation actions (NAMAs), which included a diversity of mitigation goals, policies, and projects.¹⁰ It remains to be seen which types of nationally determined contributions Parties will put forward for the 2015 agreement, but the same categories of contribu-

⁹ See <http://unfccc.int/resource/docs/2011/sb/eng/inf01r01.pdf>

¹⁰ See <http://unfccc.int/resource/docs/2013/sbi/eng/inf12r02.pdf>

tions, described in detail below, may be considered, and some Parties may take on more than one type of mitigation contribution for one or more sectors and greenhouse gases.

2.1 Mitigation goals

A GHG mitigation goal is a commitment to reduce, or limit the increase of, GHG emissions¹¹ or emissions intensity by a defined amount and by a specified point in time or over a time period.¹² This report uses the term “goal” to simply describe this type of contribution without prejudice to the legal form of the agreement. The word choice is not meant to imply that Parties would not be bound to this type of contribution.

There are four common types of GHG mitigation goals that may be considered for the post-2020 period – base year emissions goals, fixed-level goals, base year intensity goals, and baseline scenario goals (see Table 1 for more information).

¹¹ Or enhance removals.

¹² Goals may also be framed around non-GHG outcomes or actions, for example, goals to increase renewable energy or energy efficiency. However, because these types of goals are not framed around GHG emissions, the GHG accounting framework described in this report is not necessarily relevant, even though it may inform the way these goals are assessed. Therefore, a detailed discussion on these goals types is omitted.

Table 1. GHG mitigation goal types that may be considered under the 2015 agreement

Goal Type	Description	Reductions in what?	Reductions relative to what?
Base year emissions goal	Reduce, or limit the increase of, emissions by a specified quantity relative to a historical base year. For example, a base year emissions goal may be framed as a 25% reduction from 1990 levels by 2020.	Emissions	Historical base year
Fixed-level goal	Reduce, or limit the increase of, emissions to an emissions level in a target year. The most common type of fixed-level goal is a carbon-neutrality goal, which aims to reach zero net emissions by a specified date.	Emissions	No reference level*
Base year intensity goal	Reduce emissions intensity (emissions per unit of another variable, typically GDP) by a specified quantity relative to a historical base year. For example, a base year intensity goal may be framed as a 40% reduction from 1990 base year intensity by 2020.	Emissions intensity	Historical base year
Baseline scenario goal	Reduce emissions by a specified quantity relative to a projected emissions baseline scenario.** Baseline scenario goals are sometimes referred to as “business-as-usual” goals, especially when they include the GHG effects of implemented and adopted (but not of planned or otherwise expected) policies. For example, a baseline scenario goal may be framed as a 30% reduction from baseline scenario emissions in 2020.	Emissions	Projected baseline scenario

Notes: * Fixed-level goals are expressed in terms of emissions to be reached at a certain point in time and do not include a reference to a base year or baseline scenario.

** A baseline scenario is a set of assumptions and data that best describe future changes in emissions most likely to occur in the absence of activities taken to meet a mitigation goal.

Mitigation goals may be further differentiated as economy-wide or sectoral. Economy-wide goals cover all sectors and greenhouse gases, while sectoral goals cover one sector and its associated gases.

Implications for accounting

In general, accounting for mitigation goals is relatively straightforward in comparison to policy-based commitments. It can largely be achieved through the GHG emissions from a Party’s inventory, which Parties develop as part of their reporting obligations under the UNFCCC. Rules and procedures will also have to be developed in relation to: a) each contribution type (e.g. related to units of output for base year intensity goals and the development of baseline scenarios for baseline scenario goals); b) the use of transferable emissions units such as offset credits and tradable allowances; and c) accounting for the land sector.

While there is significant experience accounting for goals under the Kyoto Protocol (specifically base year emissions goals), new types of goals have recently emerged, and each goal type has its own advantages and disadvantages of each goal type, from an accounting perspective:

- *Base year emissions goals:* In general, base year emissions goals are straightforward to account for because the primary data input is the GHG inventory. Furthermore, because progress is tracked against emissions in the base year, as long as sufficient data exist for calculating base year emissions, it is straightforward to estimate allowable emissions in the target year (described in Section 3.1.3), track progress during the goal period, and evaluate whether the goal has been achieved.¹³ In addition, no socioeconomic data or emissions modeling is needed for accounting, such as data for calculating emissions intensity or developing baseline scenarios. Comparability across base year emissions goals of different Parties is also relatively straightforward,¹⁴ since goals can be translated and compared against a common base year.¹⁵
- *Fixed-level goals:* Similar to base year emissions goals, accounting for fixed-level goals is relatively straightforward. GHG data from the inventory is the primary data source. No socioeconomic data or emissions modeling are needed. Furthermore, allowable emissions are defined by the goal itself, which makes tracking progress during the goal period and evaluating goal achievement straightforward. Comparability among fixed-level goals is also relatively straightforward¹⁶ because goals by different Parties can be translated to reductions from a similar base year and compared.
- *Base year intensity goals:* Base year intensity goals require data on the unit of output (e.g., GDP) against which the goal is defined (e.g., Mt CO_{2e}/unit of GDP). This adds a degree of complexity to the accounting process. Furthermore, it may be difficult to understand the emissions level in the target year associated with achieving the goal, since this calculation requires an accurate estimation of the unit of output in the target year, which may be unavailable. Comparability

¹³ This assumes, however, that underlying accounting methodologies and assumptions are transparent.

¹⁴ Assuming common accounting rules for the land-use sector and transferable units, among others.

¹⁵ Assuming similar treatment of other accounting issues (e.g. transferable units, land-use accounting).

¹⁶ Assuming common accounting rules for the land-use sector and transferable units, among others.

among Parties with base year intensity goals could be enhanced by agreeing on the use of common data sources and methodologies for projecting the unit of output. Furthermore, there are several definitions of GDP or industrial production and agreement should be reached on the appropriate concept to use. For some industrial production data (such as energy) extensive background work on energy balances and other statistical data may be needed.

- *Baseline scenario goals:* Accounting for baseline scenario goals is considerably more complex. The primary reason is the need to develop a baseline scenario. Baseline scenarios are required to set a baseline scenario goal, assess progress, and determine goal achievement. To develop a baseline scenario, an emissions projection model and broad range of GHG emissions and socioeconomic data are required. In addition, assumptions are required that define how each emissions drivers is expected to change over the goal period, as well as what the likely effects of implemented, adopted, and/or planned policies on future emissions.

Because all baseline scenarios are by nature projections of the future, and the future is uncertain, it is unlikely that baseline scenarios represent a completely accurate “real” future. Therefore, the development of baseline scenarios is subject to uncertainties related to future emissions levels, which may affect the ambition of the goal. For example, an overestimated baseline scenario may result in emissions reductions that would have occurred in any case.

In addition, if baseline scenarios are not static (i.e., fixed at the start of the goal period and not changed), but are instead dynamic (e.g., recalculated throughout the goal period), allowable emissions may change during the goal period. In other words, the emissions level that the Party must reach to achieve the goal changes, which can affect measurable emissions reductions, comparability, and transparency. However, recalculating a baseline scenario based on updated data may increase its accuracy. Therefore, accounting for baseline scenario goals approaches would need to strike a balance between accuracy and predictability.¹⁷ There is considerable scope for divergence in baseline development approaches, potentially

¹⁷ For examples see Sobygaard *et al.*, 2013, “National Greenhouse Gas Emissions Baseline Scenarios: Learning from Experiences in Developing Countries,” Danish Energy Agency, OECD, and UNEP Riso Centre, http://www.ens.dk/sites/ens.dk/files/dokumenter/publikationer/downloads/national_greenhouse_gas_emissions_baseline_scenarios_-_web.pdf

undermining comparability and transparency of baseline scenarios. These challenges can be addressed with accounting rules governing methodologies and extensive transparency requirements.¹⁸

2.2 Policies and mitigation actions

Policies and mitigation actions are interventions (typically taken or mandated by a government) such as: laws, directives, and decrees; regulations and standards; economic instruments, such as taxes, charges, subsidies and incentives; market-based mechanisms, such as emission trading schemes; information instruments, such as required disclosure or labeling; implementation of new technologies, processes, or practices; public or private sector financing mechanisms and investment; and other types of climate policy instruments.

A project or programme is a specific activity or set of activities intended to reduce GHG emissions. A GHG mitigation project may be a stand-alone project, a component of a larger project unrelated to climate change mitigation, or a programme. Projects are typically smaller in scale and scope than policies (e.g. limited to an individual site), while programmes can be intermediary in scale and scope. For example, a project may aim to reduce emissions at one coal-fired power plant, while a policy could be an instrument that leads to the reduction of emissions from coal-fired power plants across a country. Parties may propose INDCs that include one or more policies or mitigation actions.

2.2.1 *Implications for accounting*

Estimating the emissions impacts of policies and mitigation actions requires that Parties attribute changes in emissions to particular interventions, relative to a counter-factual baseline scenario, which can be a complex process that has the potential to result in less accurate assessments depending on the quality of data used, methodological choices and assumptions, and a Party's technical capacity. Policies and actions may not always be framed in terms of emissions reductions, but rather as broad policy-related goals that aim to achieve a given outcome (e.g.,

¹⁸ For transparency and reporting requirements for baseline scenarios see GHG Protocol Mitigation Goals Standard (WRI, 2014).

increase renewable energy or achieve a specified amount of energy savings), which complicates comparability. Assessment of GHG effects of policies is further complicated when the underlying policy mechanisms (e.g. the nature of the legislation and regulations), intended to achieve the outcome, is not known.¹⁹ And for certain types of policies or mitigation actions, depending on data availability, it may not be possible to quantify their effects.

Under the Kyoto Protocol, there are UN-approved methodologies and procedures for assessing project-level emissions reductions under the Clean Development Mechanism (CDM) and Joint Implementation (JI). For emission reduction projects and programmes under the Copenhagen Accord and Cancún Agreements (e.g., projects submitted as NAMAs), however, there are no common accounting rules.

Regarding policies and actions, guidance has been developed by independent organizations, such as the GHG Protocol *Policy and Action Standard* (WRI, 2014), but no standardized accounting rules have been developed under the UNFCCC. Discussions at the UNFCCC have to date been limited to general provisions on reporting on policies and measures in national communications and biennial reports and biennial update reports. No accounting rules have been agreed for NAMAs.

The GHG impacts of policies and mitigation actions are, in general, more difficult to assess than those of mitigation goals, given the diversity of methodological options, data sources, and policy and action types. If common accounting rules are adopted in the new 2015 agreement, measurability of emissions and emissions reductions is maximized with mitigation goals, especially economy-wide mitigation goals, as opposed to policies and actions.

¹⁹ For example, to assess the policy outcome – increase renewable energy generation by 20% by 2025 – information is required on the actual policy mechanisms that will be implemented to achieve this outcome, which could include subsidies, incentives, research and development programs, etc.

3. Key accounting topics for the post-2020 period

Despite the variety of possible contribution types, it is possible for common principles and building blocks of tracking progress to be adopted, with detailed rules tailored to each contribution type.

In this section, we describe accounting topics relevant to tracking progress towards various possible types of mitigation contributions that might be included in the 2015 agreement. For each topic we provide a short introduction, a description of existing requirements under the Kyoto Protocol and UNFCCC (if applicable) in the ongoing negotiations, and key considerations for the post-2020 period. While the landscape is no doubt different than when the Kyoto Protocol came into force, there are lessons learned from the Protocol that may be applicable to the post-2020 regime. Regarding our analysis of the UNFCCC guidelines, it should be noted that we present only the requirements. There may be greater convergence among Parties' actual practice even if they are not bound by common rules. Key considerations are based on an analysis of the options (see Annex B) for each accounting topic based on the criteria of transparency, comparability, and maximizing emissions reductions. Annex B includes tables that compare options for each accounting topic.

The analysis and key considerations in this section are underpinned by two new WRI Greenhouse Gas Protocol standards – the *Mitigation Goals Standard* and the *Policy and Action Standard*. The *Mitigation Goals Standard* provides guidance for assessing and reporting overall progress toward national, subnational, or sectoral GHG reduction goals. The *Policy and Action Standard* provides guidance for estimating the greenhouse gas effects of policies and actions. Both standards were developed through a global, inclusive multi-stakeholder process that included a 30 member Advisory Committee, over 100 technical working group members, and over 150 reviewers. More information on the standards can be found at: <http://www.ghgprotocol.org/mitigation-accounting>.

3.1 Key accounting topics for nationally determined contributions framed as mitigation goals

This section describes the key accounting topics for nationally determined contributions framed as economy-wide and sectoral mitigation goals and is structured as follows:

- *Section 3.1.1:* National GHG inventory-related requirements.
- *Section 3.1.2:* Land sector accounting.
- *Section 3.1.3:* Calculating allowable emissions in the target year(s).
- *Section 3.1.4:* Assessing progress during the goal period.
- *Section 3.1.5:* Assessing goal achievement, including accounting for market mechanisms.

3.1.1 National GHG inventory-related requirements

A national greenhouse gas inventory is an estimate of greenhouse gases emitted or removed from the atmosphere by a country over a period of time. National GHG inventories are critical for understanding countries' emissions and how they change over time, and serve as the basis for GHG accounting.

Parties face a variety of choices when developing a GHG inventory, including the choice of methodology and global warming potential (GWP) values.

Choice of methodology

The Intergovernmental Panel on Climate Change (IPCC) has published methods for developing national inventories, such as the *Revised 1996 Guidelines for National Greenhouse Gas Inventories* and the *2006 Guidelines for National Greenhouse Gas Inventories*. In addition, the IPCC has published a number of supplemental documents.²⁰

Existing requirements: Under the UNFCCC, all Parties report their national greenhouse gas inventories, albeit with differentiated reporting obligations. Annex I countries that are Parties to the Kyoto Protocol are

²⁰ For example, see Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories, Good Practice Guidance for Land Use, Land-Use Change and Forestry, 2013 Supplement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Wetlands, and 2013 Revised Supplementary Methods and Good Practice Guidance Arising from the Kyoto Protocol.

required to use the 2006 IPCC Guidelines.²¹ Similarly, under the UNFCCC, developed country Parties are required to develop inventories for their National Communications (NCs) and biennial reports (BRs) using the 2006 IPCC Guidelines.²² Developing country Parties on the other hand are encouraged to use the 1996 IPCC Guidelines for their National Communications (NCs) and biennial update reports (BURs).²³

Thus, the UNFCCC already provides an “accounting framework” – one that relies on national greenhouse gas inventories, built on the templates recommended by the IPCC, and adopted by the Parties in the form of guidelines for Annex I and non-Annex I National Communications and their Common Reporting Format (i.e. a set of Excel tables for reporting on emissions at the sectoral level). Together with the extensive guidance on national GHG inventories, these templates provide a way of tracking global progress towards a collective goal.

In addition, under the Kyoto Protocol, a more thorough inventory review by international Expert Review Teams in accordance with Article 8 of the Protocol guarantees the validity of national GHG inventories and the emission allowances (i.e. Assigned Amount Units) generated on the basis of the inventories.

Key considerations for post-2020 regime: If all Parties use the IPCC 2006 Guidelines for National Greenhouse Gas Inventories (or any future inventory guidelines) comparability will be maximized. Given that not all non-Annex I Parties have not been using the 2006 Guidelines, this may require capacity building accordingly. If the inventory method changes during the goal period, then there should be a standardized way to recalculate the entire inventory to ensure consistency. To maximize transparency, Parties should report their choice of methodology, and any change to their inventory methodology during the goal period.

Global warming potential (GWP) values

Global warming potential (GWP) values describe the radiative forcing impact (or degree of harm to the atmosphere) of one unit of a given GHG relative to one unit of carbon dioxide, and convert GHG emissions data for non-CO₂ gases into units of carbon dioxide equivalent (CO₂e). The IPCC publishes GWP values for 20-year, 100-year, or 500-year time hori-

²¹ See Decision 4/CMP.7, para 15, <http://unfccc.int/resource/docs/2011/cmp7/eng/10a01.pdf>

²² See Decision 15/CP.17, Annex I, Part II, para 9, <http://unfccc.int/resource/docs/2011/cop17/eng/09a02.pdf>

²³ See Decision 17/CP.8, Annex, para 8, <http://unfccc.int/resource/docs/cop8/07a02.pdf>

zons. A time horizon of 100 years is standard under the UNFCCC; however, different Parties currently use different GWP values.

Existing requirements: Parties to the Kyoto Protocol are required to use IPCC *Fourth Assessment Report* (AR4) GWP values based on a 100-year time horizon.²⁴ Similarly, under the UNFCCC, developed country Parties are required to use IPCC *Fourth Assessment Report* (AR4) GWP values based on a 100-year time horizon,²⁵ while developing country Parties are encouraged to use IPCC *Second Assessment Report* (SAR) values based on a 100-year time horizon.²⁶

Key considerations for post-2020 regime: Comparability among Parties would be enhanced if Parties used the most recent GWP values (currently provided by the IPCC *Fifth Assessment Report* (AR5) based on a 100-year time horizon). If this is not possible, all Parties should apply GWP values provided by the IPCC *Fourth Assessment Report* (AR4) based on a 100-year time horizon. If Parties' GWP values are updated during the goal period, all past reported emissions data should be recalculated and reported again to ensure consistency. To maximize transparency, Parties should report their choice of GWP values, and the process for any recalculating emissions should the GWP change during the goal period.

3.1.2 Land sector accounting

How emissions and removals from the land sector are incorporated into the goal can have a significant impact on the overall reductions achieved. In most sectors, tracking progress toward a goal is generally accomplished by comparing GHG inventory emissions within the goal boundary²⁷ during the reporting year with allowable emissions in the target year or period. However, this type of accounting may not be appropriate for the land sector, especially if a GHG inventory contains GHG fluxes that are due to non-anthropogenic changes, which may not be desirable to include in accounting for a mitigation goal.

The term "land sector" refers to the following land-use categories: forestland, cropland, grassland, wetland, and settlement, as consistent with Volume 4 of the IPCC's *2006 Guidelines for National Greenhouse Gas*

²⁴ See Decision 4/CMP.7, para 5, <http://unfccc.int/resource/docs/2011/cmp7/eng/10a01.pdf>

²⁵ See Decision 15/CP.17, para 2, <http://unfccc.int/resource/docs/2011/cop17/eng/09a02.pdf>

²⁶ See Decision 17/CP.8, Annex, para 20, <http://unfccc.int/resource/docs/cop8/07a02.pdf>

²⁷ The greenhouse gases, sectors, geographic area, and in-jurisdiction and out-of-jurisdiction emissions covered by a mitigation goal.

Inventories (IPCC 2006). It also covers emissions and removals from land in agricultural production and grazing lands/grasslands. However, it does not cover accounting for GHG fluxes from on-farm agricultural activities, such as manure management or fossil fuel-based emissions from on-farm use of electricity, heat, or vehicles. These and other agricultural emissions should be accounted for separately under their corresponding IPCC inventory sector or category (such as the energy sector).

Treatment of emissions and removals from the land sector

Accounting rules for the land sector will depend on how the sector is treated under each Party's goal. Parties may account for emissions and removals from the land sector in one of four ways:

- The land sector is included in the economy-wide goal like other sectors.
- The land sector is included in a sectoral goal for the land sector only. Net land sector emissions are accounted for separately and used to track progress toward the goal.
- The land sector is not included in the economy-wide goal. Instead, net land sector emissions (emissions + removals) are accounted for separately and are used to offset emissions from other sectors included in the goal (that is, the sector's emissions are added to or subtracted from emissions from sectors included in the goal).
- The land sector is not covered by any goal and is therefore not accounted for.

See Table 2 for the advantages and disadvantages of each approach.

Table 2. Advantages and disadvantages of ways to treat the land sector in a mitigation goal

Treatment of land sector	Advantages	Disadvantages
Included in the goal boundary	Consistent with other sectors covered by the goal. Provides a signal to reduce land sector emissions.	May require additional land sector data. Provides less flexibility to design a specialized goal for the land sector.
Sectoral goal	Provides a signal to reduce land sector emissions. Enables users to design a specialized goal for the land sector.	May require additional land sector data. Having multiple goals (one for the land sector and one for other sectors) may be difficult to communicate.
Offset	Provides flexibility to treat the land sector differently from other sectors covered by the goal. Allows users to choose land sector accounting method.	May not provide a signal to reduce land sector emissions. Depending on approach chosen, may account for emission reductions or enhanced removals that would have occurred in the absence of the goal, which would enable the goal to be met without additional effort. May require additional land sector data.
Not accounted for	Appropriate for users with insignificant land sector emissions or lack of capacity to account for the sector.	Does not provide a signal to reduce land sector emissions.

Existing requirements: For Parties to the Kyoto Protocol, land-use, land-use change, and forestry (LULUCF) is not included in Parties' goals, but treated separately, offsetting emissions from other sectors included in the goal. There are no requirements regarding the inclusion of the land sector under current pledges under the UNFCCC.

Key considerations for post-2020 regime: To maximize comparability, a common approach for treating emissions and removals from the land sector should be adopted. To maximize emissions reductions, Parties that adopt nationally determined contributions framed as goals should include the land sector in the goal boundary to maximize mitigation opportunities by ensuring that land sector emissions and removals are included in broader mitigation strategies and to minimize the potential for leakage of emissions from covered sectors to the land sector (e.g. use of biomass for energy production).

That being said, in some cases, including the land sector in the goal boundary may not be appropriate. For example, Parties with base year intensity goals based on a unit of economic output should consider removing the land sector from the goal boundary and accounting for it using a more appropriate metric, such as emissions per hectare of land. Furthermore, Parties should not include the land sector in the goal boundary if doing so would result in large quantities of non-additional emission reductions or enhanced removals that would have occurred in

the absence of the goal. While there are accounting techniques that can minimize such impacts, Parties may instead choose to adopt a separate sectoral goal for the land sector or treat it as an offset.

To maximize transparency, Parties should report the way in which they treat emissions and removals from the land sector.

Land-based versus activity-based accounting approach

Parties that include the land sector in the goal, treat it as an offset, or treat it under a sectoral goal will need to decide how they will account for emissions and removals from the sector. There are two accounting approaches that may be chosen: the land-based accounting approach or the activity-based accounting approach. The underlying purpose of each approach is the same: to delineate the geographic areas, pools, and fluxes to be covered by the goal.

- The *land-based accounting approach* assesses emissions and removals from select land-use categories. The six land-use categories under the IPCC Guidelines are: forestland, cropland, grassland, wetland, settlement and other. The categories used for land-based accounting correspond to the reporting categories in the GHG inventory. For example, if a Party selects cropland as a category to be included in the goal, net emissions from all lands classified in the GHG inventory as croplands would be accounted for.
- The *activity-based accounting approach* assesses emissions and removals from select land-use activities, or practices. Examples of land-use activities include reforestation, deforestation, soil carbon management, and wetland drainage. The logic underlying activity-based accounting is to limit accounting to those lands subject to direct human influence and thereby exclude non-anthropogenic fluxes from accounting.²⁸

Existing requirements: Parties to the Kyoto Protocol are required to use activity-based accounting.²⁹ There are no UNFCCC requirements regarding the accounting approach. Both approaches are currently being used by Parties.

²⁸ Accounting for the land use, land-use change, and forestry sector under the Kyoto Protocol uses an activity-based framework; other land-use mechanisms currently under development under the UNFCCC have not yet reached the point at which this determination could be made.

²⁹ <http://unfccc.int/resource/docs/cop7/13a01.pdf#page=54>

Key considerations for post-2020 regime: To maximize comparability, all Parties that treat the land sector in similar way should adopt a common accounting approach. In other words, the activity-based approach or the land-based approach should be used by all Parties. To maximize transparency, Parties should report which approach they choose. Failing agreement on a uniform accounting approach, principles would be needed to ensure comparability of effort across both approaches (e.g. with regard to coverage of land use activities or categories so there is increased convergence between the approaches).

Coverage of land-use activities, categories, carbon pools, and/or GHG fluxes

Parties that choose the activity-based approach will need to choose which land-use activities are included in the accounting, while Parties that choose the land-based approach will need to choose which land-use categories are included. All Parties, regardless of whether they choose an activity-based or land-based accounting approach, will need to choose which carbon pools and GHG fluxes are accounted for under the goal. Each is described further below:

- *Land-use activities* are human activities that cause emissions or removals from the land sector, and may include: forest management (e.g., afforestation, reforestation, and deforestation); cropland management (e.g., soil carbon management, cropland fertilizer/manure application, and agroforestry); grassland management (e.g., soil carbon management and controlled burning); and wetland management (e.g., wetland drainage and wetland rewetting).
- *Land-use categories* correspond to GHG inventory groupings for land sector emissions and removals and include forestland, cropland, grassland, wetland, and settlement.
- *Carbon pools* are reservoirs containing carbon in the land sector.
- *GHG fluxes* are transfers of carbon from one carbon pool to another.

Existing requirements: Parties to the Kyoto Protocol account for a variety of land-use activities (see Box 2). There are no UNFCCC requirements regarding the inclusion of land-use activities, categories, carbon pools, and/or GHG fluxes under the pledges.

Box 2. Lessons from existing frameworks: Accounting for land use, land use change, and forestry under the Kyoto Protocol

Under the Kyoto Protocol, Parties were provided flexibility regarding how they include of land use, land-use change and forestry (LULUCF) activities into national targets. The Protocol wanted to provide incentives for action in relation to different types of activities. Furthermore, for specific negotiating reasons and in order to avoid perverse incentives, several exceptions in the accounting rules were devised. An overview of such rules is provided in the table below.

Activity	Article	Choice	Start	Accounting method	Limits
Afforestation	3.3	Mandatory		Gross-net*	No limit
Deforestation	3.3	Mandatory	"to have begun on or after 1 January 1990"	Gross-net*	Not accounted, if following an equal removal between 1990 and 2008
Forest management	3.3	Mandatory	"to have occurred since 1 January 1990"	Gross-net	Limit per country (Annex Z)
Revegetation, cropland management and grazing land management	3.4	Voluntary	"to have occurred since 1 January 1990"	Net-net*	No limit

The first distinguishing feature of this approach is that it potentially leaves out emissions and removals from activities not considered under either Article 3.3 or 3.4. Second, it provides for an opt-in of additional activities, providing additional flexibility (and therefore challenges to comparability between Parties with different coverage in their provisions). Third, the need to accommodate a reference year of 1990 as a base year for Article 3.3 resulted in a different approach than that of optional Article 3.4 activities, in which the accounting method is "net-net." Fourth, the approach implied that countries might need to carefully avoid double counting for the same land units in both Articles 3.3 and 3.4. The Marrakesh Accords resulted in giving primacy to Article 3.3 whenever that occurred.

This level of flexibility has led to a lack of comparability across targets under Kyoto and the development of special provisions impacting the feasibility of achieving the target and the occurrence of non-additional tons. As negotiations started on the second period of the Kyoto Protocol, Parties have recognized the downsides of flexibility and have ensured more uniform coverage of similar activities across Parties:

Box 2 continued

	First CP rules	Second CP rules
Afforestation	Mandatory. Based on “gross-net” accounting.	No change
Reforestation	Mandatory. Based on “gross-net” accounting.	No change
Deforestation	Mandatory. Based on “gross-net” accounting.	No change
Grazing land management	Voluntary. Based on “net-net” accounting.	No change
Cropland management	Voluntary. Based on “net-net” accounting.	No change
Forest management	Voluntary. Based on “net-net” accounting, with absolute cap on credits.	Forest management reference levels, with new cap on credits related to base-year emissions
Wetland drainage and rewetting	-	Voluntary. Based on “net-net” accounting.
Harvested wood products	-	Mandatory, (use of specific methodologies); included under the forest management cap.

With the exception of wetland drainage, cropland management, grazing land management, revegetation, and rewetting, a newly introduced activity, all other activities are now mandatory under the Kyoto Protocol. While flexibility was again re-introduced through the new concept of “forest management reference levels,” these follow internationally-agreed guidelines and a review process.

Thus, flexibility in the LULUCF provisions introduced significant distortions and challenges to comparability of Annex I Party emissions reductions. When convergence is not possible, e.g. in the case of developing forest management reference levels, a transparent process for technical review can provide more standardization and safeguards for maintaining environmental integrity and in turn more robust and coherent contributions.

* See Table 3 for definitions of these terms.

Key considerations for post-2020 regime: To maximize measurable emissions reductions and environmental integrity, all significant land-use categories (under a land-based approach) or suites of activities (in an activity-based approach) should be included in accounting. Further-

more, comprehensive coverage of all anthropogenic emissions and removals and significant carbon pools and GHG fluxes within each elected land-use category or suite of activities should be achieved.³⁰ The more comprehensive the coverage is, the greater the overlap of covered emissions and removals will be between land-based and activity-based approaches. If necessary, Parties may adopt a step-wise approach to land sector accounting, whereby additional categories, activities, pools, and/or fluxes are included over time based on data availability and capacity, and their contribution to total emissions and trends.

In some instances, Parties may wish to use the managed land proxy, or estimates of emissions and removals on managed lands that are used as a proxy to remove non-anthropogenic fluxes from accounting. Under the managed land proxy, identified areas of land that are “unmanaged” are excluded from the goal boundary based on the assumption that any fluxes occurring on those lands are not directly attributable to human influence.³¹ Parties that choose to use the managed land proxy should ensure that they include all lands subject to direct human intervention in the goal boundary, as well as lands on which any identifiable portion of emissions or removals result directly or indirectly from anthropogenic activity.

To maximize transparency, Parties should report land-use activities or categories are included in land sector accounting, and which carbon pools and GHG fluxes are included within elected land-use categories or activities. Parties should also report whether harvested wood products, including wood and paper products, are included.

Land sector accounting method

Land sector accounting methods are used to assess changes in net emissions (emissions + removals) within each land-use category or activity. The choice of method may have a significant impact on the assessment of goal progress and goal achievement. There are three basic land sector accounting methods: net-net, gross-net, and forward-looking baseline (see Table 3).

³⁰ Significance may be defined in terms of contribution to sectoral or economy-wide emissions, short- or long term trends, or mitigation potential.

³¹ See Chapter 3 of IPCC (2003).

Table 3. Land sector accounting methods options

Accounting method	Description
Net-net	<ul style="list-style-type: none"> • Compares net emissions in the target year(s) with net emissions in the base year. The difference between the two values is applied toward goal achievement. • Accounting under this approach reflects changes in emissions relative to past performance.
Gross-net	<ul style="list-style-type: none"> • Applies the total quantify of net land sector emissions in the target year(s) toward the goal. • Unlike the other two methods, gross-net accounting does not compare net emissions in the target year(s) to any reference case (either historical base year emissions or baseline emissions).
Forward-looking baseline	<ul style="list-style-type: none"> • Compares net emissions in the target year(s) with a projection of net baseline scenario emissions in the target year(s). * The difference between the two values is applied toward goal achievement. • Accounting under this approach reflects changes in emissions relative to a reference case that represents the net emissions levels most likely to occur in the absence of activities taken to meet the mitigation goal.

Note: * Forward-looking baseline accounting is also a form of net-net accounting, but is distinguished here on the basis of using a baseline scenario projection as the basis of comparison, rather than a base year.

Existing requirements: As mentioned above in Box 2, under the Kyoto Protocol, different activities are subject to different accounting methods. Under the UNFCCC, no rules exist.

Key considerations for post-2020 regime: To ensure consistency between the way in which the land sector is accounted for and the way in which other sectors are accounted for under the goal, if the land sector is included in the goal boundary or treated as a sectoral goal, the following accounting method for all selected land-use categories or suites of activities should be used, depending on the chosen goal type:

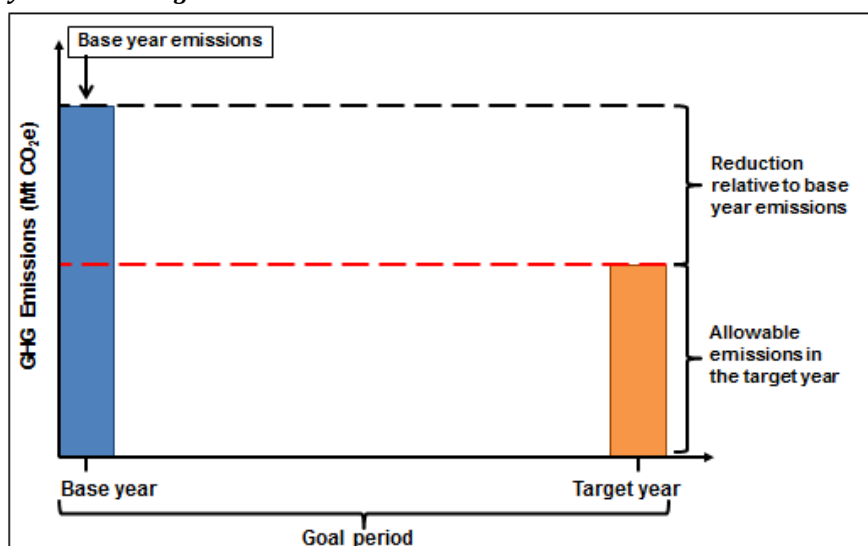
- *Base year emissions goal:* Use net-net accounting method.
- *Fixed-level goal:* Use gross-net accounting method.
- *Base year intensity goal:* Use net-net accounting method.
- *Baseline scenario goal:* Use forward-looking baseline accounting method.

To maximize transparency, Parties should report their land sector accounting method.

3.1.3 Calculating allowable emissions in the target year(s)

Allowable emissions represent the maximum quantity of emissions that may be emitted in the target year or target period that is consistent with achieving the mitigation goal. Under the Kyoto Protocol this quantity is referred to as the initial assigned amount. Allowable emissions are fundamental for assessing progress toward mitigation goals and determining whether or not a goal has been achieved. See Figure 1 for an example of allowable emissions in the target year.

Figure 1. Example of allowable emissions in the target year for single-year base year emissions goal



Existing requirements: For Parties to the Kyoto Protocol, Article 3, paragraphs 7 and 8 establish the initial assigned amount for each Party. Under Kyoto, targets are initially calculated on the basis of a simple calculation: (Percent reduction) x (reported emissions under the national inventory for base year) x (number of years in commitment period). Outside of the Kyoto Protocol, neither developed nor developing countries are required to calculate allowable emissions.

Key considerations for post-2020 regime: To enable consistent accounting over time, allowable emissions associated with mitigation goals should be calculated and reported in a consistent manner, using common methods based on the goal type, such as those provided in Table 4.

Table 4. Sample methods for calculating allowable emissions and emissions intensity

Goal type	Calculation method
Base year emissions goal	<i>Allowable emissions in the target year (Mt CO₂e) =</i> Base year emissions (Mt CO ₂ e) – [Base year emissions (Mt CO ₂ e) x Percent reduction]
Fixed-level goal	<i>Allowable emissions in the target year (Mt CO₂e) =</i> Absolute quantity of emissions specified by the goal level (Mt CO ₂ e)
Base year intensity goal	<i>Allowable emissions intensity in the target year (Mt CO₂e/level of output) =</i> Base year emissions intensity (Mt CO ₂ e/level of output) – [Base year emissions intensity (Mt CO ₂ e/level of output) x Percent reduction]
Baseline scenario goal	<i>Allowable emissions in the target year (Mt CO₂e) =</i> Projected baseline scenario emissions in the target year (Mt CO ₂ e) – [Projected baseline scenario emissions in the target year (Mt CO ₂ e) x Percent reduction]

To calculate allowable emissions, Parties will need to choose a goal level, goal timeframe, and target year or period. In addition, Parties will need to define the reference level against which the goal will be tracked, which may be either a base year or baseline scenario. While these choices can relate more to goal design than accounting, they will determine how allowable emissions are calculated and how achievement of the goal is ultimately assessed. They may also impact the modalities for generating and transferring units, affecting the operations of market mechanisms. A short description for each goal design component is provided below noting existing requirements and key considerations.

Goal level, goal timeframe, and target year or period

- *Goal level:* The goal level represents the quantity of emissions and removals or emissions reductions that the user commits to achieving within the goal boundary. The goal level may be defined as a single value or a range of values. For Parties that select a range of values, allowable emissions will also be expressed as a range.
 - *Existing requirements:* Under the First Commitment Period of the Kyoto Protocol, a single value was used. Under the Second Commitment Period a range was allowed with conditions. Under the UNFCCC, a range of values is allowed.
 - *Key considerations for post-2020 regime:* To enhance transparency and comparability, a single value for the goal level should be put forward as it increases certainty about the level of emissions in the target year or period if the goal is achieved.

- *Goal timeframe:* The goal timeframe refers to the period over which the Party agrees to achieve the goal. The goal timeframe may be single-year, multi-year, or peak-and-decline. Single-year goals aim to reduce emissions by a single target year, while multi-year goals aim to reduce emissions over a defined target period. For example, a single year goal might aim to reduce emissions by 2025, whereas a multi-year goal would aim to reduce emissions over the five-year period from 2021–2025. Peak-and-decline goals specify when emissions peak and the years over which they decline (e.g. 20% controlled increase from 1990 base year emissions by 2025 followed by a 10% reduction from 1990 base year emissions by 2030).
 - *Existing requirements:* Under the Kyoto Protocol, Parties' targets were all multi-year emissions reduction targets for both commitment periods.³² Under the UNFCCC, there are no rules for goal timeframes and some countries are framing their commitments as a single-year.
 - *Key considerations for post-2020 regime:* Multi-year goals should be adopted as they enable an understanding of emissions levels throughout multiple years of a target period rather than just the single target year. Furthermore, a single year goal may undermine the potential for significant emissions reductions to be achieved if the emission pathway leading up to the target year is not strict. As carbon dioxide builds up in the atmosphere, the cumulative emission over time will have a different climate change impact for similar target year emission goals, depending on the emission trajectory leading up to the target. This information provides more clarity about the emissions pathway and reveals whether cumulative emissions reductions are sufficient to meet temperature targets.

³² Kyoto Protocol; Decision 4/CMP.7, <http://unfccc.int/resource/docs/2011/cmp7/eng/10a01.pdf>

- *Target year/period*: The target year/period specifies when a mitigation goal is to be achieved. Whether a target year or target period is chosen depends on whether the mitigation goal is single-year or multi-year. For single-year goals, the target year is a single year. For multi-year goals, the target period spans several years.
 - *Existing requirements*: Under the Kyoto Protocol Parties shall adopt a common target period for the first and second commitment period, 2008–12 and 2013–2020 respectively.³³ Under the UNFCCC, there are no rules for target year/period. Developing country Parties with nationally appropriate mitigation actions (NAMAs) framed as mitigation goals adopted different target years. For example, Costa Rica has a target year of 2021.³⁴
 - *Key considerations for post-2020 regime*: The adoption of the same target year/period can enhance transparency and comparability. The choice of the target year/period should be guided by considering which goal length will lead to best facilitate long-term mitigation planning and investment. The most robust approach is to set a combination of short-term (e.g. 2025, 2030) and long-term goals (2050) that are consistent with an emissions trajectory that phases out greenhouse gas emissions in the long-term, consistent with the most recent climate science
- *Definition of goal boundary*: Mitigation goals may cover one or more sectors and greenhouse gases. The boundary of the goal will determine which emissions are included in the calculation of allowable emissions. If a future decision text calls for “economy-wide” contributions from Annex I Parties, as it did under the Copenhagen Accord, an accounting-related decision is whether there is any predetermined list of greenhouse gases and sectors that are included in an economy-wide contribution.
 - *Existing requirements*: Under the Kyoto Protocol, economy-wide goals cover energy, waste, agriculture, and solvent and other product use (LULUCF is accounted for separately) and the same coverage of greenhouse gases (listed in Annex A to the Kyoto Protocol). However, under the UNFCCC negotiating track, there

³³ Decision 4/CMP.7, <http://unfccc.int/resource/docs/2011/cmp7/eng/10a01.pdf>

³⁴ <http://unfccc.int/resource/docs/2011/awglca14/eng/inf01.pdf>

is no further specification of which sectors and greenhouse gases must be covered under an economy-wide goal.

- *Key considerations for post-2020 regime:* If Parties agree to adopt economy-wide goals, a common definition for economy-wide should be adopted. For example, economy-wide may mean that the goal covers all IPCC sectors and the seven gases covered under the Kyoto Protocol and the UNFCCC.³⁵

Reference level

The reference level refers to the quantity of emissions (or emissions intensity) against which the goal is tracked and assessed. The reference level will depend on goal type, and may be base year emissions, base year emissions intensity, or baseline scenario emissions. Each is described further below.

- *Base year emissions and emissions intensity:* A base year is a specific year of historical emissions data against which base year emissions goals and base year intensity goals are set and tracked over time. Base year emissions are emissions and removals within the goal boundary in the base year. Base year emissions intensity is base year emissions divided by the unit of output specified by the intensity goal (e.g., GDP).
 - *Existing requirements:* Under the Kyoto Protocol, there was flexibility for the choice of base year (as well as the calculation of base year emissions to accommodate the land sector), see Box 3. Under the Convention, there is also flexibility for the choice of base year and calculation of base year emissions. With regard to base year emissions intensity, to date there has been no common data source for unit of output used for calculating intensity. It is not relevant to targets under the Kyoto Protocol and there exist no accounting rules under the Convention.
 - *Key considerations for post-2020 regime:* Parties with base year emissions goals should calculate base year emissions intensity in a comparable manner, based on inventory data for the base year. Parties with intensity goals should use a common data source

³⁵ The seven greenhouse gases covered under UNFCCC and Kyoto are: carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF₆), and nitrogen trifluoride (NF₃). Carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF₆), and nitrogen trifluoride (NF₃).

for the unit of output as it will enhance transparency and comparability. If Parties cannot agree on that, they should be required to choose a data source that is official, peer-reviewed, publicly available and subject to robust QA/QC procedures consistent with the GHG emissions inventory.

Box 3. Lessons from existing frameworks: Choice of base year

Under the Kyoto Protocol and its Article 3, paragraph 5, some Parties were able to choose a different base-year (1995 rather 1990) given their status as “economies in transition”. As long as this flexibility is used prior to the definition of the numerical reduction target, this did not affect comparability of numbers.

Accordingly, flexibility introduced in a limited way (“bounded flexibility” (Hood *et al.* 2014)) can accommodate a number of diverse circumstances, without compromising overall environmental integrity.

- *Baseline scenario*: A baseline scenario (sometimes called a business-as-usual (BAU) scenario) is a reference case that represents the future events or conditions most likely to occur in the absence of activities taken to meet a mitigation goal. It is a plausible description of a possible future state of the world given pre-established assumptions and methodological choices; it is not a statement or prediction about what will actually happen in the future. For Parties with baseline scenario mitigation goals, the baseline scenario has a significant impact on the ambition of the goal. For example, an overestimated baseline scenario could allow a Party to meet the goal without additional effort. Baseline scenarios are based on projected changes in emissions drivers and developed using models or other projection methods. They may be static or dynamic and include or exclude existing policies.
 - *Existing requirements*: No accounting rules have been developed to date for developing baseline scenarios, as all Annex I targets under the Kyoto Protocol were framed as reductions from a base year and there exist no accounting rules under the Convention.
 - *Key considerations for post-2020 regime*: Specific considerations can be found below. If necessary, a process for gradual standardization of elements of baseline development could partially address issues of comparability over time.

Static versus dynamic baseline scenarios

A static baseline scenario is developed and fixed at the start of the goal period,³⁶ while a dynamic baseline scenario is developed at the start of the goal period (the first year of the baseline scenario) and recalculated during the goal period based on changes in exogenous emissions drivers, i.e., drivers unaffected by policies implemented to meet the goal.

- *Key considerations for post-2020 regime:* Static baseline scenarios provide more transparency regarding allowable emissions and more comparability because allowable emissions are set ex-ante and can be compared across Parties. If static baseline scenarios are not adopted, then Parties should report whether the baseline scenario is static or dynamic. If dynamic, a baseline scenario recalculation policy should be developed and reported at the start of the goal period.

Inclusion of policies and measures in the baseline scenario

Future emissions within a country will be affected by policies and measures implemented in that country, including policies and measures designed to reduce emissions as well as those designed to meet other goals.³⁷ The assumptions made about the likely GHG effects of policies and measures in the baseline scenario can have a significant effect on resulting baseline scenario emissions.

- *Key considerations for post-2020 regime:* Policies that are implemented or adopted by the year the baseline scenario is developed should be included because it provides more transparency regarding Parties' BAU emissions, more comparability across Parties' baselines because each will be developed according to a common approach, and higher ambition because the baseline scenario represents BAU emissions and therefore any deviation from it represents additional effort. Parties with baseline scenario goals should report which policies with significant effects on GHG emissions are included in the baseline scenario, and disclose and justify the exclusion of any significant policies. In addition, Parties

³⁶ With the exception of recalculations due to significant changes made to methods or discovery of significant errors.

³⁷ Policies and actions refers to interventions taken or mandated by a government and may include laws, regulations and standards; taxes, charges, subsidies and incentives; information instruments; voluntary agreements; implementation of new technologies, processes, or practices; and public or private sector financing and investment, among others. 'Policies' is used as shorthand for policies and actions.

with baseline scenario goals should report the cutoff year for the inclusion of policies – that is, the year after which no new policies or actions are included in the baseline scenario.

Baseline scenario review

In order to ensure that baseline scenarios are robust, they should be compared with other similar emissions projections. Projected baseline scenario data can be compared with data from projections developed by other in-country organizations, such as other government agencies, research institutes, or private sector institutions. At the international level, projected data can be compared with data from other organizations, such as the International Energy Agency (IEA) or U.S. Energy Information Administration (EIA). Projected socioeconomic data in particular should be directly compared to projected data from other organizations. For example, projections of national GDP used to develop a baseline scenario can be compared to national GDP projections from international organizations, such as the International Monetary Fund (IMF).

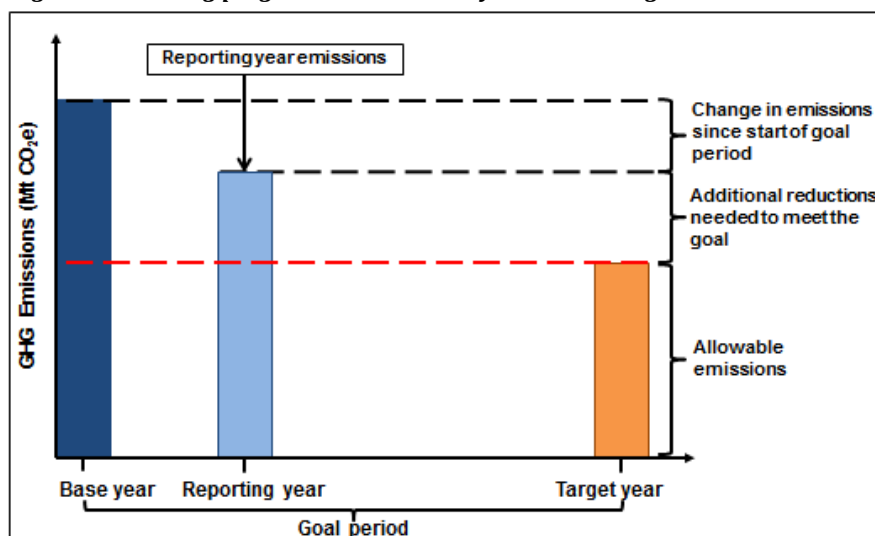
- *Key considerations for post-2020 regime:* Parties should convene a stakeholder review process for the baseline scenario.

3.1.4 Assessing progress during the goal period

Assessing progress during the goal period refers to the process of compiling, evaluating, and reporting information related to emissions trends over the goal period, progress achieved toward the goal to date, and additional emissions reductions need to reach allowable emissions. To assess progress, a GHG emissions inventory is needed for the reporting year, as well as additional land sector data, if relevant. Figure 2 provides an illustration of assessing progress toward a base year emissions goal.

Parties may be required to assess progress annually, biennially, or at a different frequency.

Figure 2. Assessing progress toward a base year emissions goal



Existing requirements: Parties to the Kyoto Protocol are required to assess and report progress annually through annual reports. Under the Convention, Parties are required to assess and report progress biennially through biennial reports (for Annex I countries to the Convention) and biennial update reports (for non-Annex I countries).³⁸

Key considerations for post-2020 regime: Parties should regularly assess and report progress during the goal period. Annual assessment will produce the timeliest and most consistent basis for assessing progress over time. Annual assessment also enables Parties to aggregate emissions over the entire goal period to calculate cumulative emissions. However, annual assessment may be difficult for some Parties given capacity constraints and/or data availability. At a minimum, current requirements should be upheld so that Parties assess and report progress on a biennial basis.

³⁸ Decision 19/CP.19 and 20/CP.19 <http://unfccc.int/resource/docs/2013/cop19/eng/10a02r01.pdf>

To maximize transparency, progress reports should include the following information:

- Complete GHG inventory for the reporting year.
- Emissions covered by the goal in the reporting year by gas (in metric tons) and in metric tons of carbon dioxide equivalent (CO₂e) (if different from the complete inventory).
- For Parties that include the land sector in the goal boundary or treat it as a sectoral goal: Land sector emissions and removals separately for each selected land-use category, activity, pool, and flux, as relevant, including all calculation methods used and any use of a natural disturbance mechanism.
- For Parties that treat the land sector as an offset: The change in net land sector emissions in the reporting year (compared to the base year/period or baseline scenario (net-net accounting), or zero (gross-net accounting)) separately reported for each selected land-use category, activity, pool, and flux, as relevant, including all calculation methods used and any use of a natural disturbance mechanism.
- For Parties with base year intensity goals: Reporting year emissions intensity, the level of output in the reporting year, and the data sources used to determine the level of output.
- Any emissions recalculations, including recalculations of base year emissions, base year emissions intensity, baseline scenario emissions, and allowable emissions or emissions intensity, and the recalculated values alongside the original values.
- For users with dynamic baseline scenarios:
 - Any recalculations made during the goal period, the significance threshold used, and recalculated emissions alongside the original values.
 - Any recalculations of allowable emissions and recalculated allowable emissions alongside the original values.

3.1.5 Assessing goal achievement, including accounting for market mechanisms

At the end of the goal period Parties will need to determine whether or not their goal has been achieved. To assess this, two quantities will need to be compared.

1. *Allowable emissions*: The maximum quantity of emissions and removals in the target year that is consistent with achieving the goal, referred to here as allowable emissions (and under the Kyoto Protocol as the initial assigned amount).
2. *Accountable emissions*: A Party's emissions and removals in the target year or period, including accounting for transferable emissions units. This amount will be based on GHG inventory data and include emissions and removals from all sectors and gases covered by the goal. It will also include accounting for the land sector from selected land-use categories, activities, and pools and fluxes based on the chosen land-use accounting method. In addition, it will be necessary to take into account transferable emissions units (see below for a discussion on the generation and use of transferable emissions units).

Existing requirements: Parties to the Kyoto Protocol account for transferable emissions units by adding any units that have been retired during the commitment period to the initial assigned amount and subtracting any units transferred to other Parties. Additionally, because the land sector is treated as an offset under the Kyoto Protocol, Parties subtract net LULUCF emissions from the initial assigned amount. This quantity is then compared with a Party's emissions to determine whether they have met their commitment.

Under the UNFCCC there are no accounting rules for assessing goal achievement, transferable emissions units, or the land sector.

Key considerations for post-2020 regime: To maximize comparability, common accounting rules for assessing goal achievement are needed. To prevent double counting of transferable emissions units and protect environmental integrity, transaction rules are needed for how to account for transferable emissions units. Furthermore, accounting rules are needed for Parties for the treatment of the land sector, as described above. To maximize transparency, Parties should report how they assess goal achievement.

Transferable emissions units from market mechanisms

Goals can be achieved using any combination of emissions reductions from within the goal boundary (domestic reductions) and transferable emissions units from market mechanisms acquired from outside of the goal boundary.

As of time of writing, no decision have been taken on the use of carbon markets or, more broadly, of unit transfers, in support of a new agreement. Broadly speaking, one can envisage several scenarios in that regard:

- direct use of national/international units for compliance with goals under the agreement
- use of national/international units under national or regional schemes, with or without automatic reconciliation to national inventories (as in the case of use of units under the EU ETS)
- additions/subtractions from national inventories of “commitment transfers” (without the creation of units).

Finally, it is possible that no unit or commitment transfer would be anticipated under a future regime. Nevertheless, it is reasonably safe to surmise that a unit-based system will remain part of a future regime, even if the shape and governance of that system will differ strongly from Kyoto: the existing spread of carbon markets and the growing experience and interest in different carbon market instruments makes it highly likely that several significant players in the future regime would want to see that option enshrined in the agreement.

Transferable emissions units include carbon credits (i.e. units generated from emissions reduction projects) and allowances from emissions trading schemes. The decision on which units are eligible to be used toward meeting a goal and how those units can be used, or transacted between Parties, can significantly affect the transparency, comparability, and emissions reductions of goals. Therefore, clear rules are needed concerning the use of transferable emissions units under the 2015 agreement, including whether there can be direct use of units for compliance (national, regional and international) and/or whether additions and subtractions can be conducted from national inventories, with no visibility of the unit transfers at the international level.

Box 4. Lessons from existing frameworks: The treatment of transferable emissions units under the Kyoto Protocol

Arguably the innovation of the Kyoto Protocol was the introduction of the notion of international emissions trading based on a unit system. Each Party's quantified emission target under the Kyoto Protocol was converted into an "assigned amount" and split into assigned amount units (AAUs). Additions and subtractions for LULUCF gave rise to other units (the "Removal Units" or "RMUs"). The Protocol further provides for the trading of emission reduction units generated under two project-based mechanisms – Joint Implementation (hosted by countries with quantified commitments) and the Clean Development Mechanism (hosted by countries without quantified commitments), which generate Emission Reduction Units (ERUs) and Certified Emission Reduction Units (CERs), respectively. The possibility of meeting commitments under the Kyoto Protocol with units from outside the relevant Party was limited through non-binding language in decisions, which was taken to imply that the majority of the reduction effort should take place at home, and use of the mechanisms should be supplemental to own emission reductions.

In order to ensure coherence, detailed guidance was adopted under the Protocol in the Marrakesh Accords on the operation of the three mechanisms and compliance-related provisions. Guidance is provided for:

- *Unit generation:* Units are generated through different procedures: in the case of AAUs, they are generated through a process that calculates assigned amounts. Once generated, these units are centrally issued into a national registry. Units from Joint Implementation are issued upon conversion of AAUs into ERUs, once verification reports have been submitted and approved that attest to the emission reductions. CERs are generated and issued ex novo once emission reductions generated by a project have been verified independently and the Clean Development Mechanism Executive Board approves the request to issue units. Special temporary units were devised for afforestation and reforestation projects under CDM, given the perceived temporary and contingent nature of sequestration under these projects.
- *Unit transfer between national registries:* All units that have been generated and issued into registries can, following internationally approved guidelines, be transferred between registries of Parties or from the CDM registry. All transactions are logged through an International Transaction Log (ITL) that serves as a hub for the system, which performs various transaction checks that ensure the legality and security of the transaction (e.g. checks related to the eligibility of Parties to trade). A number of transaction types (19 in total) are recognized, including:

Box 4 continued

- Transfer and acquisition between national registries.
- Forwarding from the CDM registry into other registries.
- Cancellation of units, i.e. removing units onto cancellation accounts. Units transferred to a cancellation account cannot be further transferred and are invalid for use towards meeting a Party's commitment.
- Retirement of units into special accounts, which will be used at the end of commitment period for meeting a Party's commitment.
- Carry-over from one period to the following one of units not retired and used for compliance.
- End of period compliance check, in which holdings in each national registry at the end of the commitment period are logged alongside totals reported in the verified emission inventory reports onto a separate Compilation and Accounting Database.

Types of units

There are many different types of units that could be used to achieve a goal. Each unit type is associated with a different baseline-and-credit mechanism or cap-and-trade mechanism, see Table 5 below for examples of unit types. Also, see Box 5 that describes the increased variety among transferable emissions units over time.

Table 5. Examples of unit types

System	Unit
Cap-and-trade mechanisms	
California Cap-and-Trade Program	California Cap-and-Trade Program Allowance
Chinese Pilot ETS	Allowances
European Union Emission Trading System (EU ETS)	European Union Allowance (EUA)
Kazakhstan ETS	Kazakh allowances
Kyoto Protocol International Emissions Trading	AAU (Assigned Amount Unit)
New Zealand ETS	NZU (New Zealand Units)
Quebec Cap-and-Trade Scheme	Quebec Cap-and-Trade Scheme Allowance
Baseline-and-credit mechanisms	
Clean Development Mechanism (CDM)	Certified Emission Reduction (CER)
Joint Implementation (JI)	Emission Reduction Units (ERU)
Verified Carbon Standard	Verified Emission Reduction (VER)
Carbon Farming Initiative (Australia)	Australian Carbon Credit Units (ACCU)
Chinese CER scheme	Chinese CER (CCER)

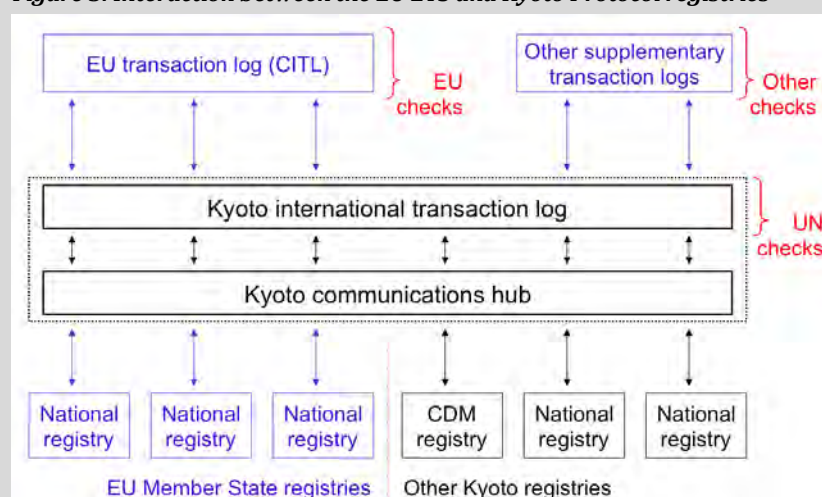
Box 5. Lessons from existing frameworks: Increasing diversity of transferable emissions units

The Kyoto Protocol established necessary preconditions for a flexible accounting framework that allows multiple systems to communicate with each other through the International Transaction Log and other Supplementary Transaction Logs.

That potential was only realized once an active carbon market arose out of the decision by the European Union to launch the European Union Emission Trading System (EU ETS) and to explicitly link trades in the European asset – the European Union Allowance (EUA) – with a corresponding transfer of an equivalent emission allowance under the Kyoto Protocol, namely the AAU. See Figure 3. This link between the two systems facilitated accounting in several ways:

- Reconciliation was automatic and immediate. Each time an entity in country A sold an EUA, a corresponding AAU would leave from the registry of country A.
- The EUA within the EU ETS was deemed equivalent to an AAU (i.e. an allowance for the emission of 1 t CO₂e), allowing for the possibility of further equivalence with other units generated elsewhere also backed by AAUs (as was the case with New Zealand units).
- Linking the EU ETS to units generated under the Kyoto Protocol was also made possible. Any addition to an account of a facility within the EU ETS of a CER was automatically an addition to the holding accounts of the national registry in which that facility operated.

Figure 3. Interaction between the EU ETS and Kyoto Protocol registries



Source: Howard, A. Progress in implementing the international transaction log- presentation to consultation on registry systems prior to SBSTA22, Bonn, 2005.

Box 5 continued

However, the system also introduced some constraints or limitations:

- Given the central role of the ITL in the architecture of the Kyoto system, operating a linked ETS system implied significant dependence of the systems using the ITL on its accommodation of various functionalities.
- Politically, the notion that units not generated by the Kyoto system could somehow be stopped and not recognized by the ITL was often cited as a source of concern, especially if Parties wanted to introduce units outside of the scope of Kyoto (as was often argued in the context of the inclusion of aviation in the EU ETS (aviation emissions are not covered by the Kyoto Protocol)).
- Inversely, the proposition that units generated in the Kyoto system (in particular CERs and ERUs) should be deemed tradable without further restrictions could lead to problems in the management of supply and demand and also in relation to claims of poor quality of offset credits.

As new carbon market initiatives sprung around the world, the centralized, uniform, AAU-backed nature of the core carbon market (EU ETS and CDM) gave way to a much different and diverse panorama:

- New Zealand instituted its ETS. This ETS was directly linked to the Kyoto Protocol system, as several unit types were freely tradable and used for compliance within the system. A New Zealand Unit allowance is generated under the system but is not directly “backed” by any AAU. Additionally, restrictions were imposed on the import of AAUs.
- In RGGI, its Model Rule,* the specifications of the system to be applied across the participating states, initially allowed for the use of international offsets from the Kyoto Protocol, despite the lack of any formal link between the two systems. The latest revision to the Model Rule no longer refers to that possibility. Instead a number of US-based offset protocols, including some specific for the RGGI program are specifically referred to in the Rule.**
- In California, similarly, regulators enacting AB32 did not see the need for an international linking. There are provisions for the use of domestic and international credits and for approval of associated protocols, but the Kyoto Protocol flexibility mechanisms and their protocols do not meet the required criteria. Thus far, only a very limited set of offset protocols have been allowed under AB32.

* Available at: <http://www.rggi.org/docs/Model%20Rule%20Revised%202012.31.08.pdf>

** Available at: http://www.rggi.org/docs/ProgramReview/_FinalProgramReviewMaterials/Model_Rule_FINAL.pdf

Box 5 continued

- In the EU, backing of EUAs with AAUs under Kyoto was directed by the Registries Regulation (EC Regulation 2216/2004, Article 45). In 2008 (EC Regulation 994/2008), the European Commission created an EU ETS AAU annual clearing process. In 2013, the Union moved to a single registry system. The EU Registry will on a periodic basis reconcile holdings of Kyoto units with the international system through the ITL. This new system holds several advantages over the older system: internal transfers within the EU no longer go through the ITL; and non-Kyoto units can now presumably be more easily transferred within the EU, regardless of the Kyoto commitments that Europe will undertake until 2020.

This brief discussion highlights the growing fragmentation in carbon market initiatives around the world, departing from a world with a common currency issued centrally. This fragmentation poses challenges to an accounting system. First, these initiatives must be reconciled with existing pledges that take the national inventories as a point of departure for assessing achievement. For example, California's AB32 and its bilateral engagement with Quebec leads to the potential trade across the US national borders of emission entitlements. Such entitlements may be reflected in both US and Canadian accounting towards their pledges. Without acknowledgment, the potential for double counting exists.

Second, as initiatives proliferate, jurisdictions may choose to define the scope of allowable units inside the system rather than to accept any centralized rules and principles for approval and issuance of units. This may lead to difficulties regarding potential linking of such initiatives.***

If contributions under the 2015 agreement take on a diversity of approaches and tools (including different basis for the issuance of allowances and different offset standards) it will be difficult to ensure technical comparability between the different units. However, recent developments suggest that nevertheless some convergence across these initiatives may remain:

*** The problem is similar to that of currency convertibility and standards. It is well known that if two currencies are used with a similar face value but with different metallic component (in a gold or silver standard), the unit that has most real value will be hoarded and only the debased unit will circulate (this is known as Gresham's law in economics). Similarly, if any standards regulating the generation of an asset prove to be laxer, it will debase the currency in any linked system. Linking between systems will require mutual recognition/acceptance of respective standards and a likely acceptance of rules on allowed offset use (both in terms of quantity and quality).

Box 5 continued

- The Chinese pilots have generally used the internationally developed Data Exchange Standards of the UNFCCC, as have the majority of national initiatives including the EU ETS.
- There is some interest in linking systems in the future and some initiatives have already linked up, despite initial differences (as is the case with California and Quebec).
- Despite the proliferation of offset standards, a relatively high number of such standards based themselves on CDM templates (with some important variations vis-à-vis additionality, for example), with Chinese pilots accepting the CDM standard as is.
- New Zealand and Japan have expressed interest to continue using ITL despite the fact that they have no commitment under the Kyoto Protocol's second commitment period.

It is possible, therefore, to envisage that the carbon market initiatives that have sprung up around the world may in the end communicate with each other, in support of a new agreement, based on:

- Similar access to offset pools (i.e. if offset standards are sufficiently coincident to be allowed across different markets).
- A tracking scheme that uses the same international standard to identify units (whether they be allowances or credits).
- The use of underlying common inventory guidelines to ensure reconciliation with nationally determined contributions (assuming these are quantity-based).

While this could lead to compromises to the fungibility of the different units and would be complex to realize (for example, given required changes in legislation) it would still allow for a fairly robust operation of carbon markets.

Which units are eligible to be applied by a Party toward meeting its goal will affect the environmental integrity, comparability, and emissions reductions of the goal. For example, if low quality units are used, emissions reductions counted toward the goal may not be additional. Furthermore, if Parties use units of differing quality to achieve their goals, it would be difficult to determine whether goal achievement is comparable across Parties. To ensure the quality of units, rules are needed to establish quality principles that govern which units are eligible for use and how eligible units are to be generated.

Existing requirements: Under the Kyoto Protocol only credits generated from the three flexibility mechanisms are eligible for use towards Annex I Parties' compliance with their quantified emission reduction targets. These include Certified Emission Reductions (CERs) units from the Clean Development Mechanism (CDM) and Emission Reduction Units (ERUs) from Joint Implementation (JI). These mechanisms follow principles and requirements defined in Articles 6 and 12 of the Kyoto Protocol, as well as the CMP decisions, and include the principle of additionality as well as conservativeness. Kyoto units can only be issued in accordance with pre-established rules approved by their respective governing body (the Executive Board for the CDM and the Supervisory Committee for Track 2 JI; for Track 1 JIs, national rules apply).

Tradable allowances are also issued under the Kyoto Protocol. These units are called Assigned Amount Units (AAUs) and are issued into each Party's registry upon calculation of the assigned amount. Quality of AAUs is determined by the level of quality of the inventories and the national system (a successful review of both the national inventory system and the inventory itself is a pre-condition to the central issuance of units). Quality is also determined by the stringency of targets or caps. During the Kyoto Protocol's first commitment period in 2008–2012, some Annex I Parties had emission targets in excess of the foreseeable emission growth in the period, leading to a large surplus of units. This surplus and its impact on environmental effectiveness of overall commitments under the first and second commitment period led to decisions on the banking and use of such units in a second commitment period (see below under banking and vintages).

Under the UNFCCC, there are no specific emission targets or market mechanisms. Hence, no detailed rules exist on eligible units. (At the same time, there are no UNFCCC rules on the voluntary mitigation pledges made in the context of the Copenhagen Accord and subsequently compiled by the UNFCCC Secretariat. This means that countries having made such pledges and not bound by the Kyoto Protocol rules for the second commitment period are, in principle, free to use any national and international market mechanisms in fulfilling their pledges. At the same time, negotiations have taken place under the UNFCCC on potential new mechanisms, including the New Market Mechanism (NMM) and Framework for Various Approaches (FVA), to strengthen environmental integrity. Agreement on these issues thus far is limited to certain common principles that approaches must meet. Under Decision 2/CP.17, paragraph 79, various approaches must meet standards that deliver real, permanent, additional and verified mitigation outcomes, avoid double

counting of effort and achieve a net decrease and/or avoidance of greenhouse gas emissions.

In a post-2020 landscape, there is considerable uncertainty about whether the UNFCCC will play a central role in governing future market mechanisms or whether there will be a decentralized system with limited coordination.

Key considerations for post-2020 regime: To maximize environmental integrity, emissions reductions, and comparability of mitigation efforts under the 2015 agreement, any credits that are eligible to be applied by a Party toward meeting its contribution should conform to the following quality principles:³⁹

- *Real:* Emission reductions or removals represent actual emission reductions and are not artifacts of inaccurate or incomplete accounting.⁴⁰
- *Additional:* Emission reductions or removals are beyond what would have happened in the absence of the incentive provided by the offset credit program or project.
- *Permanent:* Emission reductions or removals are irreversible or if sourced from projects subject to potential reversal (e.g., carbon sequestration) have guarantees to ensure that any losses are compensated for, which may include replacement mechanisms such as legal guarantees, insurance, or buffer pools.
- *Transparent:* Credits are publicly and transparently registered with unique serial numbers to clearly document credit generation, transfer, retirement, cancellation, and ownership. Crediting programs are transparent regarding rules and procedures for monitoring, reporting, and verification, quantifying GHG reductions, and enforcement.
- *Verified:* Credits are issued from emission reductions or removals that result from projects whose performance has been appropriately validated and verified to a standard that ensures reproducible results

³⁹ Based on Offset Quality Initiative (2008); World Wildlife Fund (2008); and The Climate Registry (2013), and the California Cap on Greenhouse Gas Emissions and Market-Based Compliance Mechanism Final Regulation Order.

⁴⁰ As Gillenwater (2012) notes, the concept of real suggests that fraudulent behavior did not ensue and embraces several principles, including accuracy and comprehensiveness.

by an independent third party that is subject to a viable and trustworthy accreditation system.

- *Owned unambiguously*: Ownership of GHG reductions or removals is clear by contractual assignment and/or government recognition of ownership rights. Transfer of ownership of offset credits must be unambiguous and documented. Once sold the seller and host government must cede all rights to claim future credit for the same reduction in order to avoid double counting.
- *Addresses leakage*: Emission reductions or removals are generated so as to address leakage. The market (or other) mechanism that generates the transferable emissions units is designed and operated in a way that minimizes the risk of leakage and accounts for any unavoidable leakage.

Allowances that are applied towards contributions should come from emissions trading systems with the following quality features:

- *Rigorous monitoring and verification protocols*: Allowances are generated based on robust methods for measuring emissions that ensure the quality and comparability of underlying emissions data.
- *Transparent tracking and reporting of units*: Allowances are publicly and transparently registered to clearly document their generation, transfer, and ownership. Emissions trading programs are transparent regarding rules and procedures for monitoring, reporting, and verification, as well as compliance and enforcement.
- *Stringent caps*: Emissions trading programs have stringent caps that limit the amount of emissions in a given time period to a level lower than would be expected in a business-as-usual scenario. Using allowances from emissions trading programs with overly high caps compromises the environmental integrity of the goal, since these allowances do not represent real reductions.

To maximize transparency, Parties should report the types of units that are eligible to be applied toward their goal.

Box 6. Lessons learned from existing frameworks: Unit quality under the Kyoto Protocol

Under the Kyoto Protocol, approved CDM/JI methodologies have largely been developed in a bottom-up process of submission by project owners and subsequent improvement by a set of methodology experts and approval by the mechanism governing body, include guidance on:

- Applicability (scope of projects to be covered by each protocol).
- Additionality determination (whether a particular project would have existed in the absence of the crediting scheme (CDM/JI)).
- Baseline scenarios and baseline calculation.
- Project emissions and leakage emissions calculation.

Given the challenges in assessing additionality and creating baseline scenarios, there has been a stress on conservativeness. Under the institutional setup of the Kyoto Protocol, a number of procedures are in place to assist in providing conservativeness in standard development and in project implementation:

- A methodology panel consisting of sector experts provides opinions and assists in the development of methodologies.
- Scrutiny of methodologies by the governing bodies of the mechanisms.
- Applicability of the protocols to specific projects verified by a third-party validating entity and scrutinised by the secretariat of the UNFCCC.
- Verification of any emission reductions claimed by each project by a third-party entity.
- The Secretariat review of submissions of issuance requests and forwarding of any questionable claims to the governing bodies for potential review.

Under the Kyoto Protocol, in spite of the number of procedures, checks and balances put in place, it is not possible to effectively guarantee either the additionality or the correct baseline calculation of each project. The best that can be hoped for is that over time and over the entire flow of projects, the generation of uncredited emission reductions (due to conservative assumptions in the protocols) outweighs the amount of non-additional units being generated. This seems to be the case for example with the CDM, according to research conducted for the CDM Policy Dialogue.*

* See Spalging-Fecher *et al.* (2011) "Assessing the Impact of the Clean Development Mechanism – a report commissioned by the High-Level panel of the Clean Development Mechanisms Policy Dialogue" available at http://www.cdmpolicydialogue.org/research/1030_impact.pdf, specifically Chapter 4.

Box 6 continued

Finally, the environmental integrity of the units and the robustness of trading are underpinned by a set of eligibility conditions. Prior to having units issued centrally into its registry, each Party must satisfy the condition that its base year inventory has been produced, its national inventory system has undergone a thorough review, and its assigned amount calculation has been reviewed. Throughout the compliance period, unit transfers can only occur if the Party maintains eligibility, namely through ensuring that its inventory system and its inventories are reviewed and approved. These conditions provide some assurance that the emission units traded (AAUs) are subtracted (in the case of a selling Party) from a meaningful total assigned amount and measured in a similar way to other Parties' assigned amounts.

Thus, safeguarding environmental integrity of credits requires a thorough technical development process of emission estimation methodologies. These standards and procedures can help ensure adherence to quality principles. Ensuring these features in the different protocols and their applications has to date required extensive validation and verification procedures at project level. There are ongoing efforts to standardize approaches and thus shift part of the burden to eligibility criteria, leading to more standardised and predictable scrutiny at later stages.

Use of units

As with unit quality, how units are used and accounted for by Parties can significantly affect environmental integrity and ambition of the 2015 agreement, as well as comparability. For example, if units are double counted, goals may be achieved on paper even if GHG emissions to the atmosphere are not reduced, compromising environmental integrity and ambition of the regime.

Quantity of units

The quantity of units refers to the amount of units that a Party may apply toward achieving its goal. This limit may be set from the outset or left undefined. A high quantity of units applied toward the goal will reduce the demand for reductions to be achieved within the goal boundary.

Existing requirements: There are no rules that stipulate a maximum quantity of units to be used against the commitment.

Key considerations for post-2020 regime: Parties may decide on a limit on the use of units or type of units. If so, then the accounting rules will prescribe the limit and Parties should report on their actual use. If no limit is adopted, transparency will be maximized if Parties come forward with any limit on the use of units, as well as their expected use of such

units. As progress is being tracked, Parties should report all transfers and retirement.

Vintages and banking 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. Accounting rules are needed that define which vintages are eligible for retirement during the target year or period.

Existing requirements: Parties to the Kyoto Protocol may meet their commitments for the first commitment period by using Kyoto units with year 2000 vintage or later.⁴¹ From the first commitment period (CP1, from 2008 to 2012) to the second commitment period (CP2, from 2013 to 2020), full banking of surplus units is the norm with some restrictions already envisaged in the original decisions on accounting (namely, caps on banking of mechanisms units – to be banked up to 2.5% of a Party's CP1 assigned amount – and an exclusion of banking of removal units). Beyond banking, the Doha amendment to the Kyoto Protocol⁴² included additional restrictions in relation to the use and trade of banked units from CP1 to meet CP2 targets:

- A country with a reduction target will have its banked CP1 AAU units transferred to a previous period surplus reserve (PPSR), and those units will only be used for compliance (i.e., cannot be traded further). The surplus in the PPSR can be used for a country's own compliance with its CP2 target during the true-up period (the additional period for fulfilling commitments) of CP2. There is no limit on how much of its CP1 AAU surplus a country can use to comply with CP2. However a country cannot sell CP2 units to another country and then meet their own target with CP1 units.
- A country with a commitment in CP2 can buy CP1 AAUs from another country that has a commitment in CP2, up to a limit. The limit is set at 2% of the assigned amount for CP1 of the purchasing Party. Buying is, therefore, limited, but selling is not.

Under the UNFCCC there are no rules regarding the vintage of units or banking.

⁴¹ Kyoto Protocol Reference Manual on Accounting of Emissions and Assigned Amount, http://unfccc.int/resource/docs/publications/08_unfccc_kp_ref_manual.pdf

⁴² Decision 1/CMP.8, in particular paragraphs 23–26.

Key considerations for post-2020 regime: To maximize environmental integrity, only target year or target period vintages should be applied toward meeting goals. Under this approach, Parties purchase units at the end of the goal period only if there is a shortfall in achieving their goal. However, if Parties are not able to implement this approach, then they should use units with vintages that fall within a short period prior to the target year(s). To maximize transparency, Parties should report the vintages of units that are eligible to be applied toward the goal.

Double counting of units

Double counting of transferable emissions units occurs when the same transferable emissions unit is counted toward the mitigation goal of more than one jurisdiction. Double counting of units undermines the environmental integrity of mitigation goals by reducing the actual quantity of emissions reductions achieved, from the point of view of the atmosphere.

Double counting refers to double selling, double claiming, or double issuance of units.⁴³

- *Double selling* occurs when a single transferable emissions unit is sold twice.
- *Double claiming* occurs when a single transferable emissions unit is claimed by two different parties and applied toward the mitigation goal of both. Double claiming can occur in a variety of ways:
 - *In the case of purchased units:* Buyer claims unit and applies it toward their goal. Double counting will occur if seller applies the same unit toward their goal.
 - *In the case of sold units:* Seller sells unit and applies it toward their goal. Double counting will occur if the buyer applies the same unit toward their goal.
 - *In the case of shared units:* Both buyer and seller claim a proportion of the unit and apply that proportion toward their goals. Double counting will occur if there is overlap in the proportion of the unit that the buyer and seller claim (e.g., 60% each).
- *Double issuance* occurs when more than one transferable emissions unit is generated for one unit of emissions reduction. Double issuance

⁴³ Based on Prag (2012).

increases the risk that emissions reductions will be double counted if a buyer relies on the integrity of a market mechanism's design to ensure that the emissions unit is real instead of the purchaser doing their own due diligence on each unit purchased.

Existing requirements: Under the Kyoto Protocol some forms of double counting are avoided by requiring that “any units which a Party acquires from another Party to the Convention shall be added to the assigned amount for the acquiring Party and subtracted from the quantity of units held by the transferring Party”.⁴⁴

Under the UNFCCC, there are no rules on double counting of units beyond Decision 2/CP.17, para 79, under which various approaches must avoid double counting. A work programme has been established under the Framework for Various Approaches to avoid double counting (among others).⁴⁵ Table 6 provides examples of existing mechanisms currently being used in different jurisdictions to track units and prevent double counting.

Table 6. Examples of mechanisms for tracking transferable emissions units

Regime	Name of mechanism	Type of mechanism
California Cap-and-Trade Program	Compliance Instrument Tracking System Service (CITSS)	Transaction log
	American Carbon Registry	Registry
	Climate Action Reserve	Registry
EU Emissions Trading System (EU ETS)	Community Independent Transaction Log (CITL)	Transaction log
Kyoto Protocol	International Transaction Log (ITL)	Transaction log
	CDM Registry	Registry

⁴⁴ <http://unfccc.int/resource/docs/2011/cmp7/eng/10a01.pdf>

⁴⁵ <http://unfccc.int/resource/docs/2012/cop18/eng/08a01.pdf#page=3>

Box 7. Lessons learned from existing frameworks: Tracking units under the Kyoto Protocol

The system for tracking units under the Kyoto Protocol has been designed to run on an electronic platform in order to facilitate all operations. Given the nature of the transactions, the specific procedures to be applied are fairly detailed, including the sequencing of messages between registries, so as to avoid fraud or malfeasance in the operation of the system and, most importantly, to avoid any errors that may lead to, for example, double or wrongful issuance of units. The extensive detailed guidance provided to run both the International Transaction Log (ITL) and all of the registries was developed as the Data Exchange Standards (DES) and its Technical Specifications.

The DES can be considered the operationalization of, at computer code level, the extensive rulebook on accounting and compliance under the Kyoto Protocol.



This system ensures that several functions fundamental to the Protocol's environmental integrity are observed, including:

- No double counting of emission units can exist; all units issued onto registries are centrally issued by the ITL and are given a unique serial number.
- Several transaction related checks, such as those related to the required reserve under the Kyoto Protocol, are performed automatically and strengthen the validity of the units being transferred or acquired by anyone in the system.

Thus, a unit-based accounting system that is predicated on extensive use of market-based instruments has required a tracking system that provides security to the system and that underpins the accounting and compliance rules. In the Kyoto Protocol model, the tracking device includes the architecture of the set of registries following common data exchange standards and the central role played by the international transaction log. Unlike the definition of targets, in which some flexibility was provided, these elements hardly allow for any flexi-

Key considerations for post-2020 regime: To maximize emissions reductions and comparability and preserve the environmental integrity of the accounting system, double counting should be prevented using mechanisms such as registries and transaction logs. Under any mechanism, units should be uniquely identified at two different points in time: at the point of issuance/generation and at the point of retirement, when the unit is applied toward the achievement of a mitigation goal. Robust mechanisms entail the creation of standardized protocols for issuing and serializing units and employ a centralized transaction log.

3.2 Key accounting topics for national mitigation contributions framed as policies and mitigation actions

This section described the key accounting topics for nationally determined contributions that are framed as policies and mitigation actions, and is structured as follows:

- *Section 3.2.1:* Requirement to estimate and report the effects of policies and mitigation actions.
- *Section 3.2.2:* Methodology to estimate the expected GHG reductions from the policy or mitigation action.

3.2.1 Requirement to estimate and report on the effects of policies and mitigation actions

In order to understand the contribution of a policy or mitigation action toward mitigation, information is needed on the estimated effect that policy or mitigation action will have (or has had) on greenhouse gas emissions (and other estimated outcomes/results as relevant). This involves two distinct issues:

- Requirement to estimate and report greenhouse gas effects (and other estimated outcomes/results as relevant).
- Timing and frequency of reporting.

Requirement to estimate and report greenhouse gas effects (and other estimated outcomes/results as relevant)

Existing requirements: Under Article 2.3, Parties to the Kyoto Protocol are required to implement and/or further elaborate policies and measures to achieve their quantified emission limitation and reduction commitment under Article 3.⁴⁶

Under the UNFCCC, developed country Parties are encouraged to estimate and report the effects of individual policies and measures, or collections of policies and measures, as part of biennial reports. Such information includes estimated changes in activity levels and/or emissions and removals due to adopted and implemented policies and measures reported and a brief description of estimation methods. Information should be presented as an estimate for a particular year such as 1995, 2000 and 2005, not for a period of years.⁴⁷

Under the UNFCCC, developing country Parties are required to provide the following information in biennial update reports to the extent possible for each mitigation action or groups of actions: information on the progress of implementation of the mitigation actions and the underlying steps taken or envisaged, and the results achieved, such as estimated outcomes (metrics depending on type of action) and estimated emission reductions, to the extent possible.⁴⁸

Key considerations for post-2020 regime: To understand emissions reductions and enhance transparency, Parties should estimate and report the greenhouse gas effects of policies and mitigation actions put forward as contributions (and other estimated outcomes/results as relevant).

Timing and frequency of reporting on effects of policies and mitigation actions

The estimated GHG effects of policies and mitigation actions can be reported ex-ante (as an estimate of future expected effects of the policy or mitigation action) or ex-post (as an estimate of achieved historical effects of the policy or mitigation action to date). Ex-ante and ex-post estimates can be reported at multiple points in time, including when the policy or mitigation action is implemented, at regular intervals during implementation, and after implementation (if applicable).

⁴⁶ Kyoto Protocol reporting guidelines, para 34.

⁴⁷ Biennial report guidelines, para 23.

⁴⁸ BUR guidelines.

Existing requirements: Under the UNFCCC, Annex I Parties are encouraged to estimate and report the effects of policies and measures every two years, as part of biennial reports. Non-Annex I Parties are required to report to the extent possible every two years in biennial update reports.

Key considerations for post-2020 regime: To enable comparability and enhance transparency, Parties should assess (ex-ante and ex-post) and report the effects of policies and mitigation actions every two years as part of their biennial reports or biennial update reports, as well as any additional reporting requirements that coincide with the commitment period.

3.2.2 Methodology to estimate the expected GHG reductions from policies and mitigation actions

The estimated GHG effect of policies and mitigation actions can vary widely based on the methodology used. Specific methodological questions include:

- Recommended guidelines.
- GHG assessment boundary.
- Baseline scenario.
- Policy interactions and avoiding double counting.
- Uncertainty.

Existing requirements: Current requirements are limited to recommending that developed country Parties include, as appropriate, a brief description of estimation methods as part of the biennial reports.⁴⁹

Recommended guidelines

Parties would benefit from the use of common technical guidelines when estimating the GHG effects of a policy or mitigation action – to provide guidance on topics such as defining the assessment boundary, defining a baseline scenario and estimating baseline emissions, monitoring data over time, addressing possible interactions between related policies, actions, and projects, among other topics. Some international guidelines exist, such as the GHG Protocol *Policy and Action Standard* (WRI, 2014).

⁴⁹ BR guidelines, para 23.

Key considerations for post-2020 regime: To maximize comparability and enhance transparency, common guidelines should be adopted for how policies and mitigation actions are accounted for.

GHG assessment boundary

The GHG assessment boundary defines the scope of the assessment in terms of the range of GHG effects that are included in the assessment. The assessment boundary can range from a narrow scope (e.g., only intended GHG-decreasing effects of the policy or mitigation action, or only those that occur within the implementing jurisdiction's geopolitical boundary) to a comprehensive assessment that includes the full range of effects that are considered to be significant (which may include unintended GHG-increasing effects in addition to intended GHG-decreasing effects, and which may include effects outside of the implementing jurisdiction's geopolitical boundary).

Key considerations for post-2020 regime: To maximize comparability, Parties should estimate the global GHG effect of the policy or mitigation action, including all significant effects of the policy or mitigation action, whether GHG increasing or decreasing and whether the effects are expected to occur within a Party's national jurisdiction or outside its national jurisdiction (e.g., leakage). If this approach is not possible, reporting requirements should require that Parties disclose and justify which GHG effects are included and excluded from the assessment.

Baseline scenario

In order to estimate the effect of a policy or action, it is necessary to understand what would have happened in the absence of that policy or action. The baseline scenario is a reference case against which GHG effects are estimated. Properly estimating baseline emissions is a critical step, since the way that baseline emissions are estimated has a direct and significant impact on the estimated GHG effect of the policy or action.

Key considerations for post-2020 regime: To maximize comparability, Parties should estimate GHG effects relative to a baseline scenario that represents the most likely conditions in the absence of the policy or mitigation action. If this approach is not possible, reporting requirements should require that Parties disclose baseline scenario methodology and assumptions.

Policy interactions and avoiding double counting

In many cases, an individual policy or mitigation action may overlap or interact with other policies and actions to produce total effects that differ from the sum of the individual effects of each individual policy. These

interactions can lead to double counting of GHG reductions between multiple policies or mitigation actions put forward as contributions. Policies and actions can interact with each other in various ways (i.e., policies can be independent, overlapping, or reinforcing).

To reduce the risk of double counting, Parties should include all significant implemented and adopted policies, actions, and GHG mitigation projects in the baseline scenario for the policy or action being estimated. Parties may also group related policies and actions together and assess them as a package.

If double counting between policies is suspected, GHG reductions from overlapping policies and actions should not be aggregated to determine total emissions or reductions in a given jurisdiction or geographic region. When reporting results, users should acknowledge any potential overlaps and possible double counting with other policies and actions to ensure transparency and avoid misinterpretation of data.

Key considerations for post-2020 regime: To maximize comparability and enhance transparency around potential double counting, Parties should identify and estimate interactions with other policies, actions, and projects. If this approach is not possible, reporting requirements should require that Parties report potentially interacting policies, actions, and projects, and disclose and justify whether and how policy interactions were estimated.

Uncertainty

Depending on the methods used, the results of the assessment may or may not be accurate. Several inherent challenges are involved in estimating the GHG effects of policies and actions, which may result in high uncertainty, such as the need to estimate effects relative to a counterfactual baseline scenario and estimating interactions between related policies, among other methodological challenges. The degree to which these challenges are overcome may be limited by time, resources, and capacity. The results should be interpreted as “estimates” of the effect of policies and actions, given the inherent uncertainties. Parties should quantify or describe the level of uncertainty associated with the estimated GHG effects of the policy or action to properly characterize the expected range of mitigation effects of a policy or mitigation action.

Key considerations for post-2020 regime: To maximize transparency and comparability, Parties should assess uncertainty and report a quantitative estimate or qualitative description of the uncertainty of the results.

4. Important accounting characteristics for the post-2020 regime

In the ongoing negotiations under the Durban Platform for Enhanced Action, Parties have agreed to work towards a “protocol, another legal instrument or an agreed outcome with legal force under the Convention applicable to all Parties” that should serve as the basis for international progress on addressing climate change. Any accounting framework should ideally be simple while maintaining environmental integrity. However, there are two considerations that suggest that any accounting framework for the post-2020 regime is likely to be considerably more complex than the existing Kyoto Protocol framework, which remains the most detailed international greenhouse gas accounting system.

First, there could be complexity concerning the types of mitigation contributions submitted and then committed to under the new 2015 agreement. The process of defining intended nationally determined contributions is currently ongoing in many Parties and details of the INDC process are still being negotiated by the ADP. Many Parties have also proposed that the INDC process should be subject to international review under the UNFCCC. It, thus, remains unclear what types of mitigation contributions might be included in the 2015 agreement. Nevertheless, the 2015 agreement is likely to include a more diverse range of mitigation contributions from a more diverse group of UNFCCC Parties than the Kyoto Protocol (which is currently the case under the Copenhagen Accord), therefore necessitating further work to strengthen the accounting framework. Unless accounting rules only govern a subset of countries that have a common contribution type, or the types of contributions are limited, the diversity of contribution types will add complexity.

Second, the recent establishment of emission trading regimes at national and sub-national levels outside of the UNFCCC legal framework may play a role in shaping any future accounting rules. In parallel with developments at the international level, several jurisdictions worldwide have introduced emission trading systems (e.g., California, China, European Union, the Regional Greenhouse Gas Initiative, and New Zealand).

Other jurisdictions are working on carbon taxes coupled with the provision of offset schemes (offsetting carbon tax liabilities with investment in project-based emission reductions). Baseline-and-credit schemes have developed outside of the Kyoto framework, some as direct response to perceived shortcoming therein (e.g. the Joint Crediting Mechanism). It remains to be seen which Parties will want to take advantage of (and gain recognition for) the effort being put into these national and sub-national instruments.

Conclusions on lessons from the Kyoto Protocol for regime architecture

The Kyoto Protocol relies on a comprehensive accounting system, which is central to the regime as it translates quantified commitments into comparable units. While providing some flexibility in the definition of targets, as described above, the rules are sufficiently common in structure to allow for technical comparability. The Protocol created an accounting framework based on the operation of a trading system that relied on extensive international rule-making on almost every aspect relevant to compliance, from the definition of the commitments themselves Parties undertook, to the use of units, to the operation of the mechanisms that Parties could rely on to ensure compliance, to the issuance of units. Throughout the Protocol's operation to date, independent review has also played a key role in the implementation of the Protocol, both with respect to the project-based mechanisms and to the international expert review of GHG reporting. This required both mutual trust among Parties and UNFCCC bodies and trust in the system.

Given the possible variety of contribution types and the wider heterogeneity of Parties expected to take on contributions, it is unclear whether Parties would rely on such a centralised system to the same extent under the 2015 agreement. Nevertheless, the Kyoto Protocol system provides valuable lessons which could inform the design of the post-2020 accounting regime. The sections below outline a few lessons on essential aspects of its architecture that may be relevant to a new regime.

Definition of contribution: It is unlikely that a single form of mitigation contributions will be embraced for the post-2020 climate regime, as was the case with the quantified, legally binding, economy-wide emission reduction targets under the Kyoto Protocol. However, even under the Kyoto Protocol, compromises were made to allow flexibility around a limited set of methodological options in issues such as the scope of activities under LULUCF, the base year for some Parties that had experienced sharp economic downturns (see Box 3), and the provisions related to the flexibility mechanisms (Article 3.5). While some of this flexibil-

ity has led to negative effects (e.g. in the case of LULUCF flexibility (see Box 2), which was later reigned in), others, such as accommodations for different base years, has not posed problems. Therefore, “bounded flexibility” (Hood *et al.* 2014) could be granted for some aspects of defining contributions, which could accommodate some of the diversity of approaches. Careful balance will be needed to ensure that provisions do not provide too much flexibility so that comparability and integrity is compromised. It will be important to consider how much flexibility should be granted to new aspects of accounting that were not relevant under the Kyoto Protocol, e.g., baseline development for any future baseline scenario goals. Any flexibility accommodated should be accompanied by enhanced reporting requirements to facilitate transparency and understanding.

Common metrics: Another useful feature of the Kyoto Protocol that can be considered in a future regime is common metrics. National inventory guidance under the Kyoto Protocol is stricter than under the current rules of the UNFCCC because the quality of the information underpins the definition and quality of the allowances. In addition, the use of a common metric – GWP as the weighting factor to allow all commitments to be expressed in CO₂-equivalent – has helped facilitate transparency and comparability.

LULUCF: As discussed above, the flexibility concerning LULUCF accounting has been reduced under the Second Commitment Period of the Kyoto Protocol in an effort to reign in the lack of comparability and the creation of non-additional tons. While it may be necessary to accommodate some diversity in the accounting approaches under a new regime, it is possible overcome that diversity (e.g., the dichotomy between land-based versus activity-based accounting) by exploring opportunities for convergence among approaches. This could be achieved in part, for example, by ensuring that a significant coverage of the total emissions and removals are covered under the contribution.

Transferable emissions units: A principal characteristic that facilitated the development of markets under the existing Kyoto Protocol regime was the central nature of UNFCCC bodies as the guarantor of the credibility of the units generated in the system, either through its review of the inventories that served as the basis of the assigned amount system (base year inventories and the calculation of the target) or through the bodies established to issue credits from project-based mechanisms (CDM and JI). This system provided comfort to agents in the market that the assets were well defined.

If existing or proposed national or sub-national mechanisms issuing credits are recognized under a new regime and the contributions (see Box 5), essential elements allowing for the technical comparability of these approaches may need to be agreed upon, such as:

- *Similar information sets to underpin the issuance of units (i.e. inventory guidelines):* If different information sets developed under different guidelines underpin the metric of contributions across different systems, it may difficult to reconcile any trade (i.e., a debit in one country would not match a credit in another country's balance).
- *Acceptable standards and tools for tracking units across systems and avoiding double counting:* A centralised registry system that tracks units throughout their existence is an integral feature of the Kyoto Protocol. Such a centralised, or at least coordinated, approach can ensure that double counting/claiming of issued units will not occur and maintain the integrity of the system (see Boxes 4 and 7). A transaction log and registry system greatly facilitates trading across jurisdictions, ensuring that only valid units are in the system through its checks. This can be adopted in a new regime, regardless of the potentially diverse forms of units under different allowance systems.
- *Quality principles that govern transferable emissions units:* The essential role of the CDM (and to a lesser extent, JI) as the offset mechanism is likely not to be retained in a new system. Instead, agreement should be sought on a number of principles for offset use, and potentially a system for reviewing and acknowledging the use of offset protocols at a central level (possibly through a body similar to the Methodology Panel).

5. Accounting under the 2015 Agreement

The key to a successful outcome of the ongoing negotiation process for a 2015 agreement is to ensure that robust and implementable accounting principles and building blocks are developed, as outlined in earlier sections, and agreed upon in tandem with the spectrum of mitigation contributions included in the agreement. These principles and building blocks should form an integral part of the agreement, including financial and capacity building support to less capable countries, much as the essential rules on flexibility were outlined in the Kyoto Protocol and then further detailed during negotiations under the Marrakesh Accords on issues such as the accounting modalities for the mechanisms and LULUCF.

It is possible to elaborate scenarios for the negotiation on accounting under the 2015 agreement. One scenario would lead to early recognition, possibly as early as at COP 20 in Lima, of the central nature of accounting as part of the 2015 agreement, and a mandate to develop detailed guidance for all major aspects outlined above. This would likely require the establishment of a contact group under the *Ad Hoc* Working Group on the Durban Platform for Enhanced Action (ADP). The work programme of such a contact group could then include the development of accounting modalities for all major contribution types (e.g. base year emissions goals, fixed-level goals, base year intensity goals, baseline scenario goals, policies, actions and projects). Such a process would imply an early agreement on the building blocks of this accounting framework as part of the work programme of a contact group. This scenario, while still feasible, is exceedingly ambitious, given the current level of both the negotiations and the definition of contributions, on the one hand, and the political interests at stake as outlined above.

A more realistic scenario may be to see an agreement that defines accounting principles and building blocks that may apply to a variety of contribution types and which includes a mandate for detailed accounting rules to be developed after Paris. Any rules would have to be developed with enough time to implement the 2015 Agreement from 2020 onwards. Under this second scenario, there are several aspects of accounting that should be included in the Paris Agreement:

- First, common metrics and inventory methodologies:
 - Common methodologies for national inventories using the latest IPCC guidelines.
 - Common global warming potential values, using the latest science.
 - Common greenhouse gas and sectoral coverage for economy-wide goals.
 - Common base year for economy-wide goals whenever possible (taking account of national circumstance, perhaps allowing for reference years).
- Second, principles for land sector accounting, including minimum thresholds for coverage of emissions and removals in the sector.
- Third, principles for accounting for transferable emissions units, including quality principles governing units and the prohibition of double counting.
- Fourth, a mandate to further elaborate accounting rules the following year, based on the agreed upon principles and common metrics. Additional rules will be required for certain contribution types (e.g. baselines for any baseline scenario goals; metric of output for any intensity goals), accounting for the land sector, use of transferable emissions units, evaluation of progress and achievement, among others.

No matter which scenario, there should be a mandate from the COP to develop detailed guidance to track progress towards contributions through an independent process or by an independent institution with the involvement of technical experts. The above provisions would also need to be complemented by user-friendly measurement, reporting and verification guidelines, and supported by access to and provision of capacity building, technical and financial supports to help developing countries meet such requirements.

Regardless of the timing of the design of accounting rules, there will also be an important interplay of any decision on upfront information for the contributions in Lima and accounting rules. Parties may view any list of information requirements as signalling flexibility insofar as choices are able to be reported. However, it could also be viewed as simply a preliminary list of anticipated assumptions, which can be constrained later once accounting rules are developed. Will accounting rules need to accommodate the diversity of approaches reported by Parties, or will that diversity of approaches be later narrowed once accounting rules are

developed? For example, if Parties are to report anticipated use of units, do accounting rules need to be designed to accommodate the range of anticipated use, or can they be designed to limit the use of units under certain conditions? If the latter, will there need to be an option for Parties to adjust their contributions after the design of accounting rules if more flexibility had been assumed? It will be critically important for Parties to discuss how accounting rules interact with the upfront information list.

The set of national mitigation commitments for the post-2020 period will determine whether the world is on track toward a low-carbon economy. Our hope is that this report identifies a set of options for accounting for national commitments that can result in accountability and measurable ambition, and that the next set of commitments delivers the emissions reductions needed to meet the goals of the Convention.

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Exekutiv Sammanfattning

Parterna i FN:s ramavtal för klimatförändringar (Framework Convention on Climate Change, UNFCCC) har identifierat behovet av att begränsa ökningen av den globalt genomsnittliga temperaturen till 2 °C jämfört med den förindustriella temperaturen. Därför lanserade parterna Durban-plattformen för ökade aktiviteter under 2011 för minskning av globala växthusgasutsläpp genom utveckling av ett protokoll, ytterligare ett juridiskt instrument eller överenskommelse i laga kraft under avtalet.⁵⁰

Under sin nittonde session inbjöd parterna i UNFCCC (COP 19) konferens inbjudna parter till initiering eller intensifiering av förberedelser av deras avsedda nationellt fastställda bidrag (INDC:er) under 2015 års avtal. Parterna utvecklar sina INDC:er väl inför COP 21 i Paris i december 2015. Medan INDC:ernas omfattning ska fastställas tycks det vara en allmän uppfattning att en lindring kommer att vara en nyckelfaktor i INDC:erna. Arbete pågår för närvarande för att identifiera information som parterna behöver för att tala om när de kan anföra sina bidrag. Det förväntas att detta kommer att beslutas i Lima vid COP 20 i december 2014 utan förförståelse av bidragande länders juridiska art i det slutliga avtalet.

Denna rapport fokuserar på utvecklingen av redovisningsregler för växthusgaser för lindrings INDC:er för perioden efter 2020. Redovisningsregler och rutiner kommer att avgöra hur framsteg spåras för olika möjliga typer av lindringsbidrag som kan vara inkluderade i 2015 års avtal och hur uppnående av dessa skall fastställas. Utan sådana regler är det svårt, om inte omöjligt, att korrekt spåra framsteg mot individuella INDC:er liksom mot begränsning av temperaturökningen med upp till 2 °C.

Rapporten, beställd av den nordiska arbetsgruppen för globala klimatiförhandlingar,⁵¹ undersöker komponenterna i ett robust och rigoröst redovisningsramverk, goda exempel från befintliga redovisningsramverk och hur ett sådant ramverk kan utvecklas för 2015 års avtal. Målet är att stödja etableringen av ett tillräckligt robust och rigoröst gemensamt redovisningsramverk för 2015 års avtal inklusive redovis-

⁵⁰ UNFCCC, 2011, beslut 1/CP.17, <http://unfccc.int/resource/docs/2011/cop17/eng/09a01.pdf>

⁵¹ Rapporten representerar utgivarnas syn, inte de nordiska ländernas.

ningsregler för internationella överföringar av enheter från marknadsbaserade mekanismer och landsektorn.

5.1 Huvudsakliga upptäckter

5.1.1 Redovisning under 2015 års avtal

En nyckel till en lyckosam utgång av pågående förhandlingsprocess för ett 2015 års avtal är att se till att robusta och implementerbara redovisningsprinciper och ingående delar utvecklas och kan överenskommas parallellt med spektrumet av lindringsbidrag som ska ingå i avtalet. Dessa principer och ingående delar bör utgöra en integrerad del i avtalet, i hög grad som de viktiga reglerna om flexibilitet skissades i Kyoto-protokollet och sedan vidare nedbrutet under förhandlingarna under Marrakesh-överenskommelserna om frågor som redovisningsmodaliteter för marknadsmekanismerna och LULUCF.

Det finns flera aspekter på redovisning som bör inkluderas i 2015 års avtal:

- Gemensamma mätetal och inventeringsmetoder inklusive:
 - a) Gemensamma metoder för nationell inventering med hjälp av senaste IPCC-riktlinjer.
 - b) Gemensamma värden för potentiell global uppvärmning med hjälp av senaste värdena i vetenskaplig litteratur.
 - c) En gemensam definition av "ekonomiomfattande" inklusive vilka växthusgaser och sektorer som täcks.
 - d) Gemensamt basår för ekonomiomfattande mål närhelst möjligt (med hänsyn till nationella omständigheter så som genom tillåtande av tillägg av referensår).
- Principer för landsektors redovisning inklusive för bevakning av utsläpp och eliminering i sektorn.
- Principer för redovisning av internationellt överförbara utsläppsenheter inklusive principer för att säkra kvaliteten på enheter och förhindrande av dubbel registrering.
- Ett mandat att vidare genomarbeta redovisningsregler efter 2015 baserat på de avtalade principerna och gemensamma mätetal. Tillkommande regler kommer att krävas för vissa bidragstyper (t.ex. relaterade till antaganden och metoder för planering av standardvärden för alla standardvärdescenariomål och datakällor kopplade till mätning av resultatet för varje intensitetsmål), redovisning för landsektor,

användning av överförbara utsläppsenheter, utvärdering av framsteg och uppfyllelse, med flera.

Det bör även finnas ett mandat från COP att utveckla detaljerade riktlinjer för spårning av framsteg mot bidrag genom en oberoende process eller med en oberoende institution som involverar teknisk expertis. De fyra aspekterna på redovisning ovan skulle även behöva kompletteras med användarvänliga riktlinjer för mätning, rapportering och verifiering och stödjas av tillgång till och bestämmelser för kapacitetssuppletering, tekniskt och ekonomiskt stöd när det behövs för att länder ska kunna möta kraven.

5.1.2 Typer av bidrag och innebörd för redovisningen

Några parter lämnar eventuellt INDC:er i form av mål för eller resultat av utsläppsminskning (kallas "lindringsmål" i denna rapport) medan andra kan lämna policy- eller aktivitetsbaserade åtaganden.

I allmänhet är redovisning för lindringsmål mer entydigt än redovisning för policybaserade åtaganden. Det finns betydande erfarenhet med redovisning för mål under Kyotoprotokollet (specifikt utsläppsmål för basår). Nya typer av mål har dock börjat dyka upp där några är svårare att redovisa än andra. I allmänhet är *utsläppsmål för basår* och *nivåbestämda mål* enklare att redovisa eftersom ursprungsdata är den nationella växthusgasinventeringen vilken parterna utvecklar som del av sina rapporteringsskyldigheter under UNFCCC. Redovisning för *basårets intensitetsmål* är svårare då det kräver data om utfall (t.ex. GDP) mot vilka målet definieras (t.ex. Mt CO₂e per GDP-enhet). Redovisning för *standardvärdescenariomål* är betydligt mer komplext. Utvecklingen av standardvärdescenarier är föremål för osäkerheter kopplade till framtida utsläppsnivåer vilket kan påverka ambitionen med målet. Därutöver om standardvärdescenarier inte är statiska (t.ex. fixerade vid inledningen av målperioden och inte ändras) utan istället är dynamiska (t.ex. omberäknade under målperioden) kan tillåtna utsläpp under mållåret ändras under målperioden.

5.1.3 Viktiga bedömningar för redovisning av lindringsmål

Redovisningsregler och rutiner bör utvecklas kopplat till (a) inventeringsmetodik och värden, (b) landsektorredovisning och (c) utvärderingens utveckling inklusive användningen av överförbara utsläppsenheter.

Inventeringsmetodik och värden

Val av nationell inventeringsmetodik: Om alla parter använder IPCC 2006 *Guidelines for National Greenhouse Gas Inventories* (eller andra framtida riktlinjer för inventering) förbättras jämförbarheten än om parter använder olika riktlinjer. Eftersom alla parter utanför Annex I har inte har tillämpat 2006 årsriktlinjer kan detta kräva motsvarande kapacitetsuppbyggnad.

Värden för global uppvärmningspotential (GWP): Jämförbarhet mellan parter skulle förbättras om parterna använder de senaste GWP-värdena (levereras för närvarande av IPCC:s *femte utvärderingsrapport* (AR5) grundat på en 100-årig tidshorisont). Om det inte är möjligt bör GWP-värden som ges av IPCC:s *sjätte utvärderingsrapport* (AR4) grundat på en 100-årig tidshorisont tillämpas.

Landsektors redovisning

Behandling av utsläpp och borttagning från landsektorn: Ett gemensamt angreppssätt för behandling av utsläpp och borttagning från landsektorn kan maximera jämförbarheten. Medtagande av landsektorn i målavgränsningen (i motsats till att behandlas som ett separat mål per sektor, behandlat som en motvikt, eller tillsammans utelämnade) kan maximera möjligheterna till lindring genom att se till att landsektors utsläpp och eliminering inkluderas i bredare lindringsstrategier och kan minimera risken för läckage av utsläpp från andra sektorer till landsektorn.

Angreppssätt med landbaserad kontra aktivitetsbaserad redovisning: Behandlingen av landsektorn på ett liknande sätt (t.ex. alla aktivitetsbaserade eller landbaserade) kan maximera jämförbarheten. Om avtal om ett enhetligt redovisningssätt inte kan träffas måste principerna tillförsäkra jämförbarhet av ansträngningar enligt båda angreppssätten (t.ex. med hänsyn till täckning av användningsområde eller kategorier så att ökad konvergens skapas mellan angreppssätten).

Täckning av användningsområde, kategorier, koldioxidlagring och/eller växthusgasströmmar: inkluderandet av alla betydande underkategorier av landanvändning (under ett landbaserat angreppssätt) eller uppsättning av aktiviteter (i ett aktivitetsbaserat angreppssätt) i redovisningen kan maximera utsläppsminskningen.

Angreppssätt med landbaserad kontra aktivitetsbaserad redovisning För de parter som inkluderar landsektorn i sina bidrag eller behandlar landsektorn som ett sektorvist mål kommer anpassningen av redovisningen till vald typ av mål (t.ex. netto-netto redovisningsmetod för utsläppsmål under basår och intensitetsmål för basår, brutto-netto redovisningsmetod för fixerade mål och framåtblickande redovisningsmetod med standardvärde för standardvärdescenariomål) att säkerställa konsekvens mellan sättet på vilket landsektorn redovisas och sättet på vilket andra sektorer redovisas.

Utvärderingsförlopp inklusive användningen av överförbara utsläppsenheter

Beräkning av tillåtna utsläpp under mållår(en): Beräkningen och rapporteringen av tillåtna utsläpp (maximal kvantitet av utsläpp som får ske under mållåret/perioden och är konsekvent med uppfyllande av lindringsmålet) på ett konsekvent sätt för alla parter kommer att möjliggöra konsekvent redovisning över tid.

Målnivå: Användning av ett enda värde för målnivån snarare än en uppsättning av värden kommer att öka transparensen och jämförbarheten då det ökar säkerheten om huruvida målet uppnås för utsläppsnivån under ett mållår eller -period.

Målens tidsram: Mål för flera år snarare än mål för bara ett år möjliggör en förståelse för utsläppsnivåer under flera år i en målperiod bättre än för endast ett mållår. Ett mål för ett år kan undergräva potentialen för att uppnå märkbara utsläppsminskningar om inte utvecklingen av utsläppen mot målet inte är strikt.

Mållår/period: Antagande av samma mållår/period kan öka transparensen och jämförbarheten. Valet av mållår/period bör göras utifrån en bedömning av vilken mållängd som leder till att bäst underlätta långsiktig planering och investering för lindring. Det mest robusta tillvägagångssättet är att välja en kombination av kortsiktiga (t.ex. 2025, 2030) och långsiktiga (2050) mål som är förenliga med en bana för utsläppen som fasar ut växthusgasutsläpp i det långa perspektivet, konsekvent med senaste klimatforskningen

Definition av målgränser: En gemensam definition för ekonomiomfattande mål kan öka jämförbarheten och om alla betydande växthusgaser och sektorer medräknas maximera möjligheterna till utsläppsminskningar.

Basårets utsläpp och utsläppsintensitet: Beräkningen av basårets utsläppsintensitet på ett jämförbart sätt baserat på inventeringsdata för basåret och antagande av en gemensam datakälla för utsläppta enheter kommer att öka transparensen och jämförbarheten.

Antaganden om standardvärdescenario: Medtagande av policyer som implementeras eller antas för det år då standardvärdescenariot utvecklas kommer att maximera följd effekter och ambition. Statiska standardvärdescenarier ger högre transparens avseende tillåtna utsläpp och högre jämförbarhet eftersom tillåtna utsläpp sätts på förhand och kan jämföras mellan parter. Om dynamiska standardvärdescenarier väljs är rapporteringen av en omberäkningspolicy för standardvärdescenario vid målperiodens början kritisk för att öka transparensen.

Överförbara utsläppsenheter från marknadsmekanismer: För att maximera utsläppsminskningarna och jämförbarheten av lindringsansträngningar under 2015 års avtal bör alla erkännanden som är lämpliga att tillämpa av en parts mötande av sitt bidrag överensstämja med följande kvalitetsprinciper: verklig, adderande, permanent, transparent, verifierad under otvetydigt ansvar och adresserar läckage. Understöd som tillämpas för bidrag bör komma från utsläppshandelssystem med följande kvalitetsegenskaper: rigorösa uppföljnings- och verifieringsprotokoll, transparent spårning och rapportering av enheter och stringenta gränser. För att maximera miljömässig integritet bör endast utfall för målår eller målperiod tillämpas. För att maximera ambition och jämförbarhet och skydda redovisningssystemets miljömässiga integritet, bör dubbelregistrering förebyggas genom mekanismer som registraturer och överföringsloggar.

5.1.4 Nyckelbedömningar för redovisning för policyer och lindringsaktiviteter⁵²

Krav på uppskattning och rapportering om effekter av policyer och lindringsaktiviteter: Uppskattning och rapportering av policyers och lindringsaktiviteters effekt på växthusgaser framförda som bidrag bör genomföras för att skapa förståelse för potentiella och verkliga utsläppsminskningar och öka transparensen.

Tidsanpassning och frekvens: För att möjliggöra jämförbarhet och öka transparensen bör utvärderingen (på förhand och i efterhand) och rap-

⁵² Policyer och lindringsaktiviteter kan inkludera policyer, lindringsaktiviteter, mått och projekt.

portering av effekterna av policyer och lindringsaktiviteter ske med två års mellanrum som del av tvåårsrapporter eller tvåårsuppdateringsrapporter liksom alla tillkommande rapporteringskrav som sammanfaller med avtalsperioden.

Metodik: För att maximera jämförbarhet och öka transparensen bör gemensamma riktlinjer antas för hur ansvar tas för policyer och lindringsaktiviteter, vilket adresserar hur gränserna för utvärdering ska definieras, definiera ett standardvärdescenario, inriktar samarbete med andra policyer och aktiviteter och uppskatta eller beskriva osäkerheten i uppskattningarna. Om detta angreppssätt inte är möjligt bör rapporteringskraven inkludera ett tillkännagivande av använda metodiker och gjorda antaganden samt resultatens osäkerhet.

Uppsättningen av nationella lindringsåtaganden för perioden efter 2020 kommer att avgöra om världen är på väg mot en kolfattig ekonomi. Vårt hopp är att denna rapport identifierar en uppsättning med alternativ för redovisning för nationella åtaganden som kan resultera i ansvarstagande och mätbara ambitioner och att nästa uppsättning av åtaganden åstadkommer de utsläppsminskningar som krävs för att uppfylla avtalets mål.

Annex A: Upfront information to maximize transparency, understanding and clarity of mitigation contributions

This annex provides a list of information for Parties to submit to accompany the INDC in 2015 if transparency, understanding and clarity of mitigation contributions are to be maximized. It is divided into a proposed minimum list and a list of additional recommended information to provide additional transparency.

Proposed minimum list

1. Description of mitigation contribution (such as type and level of contribution).
2. Base year or period, if applicable.
3. Target year or period, including both short-term and long-term contributions, if applicable.
4. Coverage in terms of:
 - Sectors.
 - Greenhouse gases.
 - Percentage of national emissions covered.
5. Anticipated national emissions in the target year/period.
6. Peaking year and peak emissions level.
7. Expected use of *international market mechanisms*, including how double counting will be avoided and types and years of units to be used, if applicable.
8. Intended inventory methodologies and GWP values to be used to track progress.
9. Intended accounting approach for the *land-use sector*, including coverage of land-use activities and categories, if applicable.

10. *For baseline scenario goals:* 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.
11. *For intensity goals:* base year emissions intensity, projected emissions intensity in the target year/period, and data sources used.
12. *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.
13. A description of how the contribution relates to the objective of the Convention, including how it responds to the need for *equity and how it is aligned with the global 2 °C target*, based on indicators as applicable.
14. What portion of the contribution assumes additional *international support*, if any, and an indication of additional mitigation action to be achieved through the provision of further support, if applicable.
15. *Additional information, explanation, or context* as relevant.

Additional recommended information to provide additional transparency

7. Expected use of international market mechanisms:
 - a) Anticipated quantity of units that will be used to meet goal, if known.
 - b) Quality principles applied to units purchased/transferred (such as real, additional, permanent, transparent, verified, owned unambiguously, address leakage).
 - c) Anticipated issuance of offset credits that will be valid for use by another Party, if known; anticipated net transfers of emissions allowances between emissions trading systems, if known.
 - d) Any approaches assumed for banking and borrowing of units between different commitment periods.
 - e) Participation requirements and participating entities in market-based programs.

9. Accounting for the land-use sector:
 - a) Treatment of land-use sector (included in the goal boundary; treated as a separate sectoral goal; used to offset emissions within the goal boundary; or not accounted for).
 - b) The baseline/reference against which emissions and removals from the land-use sector are accounted, and assumptions and methodologies for the reference.
 - c) Land-use accounting method (net-net, gross-net, or forward-looking baseline).
 - d) Any use of the managed land proxy, including managed land definition and locations of managed and unmanaged lands.
 - e) Any inclusion of harvested wood products in accounting.
 - f) Treatment of age-class legacy/carbon sink saturation.
 - g) Any use of a natural disturbance mechanism, including: location, year, type, estimation technique, demonstration that disturbances are beyond Party's control.
10. Information for baseline scenario goals:
 - 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) For dynamic baseline scenario goals, a recalculation policy and significance threshold used to determine whether changes in emissions drivers are significant enough to warrant recalculation of the scenario.
12. 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 .
13. Alignment with the global 2 °C target
- a) Domestic mitigation-related targets, in particular long-term targets and how the contribution is consistent with such long-term targets.
 - b) Assumptions related to mitigation potential and mitigation costs.
 - c) Comparison of contributions with independent studies providing top-down analyses and model results of emission reductions necessary to achieve the 2 °C target.
 - d) References to background information with more detailed information and studies related to global 2 °C target.
 - e) Approaches and concepts used to operationalize equity and fairness considerations (e.g., responsibility, capability, equality, cost effectiveness) and references to any underlying studies and reports conducted related to equity.
15. Additional information:
- a) Existing or planned domestic policies or actions that will support implementation of the mitigation contribution, and their legal status.

Annex B: Evaluation of accounting options

This annex evaluates the each accounting option described in the report based on the criteria of transparency, comparability, and maximizing measurable emissions reductions. When assessing the potential for maximizing emissions reductions, in particular, it should be noted that it will also depend on other aspects of goal design, but all other things being equal we assess how the options can lead to more measurable emissions reductions.

Key accounting topics for national mitigation contributions framed as mitigation goals

National GHG inventory-related requirements

Choice of methodology

Option	Alignment with Kyoto Protocol and/or current pre-2020 UNFCCC rules	Implications for transparency	Implications for comparability	Implications for measurable reductions
All Parties use IPCC 2006 guidelines	Consistent with KP, where all Parties with targets (Annex I Parties) are required to use the same inventory methodology	Transparent because methods are common and pre-determined	Enhanced comparability because emissions estimates for all Parties are developed using the same methodology (although different tiers may be used)	N/A
Some Parties use IPCC 2006 guidelines while others use IPCC 1996 guidelines	Consistent with pre-2020 rules, where Annex I Parties are required to use 2006 IPCC guidelines, while non-Annex I Parties use revised 1996 IPCC guidelines	Transparent because methods are common among sets of Parties and pre-determined	Comparability is comprised since Parties are using two different guidelines, resulting in emissions estimates that cannot be easily compared without additional analysis	N/A
Parties choose inventory method	No precedent	Transparency will depend on reporting requirements for disclosing inventory methodologies. Transparency is compromised if Parties are not required to report their inventory methodology	Depends on methods chosen by Parties. Comparability will be comprised if Parties choose different methods	N/A

Global warming potential (GWP) values

Option	Alignment with Kyoto Protocol and/or current pre-2020 UNFCCC rules	Implications for transparency	Implications for comparability	Implications for measurable reductions
1. All Parties are required to use IPCC AR5 values	No precedent	Maximum transparency because GWP values are common and pre-determined, and transparency is not dependent on reporting rules	Maximum comparability because emissions estimates for all Parties are developed using the same GWP values	N/A
2. All Parties are required to use IPCC AR4 values	Consistent with KP, where all Parties are required to use AR4 GWP values	Maximum transparency because GWP values are common and pre-determined, and transparency is not dependent on reporting rules	Maximum comparability because emissions estimates for all Parties are developed using the same GWP values	N/A
3. Some Parties are required to use IPCC AR4 values while others are required to use IPCC SAR values	Consistent with pre-2020 rules, where Annex I Parties are required to use AR4 GWP values, while non-Annex I Parties use SAR GWP values	Maximum transparency because GWP values are pre-determined and not dependent on reporting rules	Comparability is comprised since Parties are using two different set of GWP values, resulting in emissions estimates that cannot be compared without additional analysis. However, it is not technically challenging to convert one GWP to another as long as there is transparency regarding which one is in use	N/A
4. Parties may choose values	No precedent	Depends on reporting rules for disclosing GWP values. Transparency is compromised if Parties are not required to report their GWP values	Depends on GWP values chosen by Parties. Comparability will be comprised if Parties choose different values	N/A

Land sector accounting

Treatment of emissions and removals from the land sector

Option	Alignment with Kyoto Protocol and/or current pre-2020 UNFCCC rules	Implications for transparency	Implications for comparability	Implications for measurable reductions
1. Parties with economy-wide goals must account for the sector as part of the goal boundary	n/a	Most transparent given that Parties with economy-wide goals must include the sector in the goal boundary	Greatest comparability because land-use sector is treated in a more similar way across all Parties with economy-wide goals	Consistent with goal; signal to reduce emissions relative to historical emissions
2. Parties with economy-wide goals can either account for the sector as part of the goal boundary, a separate sectoral goal, or as an offset but must account for the sector	Under the Kyoto Protocol, the sector is treated as an offset	If this option is chosen, Parties will need to come forward with more information regarding the way in which the sector is accounted for if transparency is to be gained	Challenging given different ways in which the sector is accounted for	Depending on how the target is defined, may provide a mitigation signal because land use sector is included in accounting
3. Parties with economy-wide goals have flexibility with regard to how the sector is treated	Current pre-2020 UNFCCC rules	If this option is chosen, Parties will need to come forward with more information regarding the way in which the sector is accounted for if transparency is to be gained	Most challenging given different ways in which the sector is accounted for	Does not provide a mitigation signal because land use sector may not be included in accounting

Land-based versus activity-based accounting approach

Option	Alignment with Kyoto Protocol and/or current pre-2020 UNFCCC rules	Implications for transparency	Implications for comparability	Implications for measurable reductions
1. All Parties are required to use activity-based accounting	Kyoto Protocol	n/a	Greater comparability because land-use sector is treated similarly	Emissions reductions will be determined by the covered activities or pools/fluxes (and whether all significant ones are covered) as opposed to the accounting approach itself and whether a cap is used (and the overall goal level)
2. All Parties are required to use land-based accounting	Current Kyoto Protocol system does not have land-based accounting	n/a	Greater comparability because land-use sector is treated similarly	
3. Parties have flexibility and can choose whether land-based accounting or activity-based accounting is adopted but a certain percentage of emissions in the sector needs to be covered	n/a		Enhances comparability given that coverage is similar between both approaches (and thus the calculated emissions levels will converge)	
4. Parties have flexibility and can choose whether land-based accounting or activity-based accounting is adopted	Under UNFCCC (in the absence of rules)	n/a	Most challenging given flexibility	

Coverage of land-use activities, categories, carbon pools, and/or GHG fluxes

Option	Alignment with Kyoto Protocol and/or current pre-2020 UNFCCC rules	Implications for transparency	Implications for comparability	Implications for measurable reductions
1. All significant fluxes or activities are included	n/a	If transparency is to be maximized, still will require information on how significance was determined and list of included fluxes/activities	Greatest comparability because coverage is most similar across Parties	Emissions reductions will be determined by the covered activities or pools/fluxes (and whether all significant ones are covered) as opposed to the accounting approach itself (and the overall goal level)
2. Parties are required to include some fluxes or activities; others are voluntary	Kyoto Protocol	If transparency is to be maximized, will require information on list of included fluxes/activities and justification for any exclusions	More challenging given different ways in which the sector is covered under Parties' goals	
3. Parties can choose which fluxes/activities to include	n/a	If transparency is to be maximized, will require information on list of included fluxes/activities and justification for any exclusions	Most challenging given different ways in which the sector is covered under Parties' goals	

Land sector accounting method

Option	Alignment with Kyoto Protocol and/or current pre-2020 UNFCCC rules	Implications for transparency	Implications for comparability	Implications for measurable reductions
1. Parties must use certain land sector accounting methods for certain activities, but the method need not be consistent with the goal design and need not be the same across activities	Kyoto Protocol	Transparent insofar as the methods are reported	Comparable because all Parties have adopted the same land sector accounting method for each activity	Emissions reductions will be determined by the covered activities or pools/fluxes (and whether all significant ones are covered) as well as how the accounting method is designed (e.g. forward-looking baseline development) (and the overall goal level)
2. Parties use land sector accounting methods consistent with the goal accounting method	n/a	Transparent insofar as the method is reported	Most comparable because ensures consistency with land sector accounting and goal accounting method	
3. Parties may use whichever land sector accounting methods they wish for whichever activities	Under UNFCCC (no rules)	Least transparent and requires more significant reporting requirements as a result	Least comparable as land sector accounting method may differ	

Calculating allowable emissions in the target year(s)

Goal level, goal timeframe, and target year or period

Goal level				
Option	Alignment with Kyoto Protocol and/or current pre-2020 UNFCCC rules	Implications for transparency	Implications for comparability	Implications for measurable reductions
1. All Parties must express their goal level as a single value	Kyoto Protocol CP1	The allowable emissions level in the target year is more transparent and understood with greater certainty	There is a single value for allowable emissions in the target year or period	Provides greater certainty regarding the level of both national and global emissions levels in a given target year, and therefore enables an assessment of ambition. (However, note that the ambition itself will be determined by the goal level)
2. Parties have flexibility and can express their goal level as either a single value or a range of values	Current pre-2020 UNFCCC situation; CP2 of Kyoto Protocol	There is a range of allowable emissions levels associated with the goal and therefore less transparency about the level of emissions reductions that will be realized.	More difficult to compare goals because there is a range of values for the goal level and therefore greater uncertainty about the level of emissions in the target year or period that will be realized.	Presents hurdles for measuring emissions reductions given that emissions levels in the target year or period can be anywhere in the range. (However, note that the emissions reductions themselves will be determined by the goal level)

Goal timeframe

Option	Alignment with Kyoto Protocol and/or current pre-2020 UNFCCC rules	Implications for transparency	Implications for comparability	Implications for measurable reductions
1. All economy-wide goals are defined as multi-year goals	Consistent with KP, where all KP Parties adopted multi-year goals with the same timeframe	More transparency regarding the emissions trajectory during the target period	Depends on the target period across Parties. Comparability is enhanced if all Parties adopt a common target period.	Maximum emissions reductions because multi-year goals tend to limit cumulative emissions, but ambition is not guaranteed as it will depend on other aspects of goal design, including goal level
2. Economy-wide goals for some Parties are defined as multi-year goals while others are framed as peak-and-decline goals	No precedent	More transparency regarding emissions trajectories for Parties with multi-year goals and peak-and-decline goals	Comparability is comprised since Parties adopt different goal timeframes that cannot be easily compared without additional analysis	More reductions because multi-year goals and peak-and-decline pathways tend to limit cumulative emissions
3. Economy-wide goals for some Parties are defined as multi-year goals while the goal timeframe is left undefined for other Parties	No precedent	More transparency regarding emissions trajectories for Parties with multi-year goals, less transparency for Parties with single-year goals	Comparability is comprised since Parties adopt different goal timeframes that cannot be easily compared without additional analysis	Depends on differentiation, less ambitious if most Parties adopt single-year goals
4. The goal timeframe is left undefined for all Parties with economy-wide goals	Consistent with pre-2020 situation (no rules)	Less transparency regarding emissions trajectories if most Parties adopt single-year goals	Comparability is comprised if Parties adopt different goal timeframes that cannot be easily compared without additional analysis	Ambitious only if most Parties adopt multi-year goals

Target year/period

Option	Alignment with Kyoto Protocol and/or current pre-2020 UNFCCC rules	Implications for transparency	Implications for comparability	Implications for measurable reductions
1. All contributions are framed around a common target year/period	Consistent with KP and pre-2020 actions taken by developed countries, where all adopted common target year/period	Maximum transparency because all Parties adopt same target year/period, and transparency is not dependent on reporting rules	Maximum comparability because progress for all Parties is tracked against common target year/period	N/A
2. Contributions for some Parties are framed around a common target year/period while others have flexibility	No precedent	Maximum transparency for Parties required to adopt common target year/period		
For other Parties, transparency is compromised if they are not required to report target year/period	Comparability is comprised since Parties adopt different target years/periods and progress cannot be easily compared without additional analysis	N/A		
There is no common target year/period; it is left undefined	Consistent with pre-2020 actions taken by developing country Parties, where different target years were chosen	Depends on reporting requirements. Transparency is compromised if Parties are not required to report their target year/period	Comparability is comprised since Parties adopt different target years/periods and progress cannot be easily compared without additional analysis	N/A

Definition of economy-wide goal

Option	Alignment with Kyoto Protocol and/or current pre-2020 UNFCCC rules	Implications for transparency	Implications for comparability	Implications for measurable reductions
1. "Economy-wide" goals are required to include certain pre-determined key sectors and gases	Consistent with KP, where all KP Parties include all sectors and gases under Annex A	Maximum transparency because definition is common and pre-determined, and transparency is not dependent on reporting rules	Maximum comparability because sectoral and gas coverage is common across all Parties, enabling easier comparisons of emissions across Parties	Higher emissions reductions because the large majority of emissions sources and gases are covered
2. "Economy-wide" is left undefined, and Parties with economy-wide goals may choose included sectoral coverage and sector definitions and greenhouse gases	Consistent with UNFCCC, where there is no definition of "economy-wide" dictating which sectors or gases are to be included	Depends on reporting requirements. Transparency is compromised if Parties are not required to report definition of economy-wide goal	Comparability is comprised if Parties' goals cover different sectors or gases, making progress and effort difficult to compare without additional analysis	Lower emissions reductions if most Parties choose limited sectoral and gas coverage

Reference level

Base year emissions and emissions intensity

Option	Alignment with Kyoto Protocol and/or current pre-2020 UNFCCC rules	Implications for transparency	Implications for comparability	Implications for measurable reductions
1. A common base year is applied to all goals (if relevant, e.g. base year emissions and base year intensity goals)	Consistent with KP First Commitment Period, where all KP Annex I Parties adopted common base year	Maximum transparency because base year is common and pre-determined, and transparency is not dependent on reporting rules	Maximum comparability because progress for all Parties is tracked against common base year	Higher emissions reductions if the common base year is one where majority of Parties' emissions are low; however, Parties may adjust goal level accordingly
2. A common base year is applied to all goals (if relevant, e.g. base year emissions and base year intensity goals) but Parties can also frame their goal from another reference years	Consistent with KP Second Commitment Period, where all KP Annex I Parties adopted common base year but have the option of having different reference years	Maximum transparency for Parties required to adopt common base year. For other Parties, transparency is compromised if they are not required to report their base year	Maximum comparability because progress for all Parties is tracked against common base year	Higher emissions reductions if the common base year is one where majority of Parties' emissions are low; however, Parties may adjust goal level accordingly
3. Any base year can be used for a goal	Consistent with pre-2020 situation (no rules)	Depends on reporting requirements. Transparency is compromised if Parties are not required to report their base year	Comparability is comprised since Parties adopt different base years and progress cannot be easily compared without additional analysis	Lower emissions reductions if most Parties choose base years with high emissions; however, Parties may adjust goal level accordingly

Unit of output for base year intensity goals

Option	Alignment with Kyoto Protocol and/or current pre-2020 UNFCCC rules	Implications for transparency	Implications for comparability	Implications for measurable reductions
1. Parties with base year intensity goals must use a common data source for unit of output	n/a	The data source is prescribed and therefore transparent	More comparable as a common data source is used for unit of output, enabling comparison	Provides an opportunity to require a standardized unit of output that is peer-reviewed and subject to robust QA/QC procedures
2. Parties with base year intensity goals have flexibility to determine the data source for the unit of output	Current pre-2020 UNFCCC rules	If the data source is reported, then transparent. If it is not required information provided alongside a contribution, then not transparent	Less comparable given the varying methodologies to develop projections of the unit of output among data sources. National projections of the unit of output may be higher than international projections	Data for the unit of output may not come from official, peer-reviewed sources that are publicly available and are subject to robust QA/QC procedures, which could negatively affect ambition

Baseline scenario

Static versus dynamic baseline scenarios

Option	Alignment with Kyoto Protocol and/or current pre-2020 UNFCCC rules	Implications for transparency	Implications for comparability	Implications for measurable reductions
1. All baseline scenario goals are based on static baseline scenarios	No precedent	More transparency regarding allowable emissions	Maximum comparability because allowable emissions are set ex-ante and can be compared across Parties	N/A
2. All baseline scenario goals are based on dynamic baseline scenarios	No precedent	Less transparency regarding allowable emissions, since they may change based on baseline scenario recalculations	Comparability is compromised because allowable emissions may change over the goal period due to baseline recalculations, and therefore cannot be compared unless Parties are required to report recalculated allowable emissions	N/A
3. Baseline scenario goals for some Parties are based on static baseline scenarios while others are based on dynamic baseline scenarios	No precedent	More transparency regarding allowable emissions for Parties with static baselines, less for Parties with dynamic baselines	Comparability is compromised given uncertainties related to dynamic baselines and allowable emissions	N/A
4. Parties with baseline scenario goals may choose a static or dynamic baseline scenario	No precedent	Transparency is compromised if Parties do not report choice of static or dynamic baseline. Less transparency regarding allowable emissions if most Parties adopt dynamic baselines	Comparability is compromised given uncertainties related to dynamic baselines and allowable emissions	N/A

Inclusion of policies and measures in the baseline scenario

Option	Alignment with Kyoto Protocol and/or current pre-2020 UNFCCC rules	Implications for transparency	Implications for comparability	Implications for measurable reductions
1. Baseline scenarios include policies that are implemented or adopted by the year the baseline scenario is developed	No precedent	More transparency regarding Parties' BAU emissions	Maximum comparability across Parties' baselines because each will be developed according to a common approach	Higher emissions reductions because the baseline scenario represents BAU emissions and therefore any deviation from it represents additional effort
2. Implemented or adopted policies by the year the baseline scenario is adopted need not be included in the baseline scenario	No precedent	Less transparency regarding BAU emissions if most Parties do not include existing policies	Comparability across Parties' baselines is compromised because different Parties will likely adopt different approaches (unless all Parties omit all implemented or adopted policies)	Lower emissions reductions if Parties do not include existing policies. In extreme cases, Parties may achieve their goals without additional effort

Baseline scenario review

Option	Alignment with Kyoto Protocol and/or current pre-2020 UNFCCC rules	Implications for transparency	Implications for comparability	Implications for measurable reductions
1. Baseline scenarios are required to undergo baseline review process	No precedent	Maximum transparency regarding the underlying data and methods used to develop the baseline scenario	Higher comparability since underlying data and methods can be compared across Parties	Can help to enhance robustness of baseline and therefore ensure that achieving the goal requires additional effort
2. Parties with baseline goals may choose to undergo baseline review process but it is not required	No precedent	Depends on reporting requirements, transparency is compromised if Parties are not required to disclose underlying baseline data and methods	Less comparability if Parties are not required to disclose underlying data and methods	Without detailed knowledge of underlying data and methods, assessing the emissions reductions of the baseline scenario goal is difficult

Assessing goal achievement, including accounting for market mechanisms

Transferable emissions units from market mechanisms

Eligibility of units

Option	Alignment with Kyoto Protocol and/or current pre-2020 UNFCCC rules	Implications for transparency	Implications for comparability	Implications for measurable reductions
1. Any units used towards goals conform to predefined quality principles	Consistent with KP; consistent with various approaches under UNFCCC track	More transparency regarding the environmental integrity of units	More comparable, because quality principle ensure that units represent actual emissions reductions and can therefore enable accurate comparison of emissions reductions across Parties	Higher emissions reductions because quality principles ensure that units correspond to actual emissions reductions
2. Parties may use any units; no quality principles are adhered to		Less transparency regarding the environmental integrity of units	Less comparable, because units may not represent actual emissions reductions and therefore emissions reductions cannot be compared across Parties	Lower emissions reductions if units are poor quality

Types of units

Option	Alignment with Kyoto Protocol and/or current pre-2020 UNFCCC rules	Implications for transparency	Implications for comparability	Implications for measurable reductions
1. Any units used towards goals are from types that are predefined	Consistent with KP	More transparency regarding the nature and environmental integrity of units	More comparable, because unit type will be limited and can therefore be easily compared across Parties	Higher emissions reductions if unit types are high quality
2. Units used towards goals may be from any type	Consistent with pre-2020 UNFCCC rules	Less transparency regarding the environmental integrity of units	Less comparable, because unit types will differ and may not be comparable due to varying quality	Lower emissions reductions if unit types are poor quality

Quantity of units that may be used

Option	Alignment with Kyoto Protocol and/or current pre-2020 UNFCCC rules	Implications for transparency	Implications for comparability	Implications for measurable reductions
1. Accounting rules define a limit on the amount of units that can be used towards a Party's goal	No precedent	More transparency regarding the potential use of units	Higher comparability of domestic emissions reductions because limit on unit use is predefined	Higher emissions reductions if Parties define low limits because this will drive domestic emissions reductions which can better enable long-lasting transformational change
2. No rules on quantity of units that can be used towards a goal	Consistent with KP and pre-2020 UNFCCC rules	Transparent if the use of units is reported	Lower comparability of domestic emissions reductions because of uncertainty regarding how Parties are meeting their goals, either by domestic action or acquisition of units	Lower emissions reductions if Parties use large amount of units to meet goals instead of putting in place policies that lead to transformational change in their countries

Vintages and banking of units

Option	Alignment with Kyoto Protocol and/or current pre-2020 UNFCCC rules	Implications for transparency	Implications for comparability	Implications for measurable reductions
1. Parties cannot bank pre-2020 units and use towards post-2020 contributions	No precedent	Higher transparency regarding the vintages of units applied toward the goal	Higher comparability because all Parties will use units from the goal period only	More emissions reductions during the goal period since Parties cannot apply units from a previous period; however, this may not provide sufficient incentives to ramp up pre-2020 ambition
2. Parties may bank units from a pre-defined period before the goal period (e.g. 2017–2020)	Consistent with KP	Higher transparency regarding the vintages of units applied toward the goal	Higher comparability because Parties will have a common approach to banking units	Fewer emissions reductions during the goal period since Parties can apply units from a previous period; however, this may incentivize pre-2020 ambition
3. Parties may use units of any vintage	Consistent with pre-2020 UNFCCC rules	Lower transparency if Parties are not required to report on the vintages of units used toward their goals	Lower comparability if Parties use different unit vintages	Fewest emissions reductions ambition during the goal period since Parties can apply units from a previous period; however, this may incentivize pre-2020 ambition

Double counting of units

Option	Alignment with Kyoto Protocol and/or current pre-2020 UNFCCC rules	Implications for transparency	Implications for comparability	Implications for measurable reductions
1. Units cannot be double counted towards multiple Parties' pledges	Consistent with KP; consistent with various approaches under UNFCCC track	Maximum transparency regarding the transferring and holding of units	Maximum comparability because Parties emissions will reflect true and fair accounting of units, enabling them to be easily compared across Parties without risk of double counting	More emissions reductions because the environmental integrity of the accounting regime is maintained
2. No accounting rules or mechanisms prevent the double counting of units	Under UNFCCC (no rules)	Lower transparency if Parties are not required to report transfers of units and instances where double counting has occurred	Lower comparability because double counting is not prohibited and Parties emissions will not be reliably accurate and therefore cannot be accurate compared	Lower emissions reductions due to the compromised nature of the accounting regime

Key accounting topics for national mitigation contributions framed as policies and mitigation actions

Requirement to estimate and report greenhouse gas effects (and other estimated outcomes/results as relevant)

Option	Alignment with Kyoto Protocol and/or current pre-2020 UNFCCC rules	Implications for transparency	Implications for comparability	Implications for measurable reductions
1. Parties are required to estimate and report the greenhouse gas effects of policies and actions put forward as contributions (and other estimated outcomes/results as relevant)	Broadly consistent with existing requirements for all Parties but required rather than recommended information	Full transparency on emissions impacts of policies and actions	Facilitates comparability of the emissions impacts of Party's contributions (though methodological differences may hinder valid comparisons)	Encourages higher ambition, since the level of emissions reductions will be made transparent and can be determined
2. Parties are only recommended to estimate and report the greenhouse gas effects of policies and actions put forward as contributions (and other estimated outcomes/results as relevant)	Broadly consistent with existing requirements for all Parties	Limited transparency on the ambition or the impacts on emissions	Limited ability to compare Party's contributions on the basis of ambition or the impacts on future emissions	Limited ability to assess the emissions reductions of Party's contributions; may limit ambition

Requirement to monitor progress indicators over time

Option	Alignment with Kyoto Protocol and/or current pre-2020 UNFCCC rules	Implications for transparency	Implications for comparability	Implications for measurable reductions
1. Parties are required to report progress over time, according to monitoring of progress indicators	Consistent with reporting on progress indicators and results achieved	Maximum transparency on progress to date	Maximum comparability of progress based on trends in indicators	Depends on policy and action choice, but likely to encourage greater ambition by the need to report progress
2. Parties are only recommended to report progress over time, according to monitoring of progress indicators	Consistent with reporting on progress indicators and results achieved	Limited transparency on progress to date	Limited comparability of progress	Depends on policy and action choice, but may limit emissions reductions if no need to report progress achieved

Timing and frequency of reporting on effects of policies and mitigation actions

Option	Implications for transparency	Implications for comparability	Implications for measurable reductions
1. Ex-post and ex-ante estimates updated every two years as part of BRs/BURs	Maximum transparency; full transparency on achieved emission reductions and expected impacts on future emissions	Maximum comparability; facilitates comparability of the emissions impacts of Party's contributions (though methodological differences may hinder valid comparisons)	Depends on policy and action choice; encourages higher ambition, since the level of emissions reductions will be made transparent and can be determined
2. Ex-ante estimates once when the contribution is put forward; ex-post estimates updated every two years as part of BRs/BURs	Full transparency on the impacts on future emissions when put forward; less transparency as conditions change Full transparency on the impacts on achieved emissions reductions	Facilitates comparability of the emissions impacts of Party's contributions when put forward (though methodological differences may hinder valid comparisons); less transparency on ex-ante estimates as conditions change	Encourages higher ambition, since the level of emissions reductions will be made transparent and can be determined
3. Ex-ante once when the contribution is put forward; no ex-post requirements	No transparency on effectiveness in implementing contributions or on the impacts on achieved emissions reductions from contributions	No way to compare achieved emissions reductions from contributions	Less ability to assess the emissions reductions of Party's mitigation efforts to date; may therefore limit ambition
4. No requirements	Minimum transparency	Minimum comparability	Likely to reduce ambition since emissions reductions cannot be determined

Guidelines

Option	Alignment with Kyoto Protocol and/or current pre-2020 UNFCCC rules	Implications for transparency	Implications for comparability	Implications for measurable reductions
1. Common guidelines prescribed	No guidelines currently prescribed under national communications, biennial reports or biennial update reports for quantifying emissions reductions from policies and mitigation actions	Best enables transparency if common guidelines prescribe reporting requirements (e.g., based on GHG Protocol Policy and Action Standard)	Best enables comparability by prescribing common accounting guidelines (e.g., based on GHG Protocol Policy and Action Standard)	Depends on policy and action choice
2. Multiple guidelines provided as options	No guidelines provided for quantifying emissions reductions from policies and mitigation actions	Depends on reporting requirements followed	Little comparability due to variety of accounting approaches used	Depends on policy and action choice
3. No guidelines provided	Aligned with current approach; no guidelines provided for quantifying emissions reductions from policies and mitigation actions	Minimum transparency	Minimum comparability due to variety of accounting approaches used	Depends on policy and action choice

GHG assessment boundary for policies and mitigation actions

Option	Alignment with Kyoto Protocol and/or current pre-2020 UNFCCC rules	Implications for transparency	Implications for comparability	Implications for measurable reductions
1. Parties are required to estimate the global GHG effect of the policy or action, including all significant effects of the policy, action, or project, whether they are in-jurisdiction or out-of-jurisdiction (e.g., leakage), GHG increasing, etc.	Reporting of effects of NAMAs are required but there are no further stipulations regarding how such effects are calculated or reported	Depends on reporting requirements	Best enables comparability of reported GHG effects based on common approach	Depends on policy and action choice; likely to encourage greater ambition by the need to be transparent about the total net GHG effect including out-of-jurisdiction and unintended (GHG increasing) effects
2. Flexible approach	N/A since no guidelines currently provided	Depends on reporting requirements	No comparability	Depends on policy and action choice; may limit ambition since GHG effect need not include out-of-jurisdiction and GHG increasing effects

Baseline scenario

Option	Alignment with Kyoto Protocol and/or current pre-2020 UNFCCC rules	Implications for transparency	Implications for comparability	Implications for measurable reductions
1. Parties are required to estimate the effects relative to a baseline scenario that represents the most likely conditions in the absence of the policy or action	N/A since no guidelines currently provided	Depends on reporting requirements	Best enables comparability of reported GHG effects based on common approach	May encourage greater ambition by the need to be transparent about the GHG effect relative to what would have happened otherwise
2. Flexible approach	N/A since no guidelines currently provided	Depends on reporting requirements	No comparability; many possible approaches could be used	May limit ambition since GHG effect need not be estimated relative to what would have happened otherwise

Policy interactions and avoiding double counting

Option	Alignment with Kyoto Protocol and/or current pre-2020 UNFCCC rules	Implications for transparency	Implications for comparability	Implications for measurable reductions
1. Parties are required to identify and estimate interactions with other policies, actions, and projects to avoid double counting	N/A since no guidelines currently provided	Maximum transparency on possible double counting	Best enables comparability of reported GHG effects based on common approach	Depends on policy and action choice, but likely to encourage greater ambition by the need to be estimate effects above and beyond the effects of other existing policies
2. Flexible approach	N/A since no guidelines currently provided	Limited transparency on possible double counting with other policies	No comparability of approach to identifying and estimating policy interactions	Depends on policy and action choice, but may limit ambition since GHG effect need not be estimated above and beyond other existing policies

Uncertainty

Option	Alignment with Kyoto Protocol and/or current pre-2020 UNFCCC rules	Implications for transparency	Implications for comparability	Implications for measurable reductions
1. Parties are required to report a quantitative estimate or qualitative description of the uncertainty of the results	Not currently required	Maximum transparency on likely range of results, which may vary significantly based on methodological options and inherent uncertainties	Maximum comparability of results based on quantitative uncertainty ranges	Depends on policy and action choice, but may encourage greater ambition by the need to report likely range of results
2. Parties are only recommended to report a quantitative estimate or qualitative description of the uncertainty of the results	Aligned with current approach (no requirement)	Limited transparency on likely range of results	Limited comparability of results if no uncertainty ranges provided	Depends on policy and action choice, but may limit ambition if no need to report likely range of results

Annex C: Party positions

This annex presents selected positions from Parties on certain issues described in the paper. While it is not comprehensive, it shows the diversity of opinions. Unless otherwise noted, all positions are from the compilation of Party submissions under the Ad Hoc Working Group on the Durban Platform.⁵³

⁵³ Submissions can be found at: http://www.c2es.org/international/negotiations/select-issues-submissions-adp-2014?utm_source=Center+for+Climate+and+Energy+Solutions+newsletter+list&utm_campaign=f2282adfb6-July_2014_Newsletter7_31_2014&utm_medium=email&utm_term=0_36e5120ca4-f2282adfb6-303584149#mitigation (accessed September 2014).

Section	Issue	Parties' Positions
3.1.1 National GHG inventory-related requirements	Choice of methodology	<p>During the process of the revision of the reporting guidelines for developed countries' national inventories, several developing countries have expressed their willingness to consider using the updated guidelines during the preparation of their subsequent national communication (see the submission from India⁵⁴ as well as the 4th and 5th National Communications from Mexico).</p> <p>In their submissions, those countries willing to use these guidelines indicated the need for capacity building and support to meet these requirements.⁵⁵</p> <p>However, there are also countries who wish for a continued differentiation.</p> <p>The Africa Group in its June 2014 submission called for the "latest IPCC GHG Inventory Guidelines" for developed countries whereas "IPCC Inventory guide-lines" for developing countries without further detail if they are the latest guidelines, suggesting differentiation. If there is no convergence towards the same guidelines, there are two options: (1) flexibility for all Parties; or (2) differentiation between Annex I and non-Annex I Parties. The first choice, a flexible approach for all Parties, would likely be rejected by all developing countries, who would like to ensure there is no backsliding from developed countries (in numerous negotiating fora, developing countries have called for developed countries to continue the use of the revised reporting guidelines).⁵⁶ This would also not be in line with many developed countries' proposals, seeking at least a common framework for inventory methodologies.⁵⁷ For example, Switzerland recently called for "common accounting approaches for all Parties, including in regard to inventory methodologies." Australia called for methodologies from the latest IPCC guidance</p>
	Global warming potential (GWP) values	<p>Switzerland has called for "the 2015 Agreement ...to provide the authority to the COP to adopt such common accounting approaches for all Parties, including in regard to global warming potentials..." South Africa called for rules regarding GWP values used but did not specify beyond that. Australia called for use of metrics from the latest IPCC guidance. The Environmental Integrity Group called for an agreed common set of metrics. The EU called for some rules common to all commitment types, such as the use of common metrics. In older submissions, Brazil⁵⁸ has in called for new metrics such as global temperature potential (GTP)</p>
	General views on Land Use Sector	<p>Many parties in their March-June 2014 submissions (e.g. the Africa Group, Australia, New Zealand, South Africa, EU, EIG, US) called for guidelines to have some accounting rules for the land use sector. However, they have not gone into detail regarding the treatment of land sector accounting</p>
	Land use accounting approaches	<p>South Africa proposed in its May 2014 submission that the ADP initiates work to develop detailed rules on LULUCF accounting for targets under the Convention in order to demonstrate progress in achieving targets under the Convention. This should build from the Kyoto Protocol (Article 3.3 and 3.4 and related decisions), the rules for REDD+ and the IPCC good practice guidance. They expressed flexibility as to whether land- or activity-based accounting is used, but suggest developing comprehensive rules "while avoiding unnecessary complexity and ensuring that they can be effectively implemented, particularly by developing countries". They also suggest using the existing process under SBSTA to request IPCC to develop further guidance when appropriate (e.g. for wetland)</p>
	Coverage of land-use activities, categories, carbon pools, and/or GHG fluxes	<p>Switzerland in its March 2014 submission proposed that further guidance on accounting be developed for coverage of sectors, including the land sector. The United States in its February 2014 submission stated, "if the land sector is included, a specification of how the Party will account for all significant lands, activities, pools, and gases" and that "land use accounting should include all significant land use sinks and sources." EIG called for common principles for the land sector, including "comprehensive land sector approach to reporting and accounting for all lands, based on IPCC guidance."</p>

⁵⁴ <http://unfccc.int/resource/docs/2010/sbsta/eng/misc01.pdf>

⁵⁵ <http://unfccc.int/resource/docs/2010/sbsta/eng/misc01.pdf>

⁵⁶ 2010: <http://unfccc.int/resource/docs/2010/sbsta/eng/misc01.pdf>; 2013: <http://unfccc.int/resource/docs/2013/sbsta/eng/misc11.pdf>

⁵⁷ 2013: <http://unfccc.int/resource/docs/2013/sbsta/eng/misc11.pdf> and 2012: <http://unfccc.int/resource/docs/2012/awgca15/eng/misc04a07.pdf>

⁵⁸ <http://unfccc.int/resource/docs/2009/awg8/eng/misc10.pdf>

Section	Issue	Parties' Positions
3.1.3 Calculating allowable emissions in the target year(s)	Goal timeframe	Australia called for a common end date (such as 2030) in its May 2014 submission. South Africa called for developed countries to take on commitments in "the form of QELROs, or QERTs for multiple years...with every year defined." The EU called for some rules common to all commitment types such as the length of commitment period
	Base year	LMDCs called for common base years among Annex I Parties. South Africa called for a 1990 base year for Annex I Parties (with the possibility of a reference year). Russia called for maintenance of the 1990 base year
	Static versus dynamic base-line scenarios	The United States in its February 2014 submission called for no changes to baselines. South Africa in its May 2014 submission stated, "Baselines or projections of business-as-usual, if they are used at all, can similarly not be changed during a budget period."
3.1.4 Assessing progress during the goal period	General	Several Parties have called for regular reporting. For example, Canada has called for regular reporting against a common set of reporting requirements. Switzerland has called for regular reporting on progress
3.1.5 Assessing goal achievement, including accounting for market mechanisms	Transferable emissions units from market mechanisms	Australia has called for rules for international market mechanisms that ensure environmental integrity. Canada has called for the agreement to "stipulate that market mechanisms should meet standards of environmental integrity." New Zealand has called for "agreed minimum standards or guidelines that provide assurances of environmental integrity of units generated, with full transparency." Norway has stated that the agreement should ensure that international carbon credits ensure "real emission reductions and sound governance." South Africa has stated "the rules need to clearly indicate what may be counted towards mitigation commitments, targets and actions."
	Use of units	South Africa in its May 2014 submission called for "any use of international off-sets should be subject to a 10% supplementarity limit, to ensure environmental integrity through domestic action."
	Vintage and banking of units	In its submission of September 13 th 2013, Brazil ⁵⁹ has asked for early supplementary emissions reduction results to be carried-over to the post-2020 period under the 2015 agreement for domestic use. In its May 2014 submission, South Africa stated, "the issues of banking of credits for use in future periods has been defined for the second commitment period under the Kyoto Protocol. Banking would need to be addressed under new mechanisms under the Convention. Proposals to recognize 'early action', whether from market mechanisms or not, will also need to address this issue."
	Double counting of units	The Africa Group, Australia, Canada, the EU, New Zealand, Norway, Switzerland, South Africa, and the United States have called for rules that prevent double counting

⁵⁹ https://unfccc.int/files/documentation/submissions_from_parties/adp/application/pdf/adp_brazil_workstream_2_early_action_20130913.pdf



Accounting Framework for the Post-2020 Period

Accounting rules and procedures will dictate how progress is tracked for various possible types of mitigation contributions that might be included in the 2015 agreement and how their achievement will be determined. Without such rules, it will be difficult, if not impossible, to accurately track progress toward individual contributions as well as towards limiting warming to 2° C or below.

The report explores the components of a robust and rigorous accounting framework, lessons learned from existing accounting frameworks, and how such a framework can be developed for the 2015 agreement. The objective is to support the establishment of a sufficiently robust and rigorous common accounting framework for the 2015 agreement, including accounting rules for international transfers of units from market-based mechanisms and the land sector.

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