



**International Partnership
on Mitigation and MRV**

Knowledge Product

An Accounting Framework— Background and Recommendations





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An Accounting Framework— Background and Recommendations

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The concepts expressed in this publication do not necessarily represent the views of the German government, or the endorsement of any approach described herein.

RICARDO-AEA



On behalf of
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of the Federal Republic of Germany



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ADP	Ad Hoc Working Group on the Durban Platform for Enhanced Action
CDM	Clean Development Mechanism
COP	Conference of the Parties
ERT	Expert Review Team
EU	European Union
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GNI	Gross National Income
GWP	Global Warming Potential
ICA	International Consultation and Analysis
IET	Institution of Engineering and Technology
IPCC	Intergovernmental Panel on Climate Change
JI	Joint Implementation
LULUCF	Land Use, Land-Use Change and Forestry
MACC	Marginal abatement cost curves
NC	National Communication
NF3	Nitrogen trifluoride
NRI	National Inventory Report
OECD	Organisation for Economic Co-operation and Development
SEF	Standard Electronic Format
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
US	United States
VNEEC	Technical Support of Energy and Environment Consultancy Joint Stock Company Vietnam
WRI	World Resources Institute



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1. Introduction

The 2013 Summer School of the International Partnership on Mitigation and MRV was held August 20-28, 2013 in Hanoi, Vietnam, focusing on “Tracking progress and MRV for greenhouse gas emissions reductions”. It brought together 24 representatives from two industrialized countries and 17 developing countries from all world regions who work at the interface between the technical, organizational and political level of mitigation actions. The Summer School was organized by the Gesellschaft für Internationale Zusammenarbeit (GIZ), with the technical support of Energy and Environment Consultancy Joint Stock Company, Vietnam (VNEEC), Perspectives (Germany), South Pole Carbon Asset Management (Switzerland) and Ricardo-AEA (United Kingdom) and financed by the German Federal Ministry of the Environment, Nature Conservation, Building and Nuclear Safety.

The Summer School aimed to enable participants to set up a pledge by:

- (i) becoming aware of the diversity of voluntary national pledges/targets, the discussion on accounting/tracking progress, and the linkages of accounting to MRV, market-based mechanisms and pledges;
- (ii) understanding methods for defining and comparing an (absolute or intensity) emission reduction target, for setting baselines, accounting progress of domestic mitigation policies, and to identify best practice;
- (iii) being able to compare and prioritize different NAMA options by applying suitable selection criteria and to define indicators for transformational impact and sustainability of domestic mitigation progress.

This was facilitated by exchange of knowledge between participants and the presentation of good practices as well as experiences. A mix of lectures, debates, debriefings, interactive seminars, case study analyses, and group exercises was used to optimize learning. Participants were thus enabled to act as multipliers in their respective countries and assist in the establishment of appropriate and effective rules for the MRV of emissions and mitigation actions.

The following topics were covered by the Summer School:

- Methodologies for evaluating GHG abatement potential in different sectors of an economy
 - Top-down versus bottom-up modeling
 - Marginal abatement cost curves (MACC)
- Types of national GHG mitigation strategies and policies
- Framing of national mitigation policies
 - Domestic/unilateral NAMAs
 - Supported NAMAs
 - Market-based mechanisms



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- Types of national, sectoral or sub-sectoral GHG emission targets, such as absolute or intensity targets. Definition of baseline, stringency and comparability
- Methodologies for monitoring and evaluating progress differentiated according to type of mitigation policy and NAMA and their linkage to accounting/tracking of progress at national level and to existing or future (international) market-based mechanisms.
- The impact of data availability on MRV
- Data management

Based on the main findings from the Summer School as well as including experiences and debates beyond the Summer School, this knowledge product was developed in order to provide knowledge to climate policy practitioners and experts and help enable them to enhance transparency for planning and implementation of national mitigation actions as well as for tracking progress towards the 2°C objective internationally. It will provide insight into various approaches to accounting and tracking of progress and their requirements as well as advantages and disadvantages. It discusses how national frameworks may be embedded into an international context via standards and (new) market mechanisms. It shall provide support for the discussions under the UNFCCC to develop accounting standards and rules that could be applied to all Parties.



2. Background: Current MRV and accounting approaches and Copenhagen pledges

MRV and Accounting

Annex I Parties compile GHG inventories annually using methodologies from IPCC guidelines. Inventory data is reported – again annually - using the Common Reporting Format (CRF) for emission data and the National Inventory Report (NIR) for methodologies, assumptions, and further information relevant to understanding the compilation of the inventory. Both are reviewed by an Expert Review Team (ERT) composed of inventory experts accredited with the UNFCCC. The National GHG Inventories allow Parties as well as the UNFCCC to understand emission development over time, both at the national and the sectoral level. Annex I countries use inventory data for much more than only reporting to the UNFCCC, including policy related assessments and decision making at national, regional or local level.

The GHG inventory information submitted by Annex I Parties under the Kyoto Protocol is, once thoroughly reviewed, the basis for accounting under the KP. Nonetheless, GHG inventory information is only part of the accounting information submitted annually by Annex I Parties under the KP. A set of detailed information on the management of the assigned amount by Annex I Parties under the KP (issuance, cancelation, retirement, transfer, acquisition and other operations taking place within or through a Party's national registry) is reported annually using the Standard Electronic Format (SEF) tables.

Annex I countries have submitted five National Communications (NC) so far, the current frequency of submission is every four years. Besides providing a summary of their National Inventory, Parties show progress towards their target and, among other, describe policies and measures for mitigation, provide emissions projections as well as financial, technology transfer and capacity building support provided to Non-Annex I countries. Like GHG inventories they are reviewed by an ERT.

Determining emission reductions achieved by a specific measure or policy is not an easy task. This is because GHG emissions are subject to a large number of influencing factors, including economic, social and technical developments as well as potentially other overlapping policies. Many Annex I Parties thus provide estimates of emission reductions per sector or subsector, but not per policy/measure. The challenges of estimating emission reductions of single policies or measures have to be given consideration when discussing future MRV approaches.

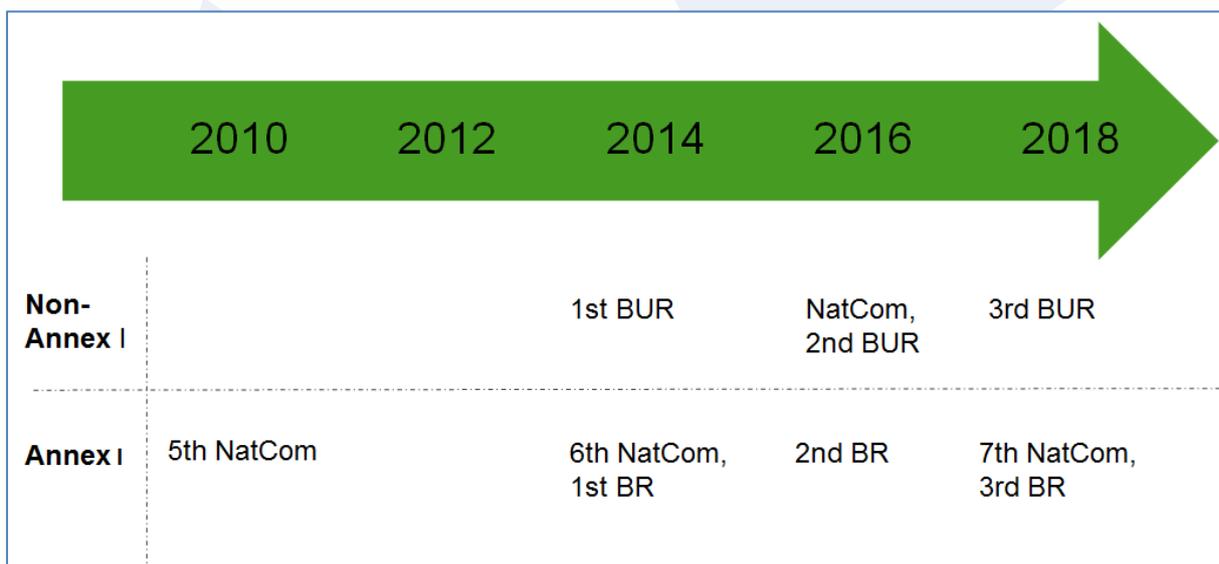


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Non-Annex I Parties submit National Communications using a different set of guidelines than that for Annex I Parties, although the general structure of the report can be considered grossly similar. The greatest differences between Annex I and non-Annex I reporting requirements, relate to the stringency of the requirements. A great level of flexibility is allowed to developing countries in implementing the guidelines. Furthermore, there is no annual GHG inventory submission (nor the requirement to use common reporting tables or provide an inventory report) and the NC is not subject to an independent verification process.

COP 16 in Cancun 2010 has set regular reporting requirements for non-Annex I Parties for the first time and enhanced reporting requirements for Annex I Parties, which now have to submit Biennial Reports (BRs) every two years from January 2014. Non-Annex I Parties shall now submit National Communications every four years (starting 2016) and Biennial Update Reports (BURs) every two years (first on 01. December 2014). This requirement exempts the least developed countries and small island developing States.

Figure 1 Timeline for submission of National Communications and Biennial (Update) Reports



Source: Ricardo-AEA, 2013.

Reports submitted by all Parties are subject to international verification. Annex I GHG inventories, National Communications and BRs are subject to review, while BURs submitted by non-Annex I Parties are subject to International Consultation and analysis.

While verification processes for Annex I Parties (reviews) and non-Annex I Parties (analysis) follows a broadly similar structure and modalities, the procedures and outcomes are quite different. The review procedures allow for a deeper scrutiny and questioning of the information submitted and foresee the possibility to challenge and change (e.g. through



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the adjustment procedure under the KP) the information submitted by the Party which is deemed not to follow the guidelines. The analysis of the information submitted by non-Annex I Parties has a more facilitative aspect to it and may result in the identification of capacity building needs.

The role of pledges in the negotiations for the 2015 agreement

At COP 15 in December 2009, the Copenhagen Accord was negotiated which specifies that industrialized countries commit to implement “quantified economy-wide emissions targets” for 2020 (para 4) while developing countries will implement “mitigation actions” (para 5). Such targets and actions should be submitted to the UNFCCC by the end of January 2010. The term “pledge” was not formally used in the text of the Accord, but is now widely used to describe submissions made subsequently. Despite the unwillingness of the COP to agree on the Copenhagen Accord (it was eventually just “noted”), in 2010, 42 industrialized countries and 43 developing countries made submissions on targets and mitigation actions. The character of these submissions varies widely. A number of targets of industrialized countries are conditional on emissions mitigation pledges by other Parties. Many developing countries make their mitigation action conditional on provision of finance or technology by industrialized countries. Several countries specify a range of targets/actions, where the more stringent end is contingent on support, while the less stringent end is unconditional. While some developing countries specify an economy-wide emissions target, many provide a list of policies or specific mitigation projects to be undertaken.

At COP 16 in Cancun, decision 1/CP.16 brought the approach of the Copenhagen Accord under the umbrella of the UNFCCC. It referred to developing country action as “Nationally Appropriate Mitigation Actions” (NAMAs) and specified that they should aim at achieving a deviation in emissions relative to ‘business as usual’ emissions in 2020 (para 48). By 2013, 57 developing countries had submitted NAMAs to the UNFCCC (UNFCCC 2013a). As per the compilation made by UNEP (2012, p. 15f), and adding the announcement of the Dominican Republic at COP 18 in Doha, 18 developing countries had defined an economy-wide emissions target.

The latest document by the co-chairs of the Ad-Hoc Group on the Durban Platform (ADP) on the negotiations for the 2015 agreement (UNFCCC 2013b) specifies that there should be “broad and deep participation, with contributions from all Parties in accordance with their common but differentiated responsibilities and respective capabilities” and that “Parties broadly acknowledge the need for internationally agreed rules to enable ex ante clarity of nationally determined contributions”.

In the Warsaw decision it was decided that all Parties in a position to do so should initiate or intensify domestic preparations for contributions and put them forward in the first quarter of 2015 in a manner that facilitates the clarity, transparency and understanding of



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the intended contributions. The ADP was also requested to identify the information that Parties will provide when putting forward these contributions. Additionally, in the Warsaw decision Parties agreed to further elaborate, as of the next session of the ADP, the elements for a draft negotiating text, as well as to accelerate progress in increasing pre-2020 ambition .





3. Different types of targets

Mitigation of global climate change is a public good as greenhouse gases mix globally and thus it does not matter where emissions are being reduced. This makes a global agreement on mitigation challenging, as governments can free-ride on mitigation action from others. Throughout the two decades of global climate policy, it has been difficult to mobilize mitigation action. Developing countries have referred to the UNFCCC principle of common but differentiated responsibilities and respective capacities to argue that industrialized countries should take the lead in mitigation. While the UNFCCC included an aspirational goal for all developed countries only, the Kyoto Protocol was able to define quantified emission limitation and reduction obligations for industrialized countries, although not all are bound by its targets and rules. In the aftermath of the Copenhagen Conference, developed countries submitted their economy wide emissions reduction targets, while some developing countries have submitted their NAMAs, which were noted in the Cancun Agreements (decision 1/CP.16). In the context of the negotiations under the ADP for the 2015 agreement that should be applicable to all parties, there is a growing recognition that all parties should contribute to mitigation, but in a variety of ways consistent with the principle of common but differentiated responsibilities and respective capabilities noting however that adaptation, finance, technology and capacity building are also important elements.

The UNFCCC objective of keeping global temperature change compared to the preindustrial period to less than 2°C as specified in decision 1/CP.16, requires a massive reduction of global greenhouse gas emissions in the next decades. UNEP (2012) estimates the emissions gap in 2020 for a “likely” chance of meeting the 2°C target at 8-13 billion t CO₂ eq, 2 billion t above the value in the 2011 estimate of the gap. This means that current national contributions to global emissions reductions are insufficient to reach the 2°C target. Therefore, it is crucial to discuss how national contributions can be designed to reduce the emissions gap.

The estimates of the emissions gap by UNEP (2012) also show the crucial role of accounting rules for the level of mitigation contributions. If conditional pledges are assessed, the difference between lenient and strict accounting rules reaches 3 billion t CO₂ eq in 2020; for the case of unconditional pledges, it still stands at 1 billion.

Nationally determined contributions, as they have been referred to in Decision 1/CP.19, to greenhouse gas mitigation can take a variety of forms. The most common one, which mirrors the emissions commitments of industrialized countries under the Kyoto Protocol, is



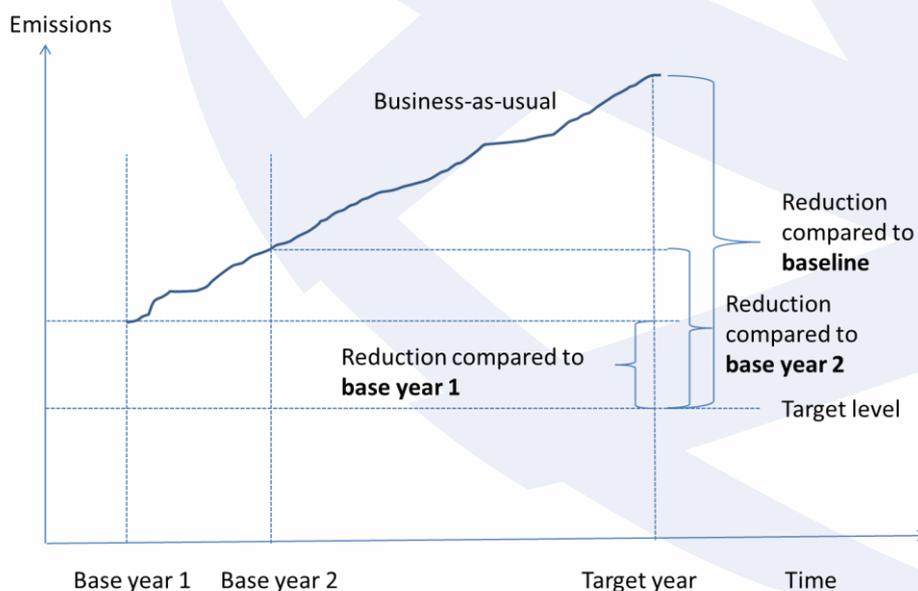
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an absolute reduction or limitation of emissions measured against a historical base year emissions level. The second one, which is frequently used by developing countries, is an absolute reduction relative to a business as usual reference level. A third one – used by China and India - is denominated in terms of emissions intensity. A fourth option is a future emissions level without referring to any baseline or historical level, such as carbon neutrality pledged by Costa Rica, the Maldives and the Dominican Republic.

Even for similar-looking types of absolute targets, their base year and target year/period, sectoral scope (coverage of land-use emissions and removals), coverage of gases, and use of units from market mechanisms can differ (OECD 2013).

The differences in assumptions and coverage can be nicely explained by comparing the EU and US targets for the period running up to 2020. For example, the EU target excludes LULUCF but includes civil aviation. It does not cover NF3 and uses the Global Warming Potentials (GWPs) of the IPCC 2nd Assessment Report instead of those of the 4th Assessment Report now applied under the Kyoto Protocol. The EU wants to use market mechanisms. The US contribution covers all sectors and sources applying a comprehensive land-based approach. It uses the whole range of greenhouse gases under the Kyoto Protocol and the GWPs of the 4th Assessment Report. Whether market mechanisms are used, remains unclear.

Figure 2 The same emissions target defined with three different comparison levels.



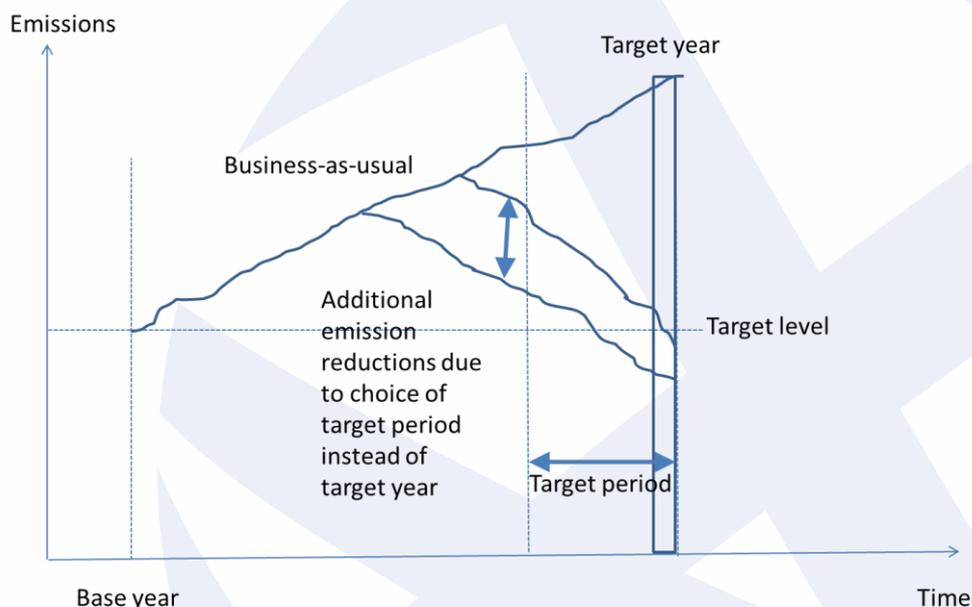
Source: Perspectives, 2013



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Base years are often chosen on the basis of past emissions development. Countries that chose 1990 as base year seek credit for early action whereas countries choosing 2000 or 2005 have generally had emissions increases during the 1990s. Countries that expect strongly rising business as usual emissions will prefer defining their target in comparison with that level. Figure 2 shows the differences in target definition due to choice of different base years or the use of a business-as-usual reference case.

Figure 3 Why a target period mobilizes earlier reductions



Source: Perspectives, 2013.

Note: In order to achieve the target during a period, the reductions need to be started earlier than in case of a single target year. Let us look at stabilization target compared to 1990 for the year 2020 or for the period 2015-2020. We assume that in 2010 the country's emissions were 10% above the 1990 level, and that the country can reduce emissions by 2% per year. To reach the target for the period, it would have to start reductions in 2010 whereas for the single target year it could wait until 2015.

Moreover, a target year can lead to accounting problems when carbon credits from international market mechanisms with different vintages are used.

Absolute targets compared to business-as-usual future emission levels are very difficult to compare. Methods to define such baselines vary and need to be fed with various



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assumptions about development of the economy, fuel prices, population and other key parameters. Already in the short period since emergence of such targets after Copenhagen, the Republic of Korea has changed its baseline projection (UNEP 2012). Experience with definition of energy use and greenhouse gas emissions baselines from industrialized countries shows that real developments can strongly differ from assumptions made for a projection already over a short period.

Emissions intensity targets depend on the expected future growth of the parameter used to calculate the intensity, most often GDP or GNI. These targets have the characteristics that they are relatively lenient in times of high economic growth while they can become extremely constraining in a recession.

Contributions that define a country to become “carbon neutral” appear simple but can only be realistic if carbon sequestration from the LULUCF sector and, highly likely, the use of international market mechanisms is taken into account.

For contributions limited to specific sectors, there is the challenge that economic sectors are usually not consistent with IPCC inventory sector classification. Ideally, a contribution of this type should be tailored to precisely match the IPCC inventory sector classification (OECD 2013).



4. Considerations on Accounting

Under the Kyoto Protocol, accounting towards a common target is enabled by ensuring comparability in tracking of emissions and emission units, e.g. carbon credits or removal units. In order to allow accounting towards a common target or objective, individual targets need to be comparable and data used for tracking progress towards these targets needs to be comparable as well. Where data is not comparable, it cannot be aggregated in a meaningful way. In order to ensure comparability of data, it seems desirable that data is:

- Using the same units (e.g. CO₂-eq.)
- Of similar accuracy
- Based on the same methodologies, e.g. related to emission calculation and the same assumptions, e.g. related to a baseline

Free from gaps (e.g. that all emissions removals within, as per the target type, a sector or a country are included) and overlaps (e.g. that the same emissions are not included in more than one source or sector in, for example, a baseline)

Comparability of targets is based on comparability of data, but partly goes beyond it. Additional requirements related to targets include:

- Covering a similar scope
- Being verified in a similar way (this is related to a common level of accuracy as required for data)
- Avoid double counting (this is related to avoiding gaps and overlaps as required for data - that no more than one country account for a single emissions reduction)

Tracking domestic mitigation progress in a federal system: Belgium

Belgium is a federal state composed of three communities and three regions. Climate change competences are partly allocated to the federal state, partly to the regions. Each region develops their own GHG inventories that are aggregated to form the national GHG inventory which is approved by a National Climate Commission. This Commission is also responsible for tracking progress of policies and measures implemented in the context of the National Climate Plan. The three regions and the federal level are tracking progress for their own policies and measures. Therefore data produced are not always comparable, as a consequence Belgium faces challenges to aggregate data at the national level. During the review of its 5th National Communication, Belgium received the recommendation to aggregate the impacts of policies and measures at the sectoral level.

Under the Kyoto-Protocol comparability of targets was achieved by the following requirements:



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- Common set of sectors and gases to be covered
- Use of the Revised 1997 IPCC Guidelines and 2000 IPCC Good Practice Guidance for estimation of emissions and removals in the national GHG inventories
- Review of national GHG inventories aiming to ensure appropriate use of IPCC Guidelines, identification of gaps and overlaps, etc.
- Application of adjustments to the emission estimates when these have been found to be inaccurate during the review process
- Common approach for establishing and fixing the assigned amount. Clear requirements for issuance and use of allowances and certificates for offsetting purposes (IET, CDM, JI)
- Clear requirements in relation to the approach to the LULUCF sector, including opt in provisions (for the non-mandatory article 3.4 activities).

Parties' pledges for a potential 2015 agreement are not based on such common rules. For instance, while there is a general understanding, that, for developed countries and major economies, targets should be "economy wide", a definition of this term does not yet exist. The same applies to the list of gases to be covered. There is no clarity on methodologies as well as assumptions used, and whether LULUCF and offset flows are considered (Levin et al. 2012). The ADP is to adopt by COP 20 in Lima the information that Parties will provide when putting forward their contributions, thus contributing to enhanced transparency and consequently comparability across parties.

In the following we will explain why these issues are so relevant for comparability.

Scope

Ideally, all sectors of an economy and all relevant greenhouse gases should be covered in order to provide a full picture of the emission situation in a country. This is important to avoid leakage, e.g. from a covered to an uncovered sector. Experience with leakage also exists with relation to gases: considerable reductions in fluorinated GHG from the electronic industry were reduced by switching to the use of NF₃, which is a GHG, but was not in the Kyoto basket. Relevant NF₃ emissions, particularly from the production of flat screens, have occurred, but not been accounted for in national GHG inventories. Another issue relevant to scope is that currently there are two possible approaches related to LULUCF. One approach, under the Convention, estimates emissions and removals using a land-based approach. The second approach, under the KP, is based on land-use activities



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(OECD 2013). The results of both approaches are not comparable and one common approach would have to be found.

Common methodologies used consistently over time

Only if comparable methodologies are used for emission estimation and where these are used consistently over time, GHG data is comparable among Parties and within one Party over time. The IPCC guidelines provide common approaches for estimating emissions, while leaving countries sufficient flexibility to consider national framework conditions and move from lower, less complex, to higher, more complex tiers over time.

When talking about the effects of individual and/or combined mitigation actions, a basic common approach would increase comparability as well. The World Resources Institute's Greenhouse Gas Protocol Policies and Actions Accounting and Reporting Standard (WRI 2013) lays out the steps to be taken in assessing such impacts, including the consideration of causality chains in policy design, setting of baselines, making ex-ante estimations, monitoring effects during implementation and quantifying effects ex-post.

Such a standard approach does not yet exist for non-climate change effects of mitigation actions, such as air quality, income, living conditions, education, job creation, etc., but could support comparability, and remains to be developed.

Assumptions underlying baseline setting

As discussed above, baseline emission projections may make comparison of targets determined as reductions from baseline emissions level very difficult. Typically, complex models are used, which consider a number of drivers, e.g. economic and technological development. There are two model families – “top-down” models that commonly apply general equilibrium calculations, and “bottom up” models that look at the potential and the costs of the different mitigation technologies. Generally, top-down models lead to less conservative baselines than bottom-up ones.

Where drivers develop differently from the assumptions made, emissions “without mitigation action” might develop quite differently from the

Tracking and projections in Portugal

Tracking of national GHG emissions has been a successful exercise in Portugal and the data reported in its various National Communications shows consistency over time. This applies less to GHG projections. For example, the 2010 baseline emissions forecast - excluding LULUCF - for Portugal defined in 2003 was 95-99 million t CO₂ eq. After the economic crisis struck, it was downgraded to 85 million t. However, the actual emissions level reached just 71 million t! This is perceived as a problem for decision-makers in climate policy. While the consistent ex-post data can provide interesting input to policy makers, emission projections are considered far more relevant for such decisions. In the case of Portugal the GHG projections of the 3rd National Communication might have misled policy makers.



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projection. For example, an increase in fossil fuel prices will trigger a stronger development of renewable energy and higher investments in energy efficiency than stable prices. An agreement is needed on how to deal with such a situation – could or would targets formulated as a relative emission reduction compared to baseline have to be revised if the baseline changes? If yes, how frequently should such a revision happen? Should it be linked to the end of a target period? Experiences from the Kyoto Protocol show that changes in baselines matter. In countries in transition emissions declined much more due to the economic transition than envisaged when emissions commitments had been negotiated in Kyoto.

Verification of reported data

The aim of verification is generally to ensure that the data reported complies with requirements, e.g. related to the application of emission estimation methodologies or accounting rules. Verification can take place at different levels. Internal verifications or reviews are an essential part of every QA/QC system. Such reviews are usually referred to as first party reviews. Reviews by another institution, which is knowledgeable in the respective area, but not accredited and does not follow a standardized approach are often referred to as second party reviews. Third party reviews are the most formalized and are carried out by independent experts, trained and examined for the review task and following a set review standard. Expert reviews under the Convention and the Kyoto Protocol are third party reviews. A third party review builds more trust, as independence is ensured, the approach is standardized and transparent and the review experts have proven their suitability through successfully undergoing training (in the case of experts participating in expert review teams). So for an agreement at global level, a third party review is fundamental. The question is of course, how it is implemented. Reviews of Annex I reports under the Convention and the Kyoto Protocol are known for having a beneficial element of experience exchange between reviewer and reviewed, leading e.g. to the sharing of best practices and potentially the improvement of both the reviewee's as well as the reviewer's approaches. This element could be strengthened. The International Assessment and Review and the International Consultation and Analysis (ICA) (although the later is not formally nor procedurally considered a review process) will also provide valuable insight into the sharing of experiences and increase of transparency without a compliance-related review element.



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Use of carbon credits leading to double counting

The use of carbon credits from international market mechanisms can lead to double counting problems if both sellers and buyers of units count them towards their contribution. This can be compounded if market mechanisms include both mechanisms under and outside the UNFCCC. Double counting occurs when an emission reduction effort – reflected as a quantified and measurable unit, whether tradeable or not – is monetized, sold or claimed more than once. Double monetization might occur, where an emission reduction from a project in a country with an emission target is first issued as credit, then as allowance. This might be the case where the country does not account for the issued credits. Double selling means that an offset certificate is sold more than once; while double claiming occurs, where several countries claim the same emission reduction. This might be the case, where a reduction project takes place in a country without a target and leads to issuance of certificates which a country with target buys and uses for compliance against its target, while the host country does not account for the certificates and also considers its emissions as reduced (VCS 2012). Whether double counting occurs is a question of perspective: under the Kyoto-Protocol the double claiming example does not lead to double counting, as the host country does not have a reduction target under the Kyoto Protocol. But considering the atmosphere as a whole – which is necessary related to the goal of keeping global warming below 2°C, double counting occurs. “The Emissions Gap Report 2012” by UNEP indicates that a strict regime avoiding double counting can reduce the existing gap towards the 2°C target by a third.

Double counting would not only put achieving the 2°C target at risk, but credibility of the pre-2020 accounting system (which applies only to those countries with a QLERC under the Kyoto Protocol’s second commitment period and is supposed to avoid such issues) and the international carbon markets as well. Therefore approaches to avoid double counting are needed. Such approaches would have to allow gaining overview on certificates issued to avoid double selling, ensure cancellation of AAUs where offset certificates are issued in countries with a target and overview of certificate flows from countries without a target in order to ensure double claiming.



5. Recommendations for an accounting regime in the context of the 2015 agreement

Based on the above considerations, we will suggest elements for an accounting regime in the context of the 2015 agreement in the following. Fundamentally, an accounting framework is necessary for an:

- Ex ante assessment of the overall contribution of Parties' pledges to meet the 2°C objective
- Ex post assessment of individual and global progress towards and achievement of the 2°C objective

Without an accounting framework, Parties will have to recognize that they will not be in the possession of the adequate tools to perform such analysis/assessments and thus, may, collectively, fall short of the 2°C objective.

Parties may not aim at having the most complex, all encompassing accounting framework, but they should at least agree to a minimum set of rules which will provide a level playing field and create the space for action by all Parties..

In the run up to the 2015 agreement, Parties should be able to agree on a framework which allows them to understand each other's pledges and contribution towards the 2°C objective. It is a matter of all Parties using the same language, while recognizing that the content of the message (the pledge) is determined by national circumstances and in accordance with the principle of common but differentiated responsibilities and respective capabilities.

Irrespective of finer accounting rules that may be agreed, there should be no question of the importance of the following elements:

- A GHG inventory which uses a set of common guidelines submitted at regular and frequent intervals
- A report with additional information on the application of the accounting rules agreed upon by the COP
- A third party verification process which both contributes to the continuous improvement of the reports submitted by Parties and provides the COP with accurate technical information related GHG emissions and (progress towards) achievement of individual and collective targets.



Specific recommendations

Coverage and scope

As already the case with Annex I Parties, GHG inventories should cover a common and ideally broad scope related to sectors (including LULUCF) and gases. The approach being common will ensure comparability, while the approach being broad will avoid leakage to non-covered sectors or gases. A common set of scientifically-based GHG estimation provisions, like the IPCC guidelines, can increase comparability further.

Common methodologies used consistently over time

National GHG Inventories seem suited to build the core of an accounting system. They provide an overview of emission developments over time and can provide key input for policy decisions at national level as well as for emission projections. The emission levels estimated through inventories are comparable and can be aggregated. At the same time, the absolute emission levels can be easily used for any kind of national target, e.g. a percentage target compared to baseline or an emission intensity per unit of GDP. Considerable experience with emission inventories already exists in Annex I countries and a number of non-Annex I countries.

Effects of mitigation actions should be assessed according to a common, while flexible approach to ensure comparability. The assessment of effects seems less suitable as an element related to the quantitative accounting of emission reductions, but well suited to understand effectiveness of mitigation action at national level and to share best practices internationally. Current reporting requirements for Annex I countries related to National Communications offer considerable potential for improvement regarding comparability, namely through the use of a set of standardized methodologies (of which the WRI's Actions Accounting and Reporting Standard is an example) .

Assumptions underlying baseline setting

Where projections are used to set baselines for targets, converging on modeling approaches for baseline setting seems appropriate to ensure comparability. This could be achieved by agreeing on a list of key parameters and by Parties sharing their baseline assumptions for these parameter, including explanations of revisions to these parameters over time, where needed.



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Verification of reported data

Verification is a key element to ensure the quality of reporting and create trust among Parties. The use of 3rd party verification can support that trust and enhance comparability. Verification approaches could be built on existing processes under the UNFCCC (reviews, IAR and ICA) and the Kyoto Protocol, while harnessing experiences made to make the processes more efficient. The experience from IAR and ICA could be used to stress the element of experience sharing and making verifications most supportive for Parties taking up a target for the first time.

Use of carbon credits leading to double counting

Oversight and alignment of the use of carbon credits from international market mechanisms and other approaches bearing a risk of double counting is required. While certain risks can be mitigated within an approach itself, e.g. the risk of double monetization through an offsetting standard, other risks, like double claiming, can only be mitigated through international alignment and oversight.



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