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Addressing the risk of double counting emission reductions under the UNFCCC

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Cover photo: The Lethaba Power Station, outside Sasolburg in the Free State, South Africa. Electricity exports can complicate accounting of emissions and emission reductions.
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ABSTRACT

Avoiding double counting of emission reductions is a key policy concern to Parties to the United Nations Framework Convention on Climate Change (UNFCCC). This paper systematically assesses how double counting can occur and how it could be addressed. It finds that double counting can occur not only directly, but in rather indirect ways which can be challenging to identify. Addressing double counting effectively requires international coordination in three areas: accounting of units, design of mechanisms that issue units, and consistent tracking and reporting on units. While international agreement on principles for accounting and mechanism design is crucial to preventing double counting, the governance arrangements for implementation and international oversight could vary. The paper discusses different options and makes specific recommendations for rules to address double counting up to 2020 and in a post-2020 climate regime.

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1. INTRODUCTION

Avoiding double counting of mitigation efforts is an important issue discussed among Parties to the United Nations Framework Convention on Climate Change (UNFCCC). If emission reductions are double counted, actual global greenhouse gas (GHG) emissions could be higher than the sum of what individual countries report. As a result, countries could appear to meet established mitigation pledges, while total emissions exceed these levels. Double counting of emission reductions would also make mitigation efforts less comparable and could discourage the use of market-based approaches to mitigate climate change.

Fifty-eight countries have made economy-wide mitigation pledges under the Cancun Agreements, almost all pegged to the year 2020. These countries together accounted for about 75% of global carbon dioxide (CO_2) emissions in 2010 (UNEP 2013). The pledges are diverse in terms of scope, applicability, coverage and use of units from market mechanisms. Thirty-seven developed countries have taken emission reduction commitments under the second commitment period of the Kyoto Protocol, and translated their pledges into quantified multi-year emissions budgets over the commitment period from 2013-2020.[1] Together, these Parties represent only about 14% of global GHG emissions.

Most Parties intend to use market-based or non-market-based mechanisms to help meet their mitigation pledges or to use units for results-based funding of emission reductions in other countries. At the same time, the international carbon market is increasingly fragmented. Under the Kyoto Protocol, three mechanisms were established: the Clean Development Mechanism (CDM), Joint Implementation (JI) and international emissions trading (IET) of assigned amount units (AAUs). The Parties are now considering a new market-based mechanism (NMM) under the UNFCCC, and several market mechanisms are emerging at national and bilateral levels.

The diversity in both mitigation pledges and market-based mechanisms, and the current lack of a common accounting framework, raise the question how double counting of emission reductions can be avoided and addressed. At COP18 in Doha, Parties agreed to consider the issue of double counting in the two work programs established under the Subsidiary Body for Scientific and Technological Advice (SBSTA), on a framework for various approaches (FVA) and on the NMM. The FVA work program shall address "technical specifications to avoid double counting through the accurate and consistent recording and tracking of mitigation outcomes".[2] The NMM work program considers the avoidance of "double counting of effort" as one of the possible elements of the NMM.[3] However, Parties have expressed different views on this matter, in particular which forms of double counting should be deemed relevant for an international climate regime, and how double counting should be addressed.

Some forms of double counting have been extensively discussed in climate negotiations (UNFCCC 2012) – in particular, the potential for double counting between host countries selling units and countries buying these units. If both countries have mitigation pledges, the emission reductions may be reflected both in the GHG inventory of the selling country and in accounting towards pledge attainment by the country using the units. Double counting could also occur if two units are issued for the same emission reduction. Another form of double counting under discussion involves the issuance of units for emission reductions resulting from financial or technology pledges and the use of those units to meet mitigation pledges.

[1] Doha amendment to the Kyoto Protocol: https://unfccc.int/kyoto_protocol/doha_amendment/items/7362.php.
[2] Decision 1/CP.18, paragraph 46(d). http://unfccc.int/resource/docs/2012/cop18/eng/08a01.pdf.
[3] Decision 1/CP.18, paragraph 51(c).

Moreover, double counting of efforts can also occur with other types of pledges, such as renewable energy or energy efficiency pledges, or mitigation efforts undertaken at different levels, such as by sectors, companies, cities or even individuals. In some instances, these forms of double counting can occur in not obvious and indirect ways that have received less attention to date.

This paper, one in a series of three papers[4] on the interactions between international carbon markets and mitigation pledges, systematically assesses how double counting could occur and how it could be addressed. It builds on the experiences and lessons learned from existing carbon market schemes, available literature, as well as submissions by Parties and stakeholders to the UNFCCC. The paper does not address other issues related to the environmental integrity of market-based (and non-market-based) mechanisms, such as ensuring that units represent "real, permanent, additional and verified mitigation outcomes".[5] Furthermore, the paper focuses on the role of UNFCCC in addressing double counting; we do not consider in detail options to address double counting with mitigation pledges or claims at sub-national levels (e.g. companies, cities, individuals). The paper also focuses on economy-wide and sectoral mitigation pledges expressed in GHG emissions (or GHG emission intensities), not on potential double counting from mitigation pledges covering specific activities and expressed in other metrics, such as renewable energy or energy efficiency targets.

We first identify the ways in which double counting can occur in the context of market-based and non-market-based mechanisms (Section 2), followed by an assessment of the types of double counting that are relevant under the UNFCCC (Section 3). We then provide a brief overview of how double counting is currently addressed under UNFCCC and the Kyoto Protocol as well as under mechanisms outside the scope of UNFCCC (Section 4). We then consider options to address the different types of double counting and discuss their advantages and disadvantages (Section 5). Based on this assessment, we provide detailed recommendations for the period up to 2020 and beyond (Section 6). A reader familiar with the subject may directly turn to these recommendations.

2. HOW CAN DOUBLE COUNTING OCCUR?

Double counting of emission reductions can occur in many different ways. Understanding how it can occur is crucial to identifying and addressing all forms of double counting, and understanding the environmental risks they entail. It can also help Parties to agree which types of double counting should be addressed under the UNFCCC and which may be addressed elsewhere. The risks for the integrity of the international climate regime can vary considerably depending on the type of double counting. Some types pose significant risks; others may have less of an impact up to 2020, but may be important to address if mechanisms are scaled up in a post-2020 climate regime. In this section, we define the term double counting and other terms, classify different forms of double counting, and delve deeper into the two main forms: double issuance and double claiming.

2.1 Definitions

The term **double counting** is used in different ways in the literature and submissions by Parties and stakeholders. Several terms are used for different forms of double counting: double use, double claiming, double selling, or double issuance. We define the term double

[4] See Lazarus et al. (2013) and Lazarus et al. (2014).
[5] Decision 2/CP.17, paragraph 79. http://unfccc.int/resource/docs/2011/cop17/eng/09a01.pdf#page=4.

counting broadly, to cover all forms of double counting, as follows: **Double counting occurs when a single GHG emission reduction or removal, achieved through a mechanism issuing units, is counted more than once towards attaining mitigation pledges or financial pledges for the purpose of mitigating climate change.**

This paper considers double counting in the context of **mechanisms**, in which **units**, representing emissions or emission reductions, are issued and can be transferred between countries or other entities. This includes, but is not limited to, market-based mechanisms. In principle, large parts of the analysis and findings of the paper would also apply to situations where mitigation outcomes are transferred between countries without formally issuing and transferring units in registries, but for simplicity, here we generally refer to the term unit for any transferred mitigation outcomes.

Units can be **allowances** and **credits**. Allowances are issued under **cap-and-trade mechanisms** where the emissions of a country, a sector, or a group of installations are capped and allowances are issued and allocated to the country or entities in line with the cap; an example is the trading of AAUs. **Emissions trading schemes** (ETS) are a sub-form of cap-and-trade mechanisms where the allowances are allocated to individual installations or companies; examples include the EU ETS or the California ETS. **Credits** are units that are issued under a **crediting scheme** for emission reductions achieved against a crediting baseline; examples include the CDM, JI, the bilateral Joint Crediting Mechanism (JCM) established by Japan, or voluntary offsetting schemes (e.g. Climate Action Reserve, Verified Carbon Standard, Gold Standard Foundation).

Mechanisms can be established under international, bilateral, or domestic governance. Under **international governance** the issuance of units is governed by an international body according to internationally agreed rules, such as the CDM under the Kyoto Protocol and possibly the NMM which Parties agreed to establish. Under **domestic governance,** the issuance of units is governed by one Party; under **bilateral governance,** by the two (or more) Parties or involved in the issuance, transfer and use of units. Examples are domestic or regional ETS, such as the EU ETS and the California ETS, or the JCM established by Japan.

Finally, when referring to **mitigation pledges**, we mean pledges or commitments by Parties made under the UNFCCC, including its protocols, amendments and decisions, that express a limit on GHG emissions for an economy or a sector of an economy. Mitigation pledges can vary with regard to their scope and coverage and their legally binding status. Examples of mitigation pledges are commitments under the Kyoto Protocol or the economy-wide mitigation pledges made under the Cancun Agreements. However, targets for renewable power generation, energy efficiency or not considered as mitigation pledges for the purpose of this study.

2.2 Classification of different forms of double counting

In the literature and in submissions to the UNFCCC, different terms are used to describe different forms of double counting (UNFCCC 2012; Prag et al. 2011; 2013; WRI 2013a; 2013b). Based on a review of the existing terminologies and concepts, we classify four types of double counting:

1. **Double issuance** occurs if more than one unit is issued for the same emissions or emission reductions. This leads to double counting of emission reductions if the units are used to attain mitigation pledges. Double issuance can involve a single mechanism, or two or more. This form of double counting can, for example, occur if the same project is registered under two

different crediting mechanisms or if two different entities, e.g. the producer and user of a biofuel, request units for the same reductions.

2. **Double claiming** occurs if the same emission reductions are accounted twice towards attaining mitigation pledges: by the country where the reductions occur, through reporting of its reduced GHG emissions, and by the country using the unit issued for these reductions. This form of double counting can occur if a) the emission reductions fall within the scope of a country's mitigation pledge, b) the emission reductions are reflected in the GHG inventory of that country,[6] c) that country does not account for the sold units in meeting its mitigation pledge, i.e. it does not add the units sold to its reported emissions or does not subtract them from the emission budget corresponding to the mitigation pledge, and d) the units are used by a country (or multilateral sectoral organization) to attain a mitigation pledge. This form of double counting is mainly discussed in the context of transfer of units from developing to developed countries.

3. **Double use** refers to the situation where one issued unit is used twice to attain mitigation pledges, either by the same country or by two different countries, thereby leading to double counting of the emission reductions represented by that unit. This form of double counting is also referred to as "double selling". It could, for example, occur if a unit is duplicated in registries or otherwise transferred twice to another country, or if one country uses the same unit in two different years to attain mitigation pledges.

4. **Double purpose** refers to the situation where a unit is not only used for attaining a mitigation pledge under the UNFCCC, but the financial (or technology) transfers associated with the issuance of that unit are also counted towards financial or technology pledges, such as climate finance or activities implemented under a technology mechanism. This form of double counting does not directly affect global GHG emissions, but is nevertheless of concern because many mitigation pledges by developing countries are conditional upon financial or technological support by developed countries.

These four generic forms of double counting can occur in different ways. In the sections that follow, we focus on double issuance and double claiming, which can occur in several rather indirect ways and are not always straightforward to identify and address.

2.3 Double issuance

Table 1 provides an overview of ways in which double issuance can occur. Issuing two units under a single mechanisms is the simplest and most obvious form of double issuance, and hence also easy to address. Identifying and addressing double issuance becomes more difficult when two mechanisms are involved. In a fragmented carbon market, with multiple mechanisms under international, bilateral, national or non-governmental governance, there is a risk that two mechanisms issue units for the same emissions or emission reductions. For example, the same project could be awarded credits under a mechanism under domestic governance and a mechanism under international governance. Overlap could also occur between crediting mechanisms if one crediting mechanism issues credits for reductions on a sectoral level or for a policy, while another mechanism credits reductions in installations or

[6] In some instances, an emission reduction represented in a unit may not be reflected in the GHG inventory of the country. For example, a project-based mechanism may issue units for N_2O abatement from nitric acid production. If the country uses a simple Tier 1 method with default values to estimate N_2O emissions from nitric acid production, the emission reductions achieved through the project-based mechanism may not be reflected in the GHG inventory of the country. This issue has been referred to as "inventory visibility" (Prag et al. 2013).

projects that fall within the sector or are affected by the policy. This could, for example, hold for the NMM and CDM projects. Overlap could also occur between cap-and-trade mechanisms and crediting mechanisms. For example, credits could be issued for reductions in an installation under the CDM that also falls within the scope of a domestic ETS.

Table 1: Overview of ways in which double issuance can occur

Mechanism(s) involved	Entities involved	Description	Example(s)
One	One	Two units are issued under the same mechanism to the same entity for the same emissions or emission reductions.	Double registration of a project activity under the same mechanism, double issuance due to two monitoring reports that overlap in time.
Two	One	Two units are issued under two mechanisms to the same entity for the same emissions or emission reductions.	A project developer registers a project under two mechanisms.
One	Two	Two different entities are each issued a unit under the same mechanism for the same emissions or emission reductions.	The producer and the consumer of a biofuel claim the same emission reduction under two projects registered under the same mechanism (see Box 1).
Two	Two	Two units are issued under the two mechanisms to two different entities for the same emissions or emission reductions.	The producer of a biofuel claims an emission reduction under mechanism A, and the consumer claims it under mechanism B.

Double issuance can involve one or two entities. For some mitigation activities, the ownership of the emission reductions is not always obvious, and different entities could potentially be entitled to claim units for the same emission reductions. For example, in a project to promote efficient lighting in households, the households could claim the emission reductions, but so could an energy service company distributing efficient lamps, as could the producers of those lamps. Thus, the same emission reductions could potentially be credited three times, to three different entities, possibly under different mechanisms. The production and use of biofuels is another example that was discussed under the CDM (see Box 1). Similarly, in the early days of the CDM, grid operators in India argued that they should own the CERs from renewable power projects operated by independent power producers. Theoretically, the consumers of renewable electricity could also claim emission reductions, and the producers of renewable power technologies could claim emission reductions for making the technologies available.

Double issuance could also occur between crediting and cap-and-trade mechanisms: for example, a country could establish an ETS which covers fossil fuel-fired power plants and also participate in a crediting mechanism which covers power generation from renewable sources. The electricity generated from renewable sources would reduce the electricity produced by the fossil fuel-fired power plants covered under the ETS, thereby lowering their GHG emissions; at the same time, the producers of renewable electricity could earn credits for reducing emissions from electricity generation. The same emission reductions would thus be reflected in two units, the ETS allowances and the credits issued under the crediting mechanism for renewable power plants. Double counting would then occur if both units are used to attain mitigation pledges (e.g. through an international linking of the ETS and through an international transfer of the credit).

Box 1: Biofuels under the CDM: Should consumers or producers claim the CERs?

The CDM allows the crediting of emission reductions from the production and use of biofuels. In the drafting of relevant CDM methodologies, a key challenge was to avoid having both the producer and the consumer of biofuels claim CERs, in which case the emission reductions would be double counted.

One approach discussed was to let only producers or only consumers of biofuels claim CERs. This would, in principle, avoid double counting, but raised other questions. If the producers were credited, the further use of the biofuels would not necessarily be tracked. If the biofuels were ultimately used in Annex I countries, the emission reductions could still be double counted, as they would be reflected in the GHG inventory of the importing Annex I Party as well as in the CERs used by Annex I Parties. Another concern of crediting only the producers was that the biofuels might not always be combusted instead of fossil fuels, but could also be used as feedstock in other processes, such as in the chemical industry. In this latter case, the production of biofuels and substitution of fossil fuels does not necessarily lead to emission reductions. For example, if the carbon would be stored for long times in the products produced with the biogenic feedstock, in both the project scenario (use of biofuels) and the baseline scenario (use of fossil fuels) the carbon would not be released to the atmosphere. Another approach discussed was to consider only the consumers of biofuels eligible to claim CERs under the CDM. This approach was not deemed practical because biofuels are sold to many different consumers, e.g. as blended fuel at petrol stations.

Ultimately, the CDM Executive Board opted for a flexible approach that defined the consumers of the biofuel as the "default" entity that is eligible to claim CERs. If producers of biofuels wish to claim CERs, they need to include the consumers within the project boundary and ensure, e.g. through written agreements,[7] that they do not also claim CERs. In addition, the actual consumption of the biofuels needs to be tracked. This addresses double counting but also raises concerns about practicability and transaction costs and may limit the use of the CDM in situations where biofuels are sold to many users in the market.

This form of double counting typically arises when the emission reductions occur through a chain of actions or where different parties have a stake in the mitigation actions. It often occurs when mechanisms issue units for indirect emissions or emission reductions. Generally, mechanisms can issue units to the entities emitting the GHGs (direct emissions) or to other entities involved in the mitigation action (indirect emissions):

Issuing units to the GHG emitters: Units can be issued to the installations where the GHG emissions or emission reductions occur. For example, under cap-and-trade mechanisms, such as ETS, allowances are often allocated directly to the entities which emit GHGs, such as fossil fuel-fired power plants, cement plants, or steel plants. Issuance to the emitters can also occur under crediting mechanisms; for example, a cement plant may be issued units for energy efficiency improvement measures which reduce the plant's GHG emissions.

Issuing units for indirect emissions: Units can also be issued for indirect emissions or emission reductions that occur upstream or downstream of the entities. Under crediting mechanisms such as the CDM, credits are often issued to the entities which undertake the mitigation actions, while the actual emission reductions occur elsewhere. For example, crediting mechanisms often credit the operators of renewable power plants for producing renewable electricity, while the emission reductions occur in fossil fuel fired located elsewhere. Other examples are the crediting of the use of efficient electric household appliances (where the emission reductions also occur in fossil fuel fired power plants) or the crediting of a composting facility for avoiding the dumping of waste on a landfill (where the

[7] Meeting report of the 26th Meeting of the CDM Executive Board, 26-29 September 2006. Annex 12: Guidance on double counting in CDM project activities using blended biofuel for energy use. https://cdm.unfccc.int/EB/026/eb26_repan12.pdf.

emission reductions occur at the landfill site). Issuing units for indirect emissions is also relevant for cap-and-trade mechanisms. Allowances could be allocated to entities that do not emit GHGs, such as fuel producers or retailers, or to grid operators or retailers of electricity.

In conclusion, ownership issues are a particular concern when mechanisms issue units for indirect emissions or emission reductions. However, in many cases it is reasonable to issue units for indirect reductions. In the case of crediting mechanisms, it seems appropriate to credit those entities that implement the mitigation actions and assume the economic risks. Limiting the issuance of units to direct emitters could significantly reduce the scope of crediting mechanisms, and would require entities that reduce but do emit GHGs to enter into agreements with the emitters. In many instances, such as multiple emitters, this would not be feasible.

Double issuance due to the accounting of indirect emissions can also occur in more complex, less obvious ways, when two mitigation activities partially overlap due to the accounting for indirect project, baseline or leakage emissions. This becomes particularly challenging where mechanisms account for life-cycle emissions that may occur far upstream or downstream of where the mitigation activity is implemented. The potential for these indirect ways of double issuance is smaller, as will be discussed later; still, policy-makers and technical experts involved in the design of mechanisms should be aware of the risks of double issuance.

Imagine, for example, that an aerobic wastewater treatment plant and a landfill project are both established under a crediting mechanism. In the wastewater project, the plant generates sludge which is incinerated, thus avoiding methane emissions. The baseline scenario for this project would assume that otherwise, organic matter in the wastewater would partially decompose in anaerobic ponds, releasing methane. Hence, the project receives credits for reducing methane emissions from wastewater treatment. Under the same crediting mechanism, a waste incinerator could claim emission reductions from avoiding methane emissions from the disposal of waste at a landfill. The operator could argue that in the absence of the project, the sludge, as other waste, would be dumped in a landfill, generating methane emissions. Thus, double counting would occur because both projects take credit for avoiding methane emissions from the decomposition of organic matter in wastewater.

Another example would be a project producing biofuels and another abating N_2O from nitric acid production, both under the CDM. The biofuels project uses nitrogen fertilizer in growing its feedstock crops and accounts for the emissions associated with the production of the fertilizer, including N_2O emissions from producing nitric acid, an ingredient in the fertilizer. At the nitric acid plant, another CDM project is implemented to reduce N_2O emissions from nitric acid production. Double counting of emission reductions would occur if both projects account for the reduced N_2O emissions at the nitric acid plant, one directly, and one indirectly. This would occur if the biofuels project used the N_2O emission factor observed at the nitric acid plant to calculate upstream project emissions from nitric acid production.

These examples illustrate the challenges of identifying and addressing indirect forms of double issuance. An important hurdle is that information on where the actual emission reductions occur is sometimes not readily available. While the location of the project or installation where the mitigation action takes place is known (e.g. the incinerator or the nitric acid factory), it is not always clear where the emission reductions occur (e.g. in which landfill the waste would be dumped in the baseline). Information in the serial numbers of units under the Kyoto Protocol makes it possible to identify the host country, the project, the monitoring report and the commitment period, but not where the emission reductions occur. Other materials, such as the project design document (PDD) and monitoring reports, would need to be reviewed to get this information. However, even in PDDs and monitoring reports, the exact

location of emission reductions is only known for some project types. In some instances, such as in the wastewater sludge example, double counting may be difficult to identify at all.

The potential for double issuance is significant for crediting mechanisms. With an increasingly fragmented carbon market the risks grows that the same mitigation actions could be credited under different mechanism. Most crediting mechanisms issue units for indirect emission reductions where different entities could potentially claim credits. Moreover, several mechanisms consider life-cycle emissions in order to avoid an overestimation of emission reductions; however, these emissions often far upstream or downstream at unidentified sources. In many instances double issuance can be easily identified and addressed in practice. For some forms of double issuance, such as accounting of indirect project or baseline emissions, it may be more difficult to identify and prevent double counting; however, the potential for these ways of double counting is smaller.

2.4 Double claiming

Double claiming can occur due to an overlap between a mitigation pledge and a mechanism, if they both cover the same installations, sectors, countries, GHGs and time frame. As noted above, double claiming is mainly discussed in the context of transfer of units from developing to developed countries. Under the UNFCCC, developed countries can reflect in their biannual reporting the number of units that they intend to use.[8] However, there are no reporting provisions for developing countries to account for units sold internationally. If a seller country does not account for units sold (e.g. by adding them to its emissions inventory, or increasing its mitigation pledge accordingly), the units would be double counted.[9]

According to different estimates, this form of double counting could range from 0.4 to more than 1 Gt CO_2e by 2020 (UNEP 2013; Erickson and Lazarus 2013). Note that such double claiming can not only occur when units are issued by the host country itself, but also when they are issued by another institution or country for reductions occurring in the host country. This could be an institution under international governance, such as the CDM Executive Board, a national or bilateral mechanism, or possibly a voluntary carbon market standard. This form of double counting is further complicated by the fact that, so far, most pledges made under the Cancun Agreements are single-year pledges for 2020. The implications of single-year pledges for the international trading of units and the integrity of pledges are discussed in Lazarus et al. (2014).

As with double issuance, double claiming can occur in more indirect ways when mechanisms account for indirect emissions that occur upstream or downstream. For example, imagine a country has an economy-wide pledge to reduce its CO_2 emissions, and it also participates in a crediting mechanism which credits the capture and uses CH_4 from landfills. If the landfill gas is used to produce electricity, the credits could be partially double counted if credits were issued for feeding electricity into the grid, reducing the country's CO_2 emissions from power generation. In this case, the reduction of CO_2 emissions from power generation would be used for pledge attainment by both the host country and the buyer of the credits.

Another example would be a country that pledges to reduce emissions from deforestation, and also hosts a project under an international crediting mechanism that reduces the use of non-

[8] Decision 19/CP.18: Common tabular format for "UNFCCC biennial reporting guidelines for developed country Parties". http://unfccc.int/resource/docs/2012/cop18/eng/08a03.pdf#page=3.

[9] At least one country, Brazil, has stated that it does not intend to make such an adjustment in its accounting (Federative Republic of Brazil 2010).

renewable biomass by distributing efficient cookstoves. The project would result in emission reductions or removals of CO_2 in the forestry sector. The resulting emission reductions might thus be used for pledge attainment by both the host country, and the buyer of the credits from the cookstove project.

These forms of double claiming occur if mechanisms account for indirect baseline emissions. The risk for double claiming depends on the type of market mechanisms and the scope of pledges. The risk is significantly larger with credits than with allowances. Allowances are often allocated to the entities emitting the GHGs, and even if they are allocated to entities for their upstream or downstream emissions (e.g. producers or retailers of fuels), the scope of emission sources that fall under the mechanism is usually well defined (e.g. all fossil fuel combustion). In contrast, as noted in the preceding section, crediting mechanisms often issue credits for reductions in upstream or downstream emissions without knowing precisely where the reductions occur – just who undertook the mitigation action. This creates a risk that these emissions are also addressed by another mechanism or fall within the scope of a mitigation pledge. The examples provided above also indicate that the risk is higher if a country's mitigation pledge does not cover all GHGs or the entire economy. Then it becomes more difficult to distinguish between emission reductions that fall within the scope of the mitigation pledge, or outside it, and account for the units accordingly.

Finally, another indirect form of double claiming can occur due to international trade of electricity, fuels, feedstocks and technologies. In such situations, mitigation actions may be taken in one country, but the emission reductions occur in another. This can lead to double counting if:

- The country where the mitigation action takes place generates units which are then sold and used to meet a mitigation pledge; and, at the same time,
- The country where the emission reductions occur has a mitigation pledge and accounts for the emission reductions in its GHG inventory to meet its pledge.

The Intergovernmental Panel on Climate Change (IPCC) Guidelines for National Greenhouse Gas Inventories[10] generally account emissions in the country where the GHGs are released to the atmosphere. This means that emissions from fossil fuel combustion are generally accounted in the country where the fossil fuels are combusted. However, the mitigation actions, such as the production of renewable electricity or biofuels, or measures to reduce electricity demand, may take place in another country.

[10] See http://www.ipcc-nggip.iges.or.jp/public/gl/invs6.html.

Figure 1: Double counting due to international trade of electricity

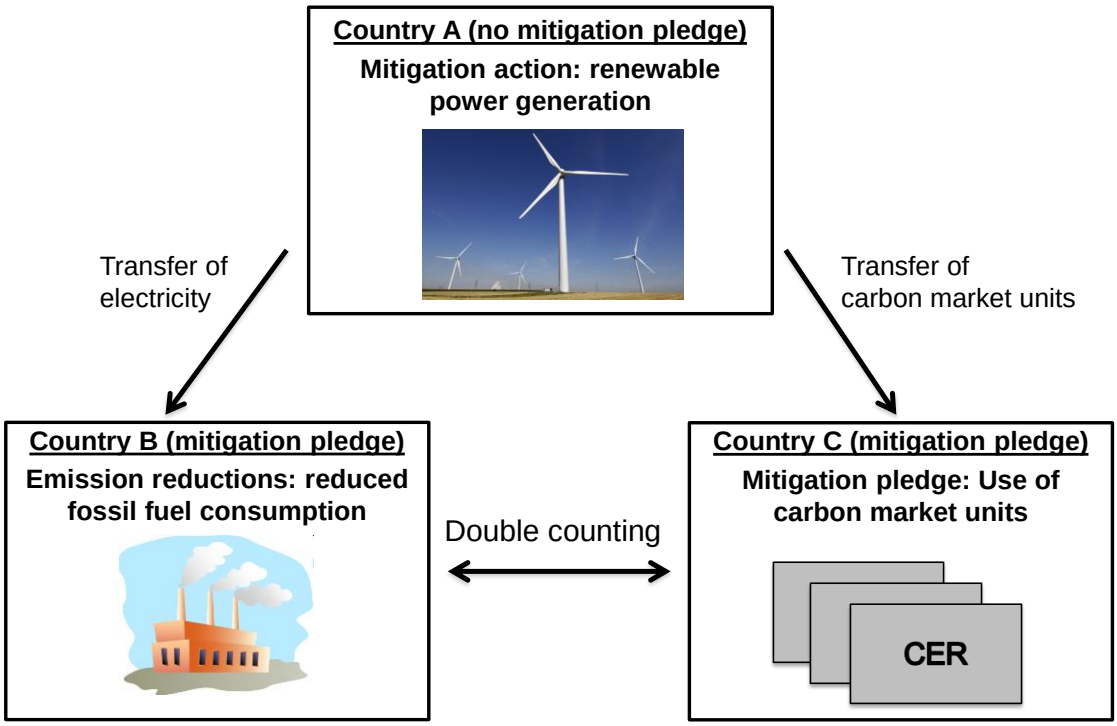


Figure 1 illustrates such a situation. In country A, a power plant receives credits for producing renewable energy. Country A does not have a mitigation pledge, and the credits are sold to country C, which uses them to meet a mitigation pledge. The renewable energy produced in country A is exported to neighboring country B. The import of electricity to country B reduces the consumption of fossil fuels in country B. Country B has a mitigation pledge and accounts the emission reductions from reduced fossil fuel consumption in its GHG inventory. Hence, the emission reductions from the renewable power plant in country A are accounted by both country B and country C to fulfill their mitigation pledges. Note that countries B and C in the example could also be the same country. This example illustrates that double counting can also be relevant if the country where the mitigation action takes place does not have a mitigation pledge under the UNFCCC. A practical example for such double counting could be the Southern African Power Pool (see Box 2).

Box 2: Potential for double counting in the Southern African Power Pool

The Southern African Power Pool (SAPP) is a multinational electricity system comprising nine countries, only one of which (South Africa) has made a quantified mitigation pledge under the UNFCCC. South Africa is the largest economy and strongly relies on coal power, while most of the other SAPP countries rely mostly on hydropower. Therefore, CO_2 emissions from the SAPP occur mainly in South Africa. Therefore, renewable energy or energy efficiency projects in the power sector of SAPP countries will mostly affect emissions in South Africa.

Under the CDM, a single grid emission factor for all SAPP countries is used to calculate emission reductions from renewable energy and energy efficiency projects in the region. Under current CDM rules, the CERs are issued for the country where the mitigation action takes place; the country identifier in the serial number of the CER corresponds to the host country where the project is registered. In the case of the SAPP this means that projects implemented in countries other than South Africa receive CERs tagged to the country where the projects are implemented, while the emission reductions mainly occur in South Africa.

This could result in double counting, since the emission reductions would be counted towards two mitigation pledges: South Africa's and the CER buyer country's. Thus, due to the international trade of electricity, double counting can occur even when the host country does not have a mitigation pledge under the UNFCCC. Since the CERs are tagged to the country where the mitigation action takes place, there is no easy way to know where the emission reductions actually occur. This makes it difficult to identify and prevent such double counting.

Similar issues can arise with biofuels. Country A may produce biofuels and claim emission reductions for the production under a crediting mechanism. The biofuels could be exported to Country B, which uses the biofuels to reduce transport-sector emissions and help meet its mitigation pledge. The credits could be sold to country C. The emission reductions from the production and use of biomass could then be accounted both by country B, which uses the biofuels to meet its mitigation pledge, and by country C, which uses the credits to meet its mitigation pledge. This form of double counting could also apply to international trade of feedstocks or technologies. For example, country A may credit the production of low-carbon feedstocks, such as from biomass or waste, or energy-efficient technologies, such as efficient appliances, and may export these feedstocks or technologies to country B, where the feedstocks or technologies are used and the emission reductions take place.

In this context, another question is whether the direction of trade matters. For fuels, feedstocks and technologies, the emissions occur in the country where they are used. Therefore, this form of double counting can only occur if the fuels, feedstocks or technologies are exported from a country without a mitigation pledge to a country with a mitigation pledge. In contrast, with electricity trade, what matters is not the direction of the trade, but how the activities that are credited affect the electricity flow. In Figure 1 above, country A could be a net exporter or importer of electricity. If country A is a net exporter of electricity, the renewable energy project increases the electricity exports to country B. If country A is a net importer of electricity, the renewable energy project reduces the imports of electricity from country B. In both cases, less electricity is produced in country B, and hence fewer CO2 emissions occur in country B. Therefore, in the case of trade of electricity this form of double counting is independent of the direction of electricity flow between the countries.

The potential impact of this kind of double claiming is lower than for other forms. It is only relevant for trade between a country with a mitigation pledge and a country without a mitigation pledge. Trade of electricity, fuels, feedstock and technologies between two countries with economy-wide mitigation pledges can affect their reported national GHG emissions, but does not result in double counting; the emission reductions are reflected in the

GHG inventory of the country where the emission reductions occur, while they are not reflected in the GHG inventory of the country where the mitigation action takes place. The main risk is with electricity trade, given that the power sector has significant mitigation potential, and crediting mechanisms usually allow renewable power projects or energy efficiency projects to earn credits for reductions in upstream emissions. Currently, there are only few regions with significant multinational trade of electricity, such as the SAPP. However, several regions are planning large interconnection lines. This form of double counting could be addressed, as electricity flows between countries are well known. In the case of fuels, feedstocks and technologies (other than power sector technologies), the crediting of upstream and downstream emissions is less frequent. However, under the CDM, for example, producers of biofuels can under some circumstances claim credits, and manufacturers of efficient household appliances can claim credits from producing and selling the technology.

3. RELEVANCE OF DOUBLE COUNTING FOR UNFCCC

A key consideration for Parties to the UNFCCC is whether – and which types of – double counting should be addressed under UNFCCC, or rather by other national, international or non-governmental bodies. In this section, we discuss whether Parties should agree on a UNFCCC framework to avoid double counting, and then identify the types of mitigation pledges and units for which double counting should be addressed under the UNFCCC. We then explore the relevance of double counting between mitigation pledges and financial or technology pledges, and finally discuss whether Parties should also address double counting of mitigation actions that may occur from units that are not accounted under the UNFCCC.

3.1 Should Parties agree on a UNFCCC framework to avoid double counting?

Whether and how double counting of emission reductions needs to be addressed in a framework under the UNFCCC is a controversial issue. As noted in the introduction, at COP18 in Doha, Parties agreed to consider the issue of double counting in the two work programs established under the Subsidiary Body for Scientific and Technological Advice (SBSTA) on a framework for various approaches (FVA) and a new market-based mechanism (NMM). The FVA work program is to address "technical specifications to avoid double counting through the accurate and consistent recording and tracking of mitigation outcomes".[11] The NMM work program is to consider the avoidance of "double counting of effort" as one of the possible elements of the NMM.[12] However, Parties have expressed different views on this matter, in particular which forms of double counting should be deemed relevant to an international climate regime and how they should be addressed (UNFCCC 2012).

At workshops and conferences, some have asked whether double counting of emission reductions needs to be avoided, and whether it is not sufficient to determine ex-post, through tracking and reporting, how much double counting is occurring, in order to assess whether Parties are jointly on track towards the 2°C target. It has also been proposed to adjust mitigation pledges to "compensate" for the amount of double counting. A related question is what magnitude the different forms of double counting could have. If double counting is a minor effect compared to the overall reductions pledged, it could be argued that preventing double counting would be useful but may not be the necessary. In other words: is double counting a major issue that needs to be prevented through internationally agreed rules?

[11] Decision 1/CP.18, paragraph 46(d). http://unfccc.int/resource/docs/2012/cop18/eng/08a01.pdf.
[12] Decision 1/CP.18, paragraph 51(c).

The potential for double counting is difficult to estimate, as this strongly depends on the actions taken at various levels to prevent it. Double claiming has likely the largest potential. Under the Kyoto Protocol, developed countries relied extensively on the use of units from other countries to meet their commitments. For example, Europe uses about 1.26 billion CERs and ERUs in the first commitment period of the Kyoto Protocol. This corresponds to more than 50% of the 2.26 $GtCO_2e$ in emission reductions pledged for that period compared with 1990 emissions.[13] A large part of these units come from economies that made mitigation pledges for 2020 under the Cancun Agreements. If European countries were to use units in 2020 to a similar extent, not addressing double claiming from such units could considerably undermine the reduction effort. If international transfer of units is to play a significant role in a post-2020 climate regime, not addressing double counting of emission reductions could undermine mitigation efforts considerably.

Importantly, not preventing double counting of emission reductions could set strong disincentives to use international carbon market instruments, such as the CDM. Both ETS and public purchase programs could be reluctant to purchase units if the units or emission reductions are also used by other jurisdictions towards attaining pledges. If double counting is not prevented, the basic principle of carbon markets that a unit represents a tonne of emission reductions would be undermined. This could lead to a further fragmentation of carbon markets. Double counting of emission reductions could also increase the global costs of GHG abatement. For example, if two units are issued for the same emission reductions, this results in over-issuance, which leads to a less efficient global allocation of GHG abatement efforts (Schneider et al. 2014).

Another concern is that not preventing double counting would also make mitigation pledges less comparable. Mitigation pledges of countries which do not use units would not be comparable to those of countries which use units. Furthermore, among the countries using units, the ambition of mitigation pledges would depend on the "quality" of the units with regard to double counting, which may be difficult to assess. This could negatively affect the credibility of the international climate regime and make it more difficult to agree on a multilateral approach to address climate change.

As highlighted above, double counting can occur in indirect forms which could make it difficult to identify or quantify it ex-post. Preventing double counting in the first place would be easier. Even if the amount of double counting would be known ex-post, it could be difficult to make a single country or entity responsible or liable for such double counting and request compensation or reconciliation. Since the cause of double counting lies in the lack of internationally agreed rules to prevent such double counting, there is no single country or entity that bears the responsibility for the double counting. If two units are issued for the same reductions under two mechanisms and consequently two countries use these units and claim the same emission reductions, which of the two should be held accountable? Similarly, in the case of double claiming, one could argue that it is the seller country's fault that it did not to account for the sold units, or that it is the buyer country's fault for buying the units from a country with a mitigation pledge.

For the same reason, it seems unlikely that buyer or seller countries would be willing to adjust their pledges to "compensate" for double counting. For example, it seems unlikely that buyer countries would want to increase their headline numbers of mitigation pledges because the

[13] These numbers are derived from information in EEA (2013) and Tuerk et al. (2013) and refers to all countries of the Economic European Area except Cyprus and Malta.

emission reductions they purchased were also used by another country to attain its pledge or issued under another mechanism. Moreover, agreeing domestically on mitigation pledges is often a long and difficult political process, and any adjustments to agreed pledges in order to compensate for double counting may be politically controversial. In our assessment, it is thus politically unlikely that countries would adjust their pledges to correct for double counting.

Failing to prevent double counting could possibly also lead to a "race to the bottom": if other countries can get two units, issued under two mechanisms, for every tonne abated, without penalty, then it might be difficult to resist the temptation. Furthermore, the process of compensation – or lack thereof – could introduce yet another source of potential conflict and divisiveness or divergence. In the interests of integrity, some Parties or mechanisms may elect to deem their units or pledges as free from "double counting", causing divisions not only between markets but also between countries.

Altogether, based on these considerations, we believe that preventing double counting is a key issue, in particular for a post-2020 climate regime. As we will discuss later in this paper, double counting is difficult to prevent through domestic or bilateral action. It is important that Parties agree on an international framework to avoid double counting, through appropriate principles, rules and procedures. In the following, we presume that Parties to the UNFCCC will agree on a framework for pledges and for the use of units to attain these pledges, with the view to avoiding double counting of emission reductions.

3.2 For which types of mitigation pledges should double counting be addressed under the UNFCCC?

Addressing double counting under the UNFCCC is clearly relevant with regard to mitigation pledges made under the UNFCCC. This includes commitments under the Kyoto Protocol, the pledges under the Cancun Agreements, and any pledges under a post-2020 agreement. In addition, avoiding double counting may also be important with regard to other multilateral processes to address GHG emissions which deal with specific sectors or gases, such as GHG emissions from international aviation and maritime transport, which may be addressed under the International Civil Aviation Organization (ICAO) and the International Maritime Organization (IMO), or GHG emissions addressed under the Vienna Convention to Protect the Ozone Layer and its Montreal Protocol on Substances that Deplete the Ozone Layer. It may be in the interest of Parties to the UNFCCC to avoid double counting with mitigation efforts under these processes.

3.3 For which unit types should double counting be addressed under the UNFCCC?

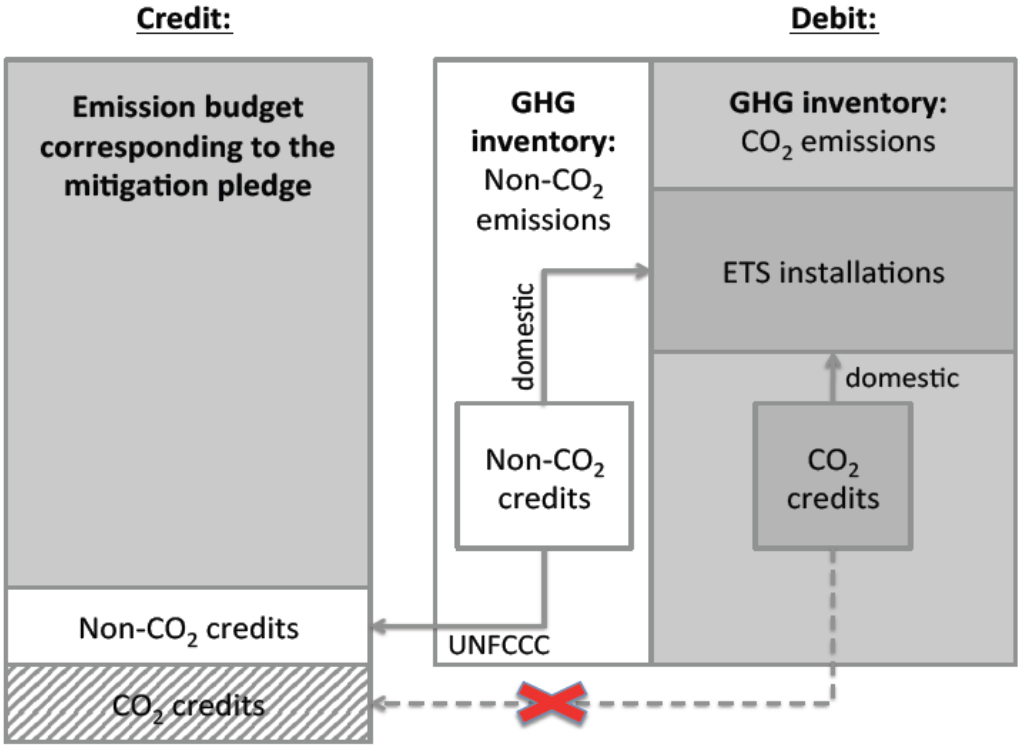
Double counting should be addressed under the UNFCCC for units which are used under the UNFCCC to meet a pledge, i.e. units which are added to a countries' emissions budget (or subtracted from its emissions) in comparing actual emissions with the pledged amounts (Prag et al. 2013). Rules would need to apply in two situations:

1. When units (whether issued under domestic or international governance) are transferred internationally between national jurisdictions (or possibly a multilateral sectoral organization, such as a mechanism under ICAO) and accounted by the buyer country (or entity of the sectoral organization) towards meeting UNFCCC (or multilateral sectoral organization) pledges or other UNFCCC obligations;
2. When units are issued for emissions or emission reductions in a country (e.g. for sectors, gases, or time periods that do not fall within the scope of a mitigation pledge) and are

used by the same country towards meeting a UNFCCC pledge or other UNFCCC obligations.

In contrast, if one country or several countries establish mechanisms to achieve mitigation but do not add the units from these mechanisms to their emissions budget (or subtract them from their reported emissions), double counting does not need to be addressed under the UNFCCC. The example in Figure 2 further illustrates this. In this example, a country makes an economy-wide mitigation pledge under the UNFCCC, covering its CO_2 emissions but not other GHGs. The country has established a national ETS which covers a part of its national CO_2 emissions. If the ETS is not linked to other countries or other mechanisms, the emission reductions from the ETS would be fully reflected in the GHG inventory of the country and thus in attaining its mitigation pledge. Hence, the ETS helps the country meet its mitigation pledge but is not relevant for accounting purposes under UNFCCC. In this regard, the ETS is not different from other domestic policy instruments, such as regulations, taxes, or other market-based approaches, such as renewable electricity certificates.

Figure 2: Example for accounting of units issued for domestic emission reductions in the case of a country with a mitigation pledge for CO_2 emissions only



The country could also introduce a domestic crediting mechanism and allow its ETS installations to use credits. In the example, the crediting mechanism covers both projects addressing CO_2 and projects addressing other GHGs. Credits from projects mitigating CO_2 can only be issued for measures that do not reduce emissions in ETS installations, to avoid overlap between the ETS and the crediting mechanism. In the case of projects mitigating only non-CO_2 gases, double counting is not an issue – the two mechanisms do not overlap in their scope, and the country could use credits from non-CO_2 projects to meets its mitigation pledge. In contrast, emission reductions from projects addressing CO_2 emissions would be double counted if the credits were added to the countries' emissions budget (or subtracted from its

emissions). The emission reductions would be reflected first in the national inventory of CO_2 emissions, and second, in the units used to attain the pledge.

If the country implemented a domestic CO_2 offsetting scheme to achieve its mitigation pledge, it would have an incentive to avoid any double counting, e.g. between the ETS and the GHG offsetting scheme, since such double counting would be reflected in the national GHG inventory and, hence, make it more difficult for the country to achieve its pledge. However, any such double counting would not impact the monitoring, verification, and accounting of the pledge made under the UNFCCC. For example, the units under the EU ETS, European Union Allowances (EUAs), are not used for accounting purposes under the Kyoto Protocol. The reductions from the EU ETS are reflected in the national GHG inventories. The EU has adopted policies to avoid double counting of emission reductions between domestic JI projects and its ETS. While these rules are relevant for an effective functioning of the EU ETS, they are not needed for UNFCCC accounting purposes, since EUAs are not used for meeting commitments under the Kyoto Protocol, and double counting between JI projects and the ETS would be reflected in the EU's GHG inventory.

In conclusion, any double counting with regard to domestic mechanisms is not relevant to the UNFCCC, when the units are neither added to the emissions budget corresponding to the mitigation pledge (or subtracted from reported emissions), nor sold to other jurisdictions. The example in Figure 2 further shows that, as a general rule, domestic units should only be added to the emissions budget (or subtracted from reported emissions) if they are issued for emission reductions that occur outside the scope of a mitigation pledge made under the UNFCCC.

3.4 Double counting between mitigation and financial or technology pledges

Another important policy question is whether double *purpose*, i.e. double counting between mitigation pledges and financial pledges, and possibly also technology pledges, should be addressed under the UNFCCC. Some observers have suggested that it should be possible to "blend" different sources of financing for mitigation actions, while others argue that there should be a bright line between actions supported financially, and actions that generate internationally transferred units (UNFCCC 2012). This question is related to whether mitigation pledges by developing countries are conditional to appropriate technological and financial support and whether the mitigation pledges by all countries, together, are sufficiently ambitious to meet the objective of limiting global warming to 2°C.

We argue that double purpose should not be permitted. The main reason is that if all the emission reductions achieved by a project are credited and used to attain the mitigation pledge by the buying country, they do not help the host country meet its own mitigation pledge, since to avoid double counting, it would need to deduct the units from its emissions budget or add them to its reported emissions. The situation is different if some of the emission reductions are either not credited or if the credits are not used, i.e. if they are canceled. Then, the mitigation action leads to a net mitigation benefit, which can be reflected in the GHG inventory of the host country. In this case, the buying country does partially support the host country in meeting its own mitigation pledge; thus, the emission reductions from any units that are not used, but canceled, could be accounted under financial pledges.

The situation is more complex when baseline and monitoring methodologies use approaches that only credit some of the emission reductions, e.g. through ambitious crediting baselines below business-as-usual levels, crediting periods shorter than the mitigation action lasts, or the discounting of emission reductions. This leads to a net mitigation benefit because fewer credits are issued than emission reductions occur. In practice, though, it can be difficult to

quantify the net mitigation benefits due to the significant uncertainty associated with determining business-as-usual emissions and assessing additionality. Often baselines are set in a conservative manner to address uncertainty. In such cases, a quantification of any net mitigation benefits may be rather difficult and uncertain. Therefore, we do not recommend to account any net mitigation benefits achieved through baseline and monitoring methodologies as financial support to developing countries. Rather, the (partial) cancellation of credits seems a more transparent approach to account for such support.

3.5 Double counting with mitigation actions outside the UNFCCC

Above we argued that double counting should be an issue for Parties to the UNFCCC whenever a Party uses units to attain a mitigation pledge. We further highlighted that double counting between UNFCCC pledges is not an issue if countries establish mechanisms under national governance to achieve mitigation but do not add units from these mechanisms to their emissions budget (or subtract them from their emissions). While it is not necessary to consider double counting in such cases, it could nevertheless be helpful for Parties and other entities to do so, for two reasons.

First, many countries are establishing and implementing market-based approaches to achieve mitigation. These actions will only be effective if double counting of efforts is avoided. Even if double counting would be fully reflected in national GHG inventories – and is therefore appropriately accounted for in attaining UNFCCC pledges – double counting at the domestic level could make it more difficult for countries to actually achieve their mitigation pledges. It could result in a discrepancy between emission reductions expected from a mechanism and the actual emissions. Countries could thus voluntarily draw upon internationally agreed rules to address double counting and apply them to domestic mechanisms in order to achieve their mitigation pledges effectively.

Second, double counting with voluntary actions could undermine global efforts to reduce GHG emissions. The voluntary carbon market, i.e. the voluntary cancellation of units by individuals or organizations to reduce or offset their own emission, is still small compared with compliance markets, but it is growing and gaining importance. There is a considerable risk that emission reductions achieved through the voluntary market are also used by countries to attain their UNFCCC pledges. Currently, many units used in the voluntary market are from countries that have commitments under the Kyoto Protocol or made pledges under the UNFCCC. If both the host country and the voluntary user account for the same emission reductions, the voluntary market provides no additional mitigation beyond what was pledged by the country.

For example, in Europe, several entities in the voluntary market allow companies or individuals to cancel EUAs from the EU ETS. However, in the third trading period from 2013 onwards, cancellations of EUAs are not necessarily backed by cancellations of AAUs. In this regard, EUA cancellations could deliver emission reductions from installations included in the EU ETS, but the emission reductions from these cancellations are also reflected in national GHG inventories used to meet commitments under the Kyoto Protocol. This could lead to a higher carry-over of AAUs to subsequent commitment periods and thus less mitigation actions by the country in non-EU ETS sectors or less purchase of international units to meet the commitment. Hence, without cancellation of an equivalent amount of AAUs, the use of EUAs in the voluntary market would not necessarily lead to emission reductions beyond the Kyoto Protocol commitments. In the long run, this may undermine the credibility of the voluntary market, as buyers of voluntary credits probably assume that they fund mitigation activities that are additional to governments' pledges.

Bearing in mind the ultimate objective of the UNFCCC, Parties could have an interest in minimizing these double counting risks as well, even if they do not affect the integrity of UNFCCC pledges. To address such double counting, internationally agreed rules could also be applied to mechanisms outside the scope of UNFCCC pledges. The cancellation of units in the voluntary market should be backed by appropriate accounting towards UNFCCC mitigation pledges. Such provisions could help ensure that carbon markets, including voluntary markets, are considered as a credible and effective tool to mitigate climate change.

4. OVERVIEW OF CURRENT RULES TO AVOID DOUBLE COUNTING

Rules to avoid double counting currently mainly exist under the framework of the Kyoto Protocol, which specifies what types of units may be used to meet commitments as well as the modalities for their issuance, transfer and use. National registries undergo an international review, and transactions between and within national registries must be endorsed by an International Transaction Log which checks the consistency of the transactions with internationally agreed rules. The issuance of Certified Emission Reductions (CERs) under the CDM occurs under the governance of the CDM Executive Board into a dedicated registry. In addition, specific rules were introduced under the CDM to ensure that only one CER is issued for a given emission reduction (avoiding double issuance) and that double counting with mitigation commitments by Annex I Parties (double claiming) is avoided.

Under Joint Implementation, Emission Reduction Units (ERUs) are converted from Assigned Amount Units (AAUs), which reflect the emission budget of Annex I Parties, or from Removal Units (RMUs), which reflect changes in land-use activities of Annex I Parties, thereby avoiding any double counting between ERUs and AAUs/RMUs. In summary, under the Kyoto Protocol, a comprehensive set of internationally agreed accounting rules have been put in place which largely address the risk of double counting.

However, similar rules are not yet in place to avoid double counting of units between the Kyoto Protocol and pledges under the UNFCCC or mechanisms under governance outside the UNFCCC. For the mitigation pledges made under the Cancun Agreements, some countries intend to use units which are issued under domestic or bilateral governance. Units could be issued from different mechanisms into different registries or to different Parties, the international transfer of units could be arranged bilaterally, and countries could potentially account for units in different ways in meeting their mitigation pledges. Addressing double counting becomes a major challenge under these circumstances.

In the following sections, we provide an overview of how existing crediting schemes address the main two forms of double counting: double issuance and double claiming. We evaluate rules under the UNFCCC and the Kyoto Protocol, as well as approaches followed by the Verified Carbon Standard (VCS), Gold Standard Voluntary Emission Reductions (GS VERs), and the Climate Action Reserve (CAR).

4.1 Double issuance

A variety of approaches are used to address double issuance (see Table 2 for an overview). Most of the assessed crediting schemes use a combination of the following approaches:

- **Information on project location and owners:** All assessed crediting schemes require project developers to specify the exact location of a proposed project through maps or geodetic coordinates and identify the project owners. This helps to identify any double registration of the same project under the same or another crediting mechanism.

- **Attestation by the project owners:** Most schemes require project developers to attest that they have the sole right to the credits and do not seek credits under another scheme. Legal remedies could be sought in the case of false attestations. The CAR (2011) requires project operators to declare that they have full ownership of the emission reductions, and that they have not claimed, and will not claim, credits under other schemes or under the same scheme under a different name. Similarly, the GS requires users of its registry to attest that they have "full legal and beneficial title to any units"; have not "sold, transferred, assigned, licensed, disposed of, granted or otherwise created any interest or encumbrance [...] in the units or the underlying environmental benefits corresponding to such units"; and have not "listed the units on another registry or similar information source" (GS 2013). The VCS (2013) requires that project proponents "shall not claim credit for the same GHG emission reduction or removal under the VCS Program and another GHG program" and requires them to attest that "no person will submit, seek, request or receive any recognition of, or legal rights in respect of, the Reductions generated by the Project during the Verification Period and for which VCU issuance will be requested, as another form of GHG-related environmental credit". In practice, to fulfill this requirement, the project owners could be required to negotiate any necessary agreements with other parties to ensure that no conflicting claims will arise, since the action of other entities is beyond their control. For example, according to information provided by the operators of the VCS, written agreements are in practice required if other entities than those entitled by default wish to claim VCUs. The CDM has no comparable procedures in place.
- **Check by the regulator:** In some schemes, the regulator checks whether a mitigation activity has been registered under another scheme. According to information provided by the operators of the crediting schemes, the VCS and CAR systematically check other programs issuance of VCUs is requested; the GS conducts checks when there is a reasonable cause to suspect double issuance.
- **Procedures for opt-in and opt-out:** Most voluntary crediting schemes allow for opting-in from other schemes (VCS 2012; GS 2012; CAR 2011). In such cases, evidence needs to be provided that the opt-out under the other crediting scheme has been completed and issuance does not continue. However, not all schemes have explicit procedures to formally withdraw from a project. The CAR and the VCS have procedures to both transfer projects from and to other schemes (CAR 2011; GS 2013), while the GS has only formal procedures for opting-in from other schemes but not for withdrawal from the scheme. The CDM does neither have procedures to withdraw a project nor to declare an opt-in from another crediting scheme.

To avoid double issuance between projects where different entities could potentially claim the same emission reductions, the following approaches are used:

- **Only one type of entity is eligible to claim credits:** Some crediting schemes only allow one type of entity to claim credits. The VCS and CAR intend to limit eligibility to projects types for which the ownership of the credits is unambiguous, making it unlikely that other entities can claim the same credits (VCS 2012; CAR 2011). Under the CDM, the available baseline and monitoring methodologies often allow only one entity to claim CERs for a proposed project activity. For example, in the case of large-scale renewable electricity projects, only plant operators – and not the producers of the power generation equipment or the consumers of the renewable electricity – can claim the emission reductions with the set of available CDM methodologies. The CDM Executive Board has not explicitly excluded the possibility that new methodologies could be developed to

allow other entities to claim emission reductions, but such methodologies would then need to include provisions to avoid double issuance of CERs. In the case of biofuels, the CDM Executive Board defined the consumers of the biofuel as the "default" entity that is eligible to claim CERs (see Box 1).

- **Written agreement among the entities that could potentially claim credits:** For some project types, CDM methodologies allow different entities to claim CERs, but require written confirmation from the project participants that the other entities that could potentially claim CERs do not wish to do so. For example, the methodology ACM0017 for production of biodiesel requires that "the consumer and the producer of the (blended) biodiesel are bound by a contract that allows the producer to monitor the consumption of (blended) biodiesel and that states that the consumer shall not claim CERs resulting from its consumption". A similar approach is, for example, followed in the GS VER methodology "Technologies and Practices to Displace Decentralized Thermal Energy Consumption", where other entities need to be informed that the project owners claim credits, e.g. through relevant contracts.

These two approaches mainly prevent double issuance due to two different entities seeking credits for the same reductions under the same crediting scheme. However, they do not necessarily address the risk that other entities may seek credits under another crediting scheme.

The risk of double issuance due to the accounting of indirect upstream or downstream project or leakage emissions from a location where emissions are reduced through another crediting scheme is addressed in few instances in specific CDM methodologies. In this case, double counting of emission reductions would occur if both crediting schemes would assume the emissions level in the absence of the CDM to calculate emission reductions. Some CDM methodologies have provisions to ensure that no such double issuance occurs. For example, to address the case of double counting between a biofuel project and a project to reduce N_2O emissions from nitric acid production, as discussed earlier, the methodological tool "Project emissions from biomass cultivation" quantifies upstream emissions from the production of nitrogen fertilizer, including N_2O emissions from nitric acid production. Many plants in developing countries abate N_2O emissions from nitric acid production under the CDM. To avoid double issuance, the tool uses a default emission factor which assumes that N_2O emissions are not abated. This ensures that the reduced N_2O emissions are only accounted by the projects that are directly abating N_2O from nitric acid production, and not also by projects which indirectly increase nitric acid production through enhanced use of nitrogen fertilizer.

Table 2 shows that most crediting schemes established outside the UNFCCC and Kyoto Protocol aim to address double issuance but do not have rules in place that would effectively avoid all forms of double issuance. In contrast, the rules under the CDM largely avoid double issuance of units within the CDM, but do not address potential double issuance with other crediting schemes outside the UNFCCC. In October 2013, the CDM Executive Board initiated a process to explore the issue of double issuance with other national or regional programs, which could potentially include other crediting schemes.[14]

[14] Meeting report of 75th Meeting of the CDM Executive Board, 30 September–4 October 2013, paragraph 82. https://cdm.unfccc.int/EB/archives/meetings_13.html#75.

Table 2: Approaches used by crediting mechanisms to prevent double issuance

	CDM	VCS	GS VERs	CAR
The same emission reductions are claimed by the *same entity* twice under the *same crediting scheme*				
Information on project location and owners	✓	✓	✓	✓
Attestation by the project owners	✗	✓	✓	✓
The same emission reductions are claimed by the *same entity* under *two crediting schemes*				
Attestation by the project owners	✗	✓	✓	✓
Check by the regulator	✗	✓	(✓)	✓
Procedures for opt-in	✗	✓	✓	✓
Procedures for opt-out / withdrawal	✗	✓	✗	✓
The same emission reductions are claimed by *two different entities* (producers / operators / consumers) under the *same crediting scheme*				
Attestation by the project owners	✗	✓	✓	✓
Only one type of entity is eligible to claim credits under the crediting scheme	(✓)	(✓)	(✓)	(✓)
A written agreement is explicitly required between the entities that may potentially claim credits	(✓)	✗	(✓)	✗
The same emission reductions are claimed by *two different entities* (producers / operators / consumers) under *two crediting schemes*				
Attestation by the project owners	✗	✓	✓	✓
Overlap due to accounting of indirect upstream or downstream project or leakage emissions from a source at which another activity is implemented under the *same crediting mechanism*				
Determination of upstream or downstream project / leakage emissions, assuming the emissions level that would occur without the upstream / downstream project	(✓)	✗	✗	✗
Overlap due to accounting of indirect upstream or downstream project or leakage emissions from a source at which another activity is implemented under *another crediting mechanism*				
Determination of upstream or downstream project / leakage emissions, assuming the emissions level that would occur without the upstream / downstream project	✗	✗	✗	✗

✗ = no rules in place, ✓ = rules in place, (✓) = rules/approach in place or implemented in some cases

4.2 Double claiming

Table 3 provides an overview of the approaches used by existing crediting mechanisms to address double claiming. The scope of double claiming rules expands to three areas:

1. **Double claiming with mitigation pledges:** In this case projects cannot be implemented in countries or sectors with mitigation pledges.
2. **Double claiming with GHG allowance trading:** This includes typically regional or national ETS or AAU trading under the Kyoto Protocol. Projects that reduce emissions

from activities that fall within the scope of the trading scheme can only issue credits if a respective amount of GHG allowances is cancelled.

3. **Double claiming with other, GHG-related traded certificates:** This typically includes "green certificates" for renewable energy and "white certificates" for energy efficiency. Projects that fall within the scope of a renewable energy or energy efficiency certificate scheme are then ineligible to claim credits under both that scheme and the crediting mechanism. Note that this latter category is not the focus of this report, which deals with addressing double counting at UNFCCC level.

Under the Kyoto Protocol, double claiming of emission reductions is mainly addressed through the provision that CDM projects can only be implemented in non-Annex I countries. Moreover, methodologies, tools and guidance by the CDM Executive Board include provisions to avoid that indirect upstream or downstream emission reductions occurring in an Annex I country are claimed by a project in a non-Annex I country. For example, guidance on biofuels ensures that emission reductions cannot be claimed from the export of biofuels to Annex I countries. Similarly, in calculating the emission factor for electricity grids, the emissions associated with import of electricity from Annex I countries are assumed to be zero.[15] Another example is the methodological tool "Upstream leakage emissions associated with fossil fuel use", which determines upstream emissions associated with exploration/mining, treatment and transportation of these fuels. In calculating emission factors for these upstream emissions, the tool discounts for emissions that are likely to occur in Annex I countries.[16] However, no such rules are yet in place to avoid double claiming between CERs and mitigation pledges under the UNFCCC.

The VCS does not address double claiming with mitigation pledges (VCS 2012), arguing that it is "beyond the jurisdiction of these GHG programs to control how GHG credits are used and what statements are made by entities using them". However, VCS rules implicitly address some forms of double claiming: Where a project reduces emissions from activities included in an emissions trading program or any other mechanism that includes GHG allowance trading, VCUs can only be issued if a respective amount of GHG allowances is cancelled. This applies to AAUs, ETS allowances, and GHG-related allowance trading. These requirements will likely prevent VCS projects in sectors that are included in the scope of these allowances schemes from being implemented, thereby also preventing double claiming. It also practically prevents projects from being implemented in countries participating in the second commitment period of the Kyoto Protocol. Beyond these provisions, double claiming is not addressed; for example, the VCS does not address potential double claiming with the pledges made under the Cancun Agreements.

The Gold Standard addresses double claiming of emission reductions from countries with a cap on GHG emissions (GS 2012); VERs can only be issued in "such countries if "an equivalent amount of allowances are retired to back-up the GS VERs issued". However, according to additional information provided by the GS, this provision refers only to legally binding caps, and hence includes Kyoto targets but not pledges made under UNFCCC. The GS further addresses double counting with the EU ETS by requiring that an equivalent

[15] Methodological tool "Tool to calculate the emission factor for an electricity system", version 4.0. Approved at the 75th Meeting of the CDM Executive Board, 30 September – 4 October 2013. http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v4.0.pdf.

[16] Methodological tool "Upstream leakage emissions associated with fossil fuel use", version 1.0.0, page 4. Approved at the 69th Meeting of the CDM Executive Board, 9-13 September 2012. http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-15-v1.pdf.

amount of EUAs be surrendered if the project falls within the scope of the EU ETS; according to additional information provided by the GS, this provision should also apply to other ETS. The GS also addresses double claiming with GHG-related certificates, referred to as "green or white certificates". Project activities claiming such certificates shall not be eligible unless they "provide a clear and convincing demonstration that no double counting and/or claiming would arise from the issuance of Gold Standard carbon credits". The type of acceptable evidence is not further specified.

The Climate Action Reserve aims to prevent double claiming by limiting the scheme to project types that are unlikely to fall within the scope of (future) ETS in the United States. For the same reason, the scheme focuses on project types that reduce emissions at the project site (and not upstream or downstream). For example, renewable power generation and energy efficiency projects reducing electricity demand are not eligible. The CAR is also applicable in Mexico, but it is unclear whether double claiming with the 2020 pledges made by Mexico under the UNFCCC is addressed.

Table 3: Approaches used by crediting mechanisms to address double claiming

	CDM	VCS	GS VERs	CAR
Double claiming through implementation of projects in countries with:				
KP targets	✓	✓	✓	**NA**[17]
UNFCCC pledges for 2020	✗	✗	✗	✗
Double claiming with ETS				
ETS in Annex I countries	✓	✓	✓	✓
ETS in non-Annex I countries	✗	✓	✓	**NA**
Double claiming with GHG-related environmental certificates				
Renewable energy certificates in Annex I countries	✓	✓	✓	**NA** [18]
Energy efficiency certificates in Annex I countries	✓	✓	✓	**NA** [18]
Renewable energy certificates in non-Annex I countries	✗	✓	✓	**NA** [18]
Energy efficiency certificates in non-Annex I countries	✗	✓	✓	**NA** [18]

✗ = no rules in place, ✓ = rules in place, NA = not applicable

[17] The CAR is only applicable in the United States and Mexico, neither of which has a commitment under the Kyoto Protocol.

[18] The CAR excludes renewable electricity and demand-side efficiency projects.

5. OPTIONS TO ADDRESS DOUBLE COUNTING

In this section, we assess what type of rules are generally needed to address double counting. We explore different governance arrangements with regard to the issuance, transfer and use of units, and identify and assess options that address the different forms of double counting, including options for the accounting of units, for the design of mechanisms, and for tracking of units.

5.1 What type of rules are needed to address double counting?

In Section 2 we highlighted that double counting and can appear in different forms and result from different situations, and is therefore not straight-forward to address. It is often argued that a system for consistent tracking and reporting of international units is crucial to addressing double counting (UNFCCC 2012). While that is important to facilitate the transfer and accounting of units, it is not sufficient to prevent double issuance and double claiming. Rather, a coherent, consistent *set of rules* is required to address the different forms of double counting. The rules should cover the entire life-cycle of units (Prag et al. 2013), including the issuance of units, which can be guided by rules on the design of mechanisms; the transfer of units, which can be guided by rules on consistent tracking and reporting of units; and the use of units, for which accounting rules are required:

1. **Design of mechanisms:** Mechanisms can establish rules to prevent double counting. For example, they can prevent double issuance by requiring actions to ensure that no units are issued for the same reductions under another mechanism.
2. **Consistent tracking and reporting of units to the UNFCCC:** Such rules are needed to facilitate the transfer and accounting of units.
3. **Accounting:** In the context of GHG mitigation pledges, the term *accounting* commonly refers to rules to compare the mitigation achievements of a country with its mitigation pledge. Accounting rules typically include the following aspects:
   - The scope of mitigation pledges and GHG inventories, including which sectors, sources and GHGs are covered by a mitigation pledge and included in the GHG inventory and for which target year(s) the pledge is made;
   - The global warming potentials (GWPs) used to express GHG emissions in tonnes of CO_2 equivalent;
   - The methods used to estimate GHG emissions and removals, such as the use of IPCC Guidelines for National Greenhouse Gas Inventories;
   - The approaches used to quantify a mitigation pledge in an emission budget of tonnes of CO_2 equivalent, such as the timing of calculating the emission budget;
   - Whether and how units can be used to attain a mitigation pledge, including which type of units can be used, how units are added or subtracted from the emissions budget or GHG inventory of the seller and buyer country, how non-permanence of emission reductions is addressed, and how double counting is avoided;
   - Whether and how units can be used to attain financial and technology pledges;
   - Whether and how units can be carried over between target periods.

   We focus our analysis on accounting rules to address double counting due to the use of units. We do not discuss other accounting issues related to the use of units, such as the

consistency of GWPs and other values used in calculating the emissions reductions expressed in units and GHG inventories.

Table 4 provides an overview of the types of rules needed to address different forms of double counting. Accounting rules are key for addressing double claiming and to avoid the double *use* of one unit; they can also facilitate addressing double *purpose*. Rules for the design of mechanisms are mainly needed to address double issuance but are also needed to avoid indirect forms of double claiming. A system of consistent tracking and recording of units is needed to facilitate the identification and avoidance of double counting through appropriate oversight on the issuance, transfer and use of units, but is not the most important element required to address double counting. Without rules for the design of mechanisms, some forms of double issuance may not be avoided or detected. Similarly, without an accounting framework, units may be tracked, but double claiming would not be prevented. Concrete options to address different forms of double counting are discussed further below, with a focus on double issuance and double claiming.

Table 4: Overview of rules needed to address different forms of double counting

	Rules or principles		
	Accounting of units	**Design of mechanisms**	**Consistent tracking and recording of units**
Double *issuance*		✓	✓
Double *use*	✓		✓
Double *claiming*	✓	✓	✓
Double *purpose*	✓		✓

Another dimension is whether the rules are preventing double counting *ex-ante*, or whether they identify and address double counting *ex-post.* Ex-ante approaches would establish rules which effectively prevent double counting; if the rules are properly followed, no additional action would be needed ex-post. Ex-post approaches, meanwhile, would not prevent double counting, but would require countries to take action to identify any double counting and address it ex-post, e.g. through the cancellation of units.

5.2 Governance arrangements and international oversight

The governance arrangements and the level of international oversight required to ensure the integrity of units from mechanisms is one of the politically controversial issues in negotiations under the FVA. This paper aims to contribute to this discussion by providing a more technical perspective on what types of information and what level of reporting and review would be necessary to provide confidence that double counting is not occurring.

The "life-cycle" of units includes the issuance, transfers and the use of units (Prag et al. 2013). International oversight could extend to mechanisms that issue units, the registries that transfer units, and the accounting balances used by countries when attaining their pledges. Different governance arrangements could apply to each of the three aspects (see Table 5).

Table 5: Possible governance arrangements for issuance, transfer and accounting of units

	UNFCCC /multilateral	National/bilateral	Non-governmental
Mechanisms issuing units	CDM NMM JI	JCM JI track 1	VCS GS CAR
Registries transferring units	CDM registry ITL	National registries under the Kyoto Protocol	VCS registry GS registry CAR registry
Balances accounting units	Compilation and accounting database under the Kyoto Protocol	CRT tables submitted for 2020 UNFCCC pledges	

Parties could agree to establish relevant governance structures under UNFCCC. This could include mechanisms under UNFCCC governance, such as the CDM, JI or the NMM. In this case, Parties would directly oversee the implementation of the mechanism and issuance of units. Parties could also establish a single international registry for tracking units, such as the CDM registry, or establish an international system to check transactions, such as the ITL. International registries and or ITLs are established according to agreed UNFCCC rules. Countries or private entities could have access to the registry in order to conduct transactions, such as under the CDM registry. Also the accounting of units could be undertaken by UNFCCC, based on information reported through registries, an international transaction log or Parties. This approach would be similar as the "accounting and compilation database" established under the Kyoto Protocol and maintained by the UNFCCC Secretariat.

Parties could also agree make use of national, bilateral or non-governmental governance structures. Parties could agree to recognize units issued under national or bilateral governance arrangements, such as the Joint Crediting Mechanism (JCM) established by Japan, or possibly under non-governmental governance arrangements, such as the VCS, GS, or CAR. However, in the case of non-governmental mechanisms Parties would have limited oversight and control on the rules governing the issuance of units which raises concerns with regard to their use to meet governmental pledges. Similarly, Parties could make use of registry systems operated by non-governmental organizations for the transfer of units, such as the registries of the VCS, GS or CAR. It could also be possible to use several registries in parallel, one for each mechanism. Finally, the accounting of units could be undertaken by Parties rather than by a multilateral organization, such as the CRT tables used to report on the accounting of units towards attaining the pledges under the Cancun Agreements.

In the case of UNFCCC governance, the implementation of any internationally agreed rules for the issuance, transfer and accounting of units is directly overseen by Parties and the UNFCCC Secretariat as implementing entity. In case of national, bilateral or non-governmental governance, a system of reporting and review is a common element under UNFCCC to provide Parties with confidence that any internationally agreed rules are followed. This often includes an initial review after which the system can start operation and subsequent reviews to assess continued compliance with internationally agreed rules. In addition to reporting and review, mechanisms could be established to provide incentives for compliance. For example, GHG inventories are adjusted under the Kyoto Protocol if the IPCC guidelines on national GHG inventories are not followed.

To prevent double counting of emission reductions, international agreement on the accounting of units and principles and rules for the design of mechanisms is key. Which entities issue, transfer and account for units is less important, as long as relevant information is reported by these entities and internationally reviewed.

5.3 Options for accounting of units towards mitigation pledges

Accounting rules are mainly needed to address double claiming, but they can also avoid double *use* of units and can facilitate addressing double *purpose* (see Table 4 above). We illustrate the options for accounting of units by drawing on double entry bookkeeping, which differentiates between "debit" and "credit". The credit corresponds to the countries' entitlements to emit GHG emissions. The debit reflects the actual GHG emissions and other reduction obligations. The comparison between debit and credit gives an *accounting balance* that shows whether a country exceeds or falls short of its mitigation pledge.

The accounting balance is straightforward when no units are used to attain a mitigation pledge: the pledge is then compared with the verified emissions. Towards this end, the mitigation pledge is expressed as an emission budget for the target year(s). For example, a country with a mitigation pledge of -10% for a five-year target period and a 2005 base year would have a target-period emissions budget of its 2005 emissions times 0.9 times five. In an accounting balance, the emission budget is then regarded as "credit" and compared, over the same period, with the verified GHG emissions, which are regarded as a "debit". If the debit (the GHG emissions) is lower than the credit (the emission budget), the country attains its pledge.

When units are introduced, accounting gets more complex. We discuss three options for accounting of units: A) accounting for net flows of units, B) restricting the issuance of units, or C) restricting the use of units. While the three approaches differ with regard to how units are accounted, they all fully prevent double claiming, as long as all countries involved in international transfers take the same approach. They can also avoid the double *use* of units by checking ex-post that each unit has only been used once to meet a pledge. For all approaches, we describe how units are used in the final accounting balance to attain the mitigation pledges. We do not consider provisions to account for (temporary) holdings of units or the voluntary cancellation of units.

All three approaches require differentiating between reductions *within* and *outside* the scope of a mitigation pledge, where the scope includes the following dimensions:

- **Temporal:** Reductions achieved prior to the target period for which the mitigation pledge is established fall outside the scope. This may include units issued for early action or units banked from previous target periods.
- **Geographic:** All countries' pledges to the UNFCCC so far cover their entire area, but pledges could, in principle, also be limited to a fraction of the country.
- **GHGs:** A mitigation pledge can address all or only some GHGs (e.g. only CO_2).
- **Sectors or emission sources:** Mitigation pledges can be economy-wide or be limited to specific sectors or GHG emission sources.

Distinguishing between reductions within and outside the scope of a mitigation pledge is important to prevent double claiming. All three approaches make that distinction with regard to the issuance and use of units. Approaches A and C allow issuing units for reductions both within and outside the scope of a mitigation pledge. To enable fungibility of units and facilitate their international transfer and correct accounting, it is important that under these approaches units are tagged accordingly, either through different unit names – e.g. CERs falling outside the scope of a Kyoto Protocol target versus ERUs falling within the scope of a Kyoto Protocol target – or through appropriate identifiers in their serial numbers. This requires agreeing internationally on rules for the design of mechanisms with regard to unit issuance (see Section 5.4). Note that units could either be issued into national, bilateral or

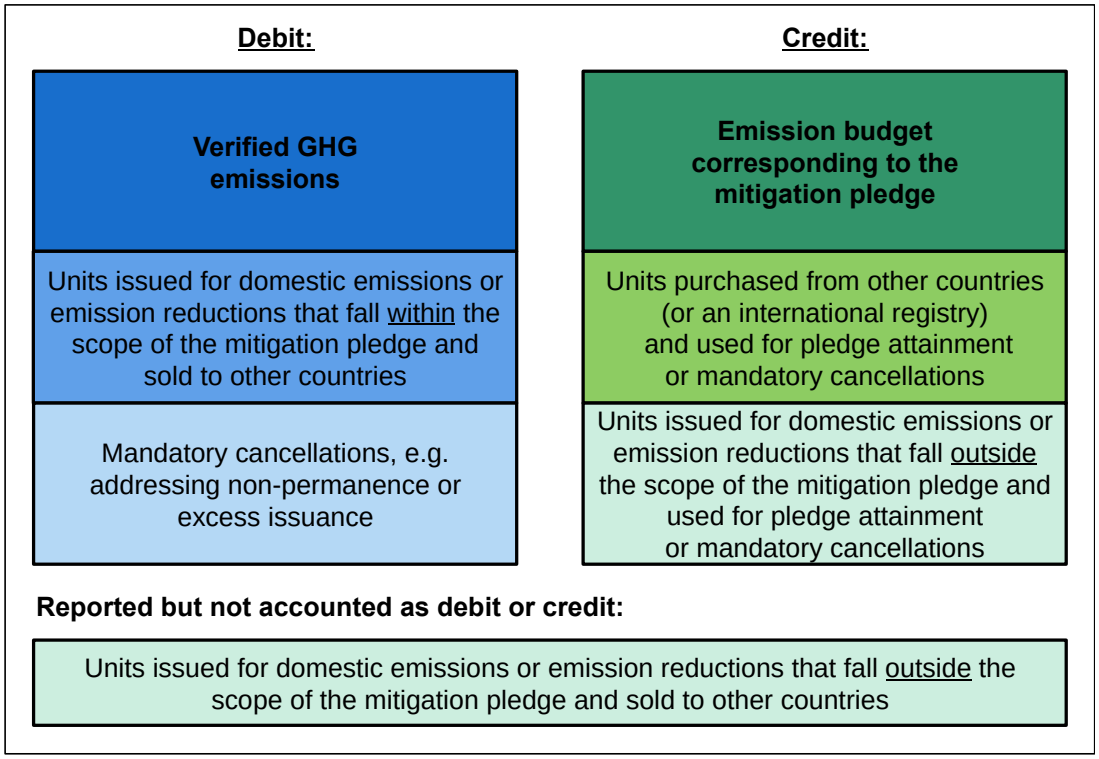
international registries, such as the CDM registry; what matters is for which country the units are issued and whether they fall within or outside the scope of a country's mitigation pledge.

It is important to further note that in some instances, the scope of mitigation pledges could change over time, and the type of unit issued or the tagging would need to change accordingly. For all approaches, describing and expressing mitigation pledges unambiguously with regard to their scope is another important prerequisite to address double counting. It is also important to note that some units may not represent permanent emission reductions, such as in the forestry sector or for carbon capture and storage (CCS). As the emission reductions or removals may only be temporary, countries could have accounting obligations arising from non-permanence, such as the cancellation of units to compensate for non-permanence. Similarly, countries could be liable for any excess issuance and be required to compensate for it. We reflect such obligations for all three accounting approaches as a debit.

Approach A: Accounting for net flows of units

This approach addresses double claiming by ensuring that units traded between countries are appropriately added as a debit by the selling country and as a credit by the country using the unit (see Figure 3). Units issued for domestic emissions or emission reductions that fall *within* the scope of the seller's mitigation pledge are added to the buyer's credit and the seller's debit (or subtracted from the buyer's debit and the seller's credit). Units issued for domestic emissions or emission reductions that fall *outside* the scope of the country's mitigation pledge, however, do not need to be added to the seller's debit. They can either be used by the same country to attain its pledge – in this case the units are added as a credit – or they can be sold to other countries – in the case the units are added as a credit by the buying country and the transfer only needs to be reported to the UNFCCC by the selling country. The country meets its mitigation pledge if the debit exceeds the credit in Figure 3.

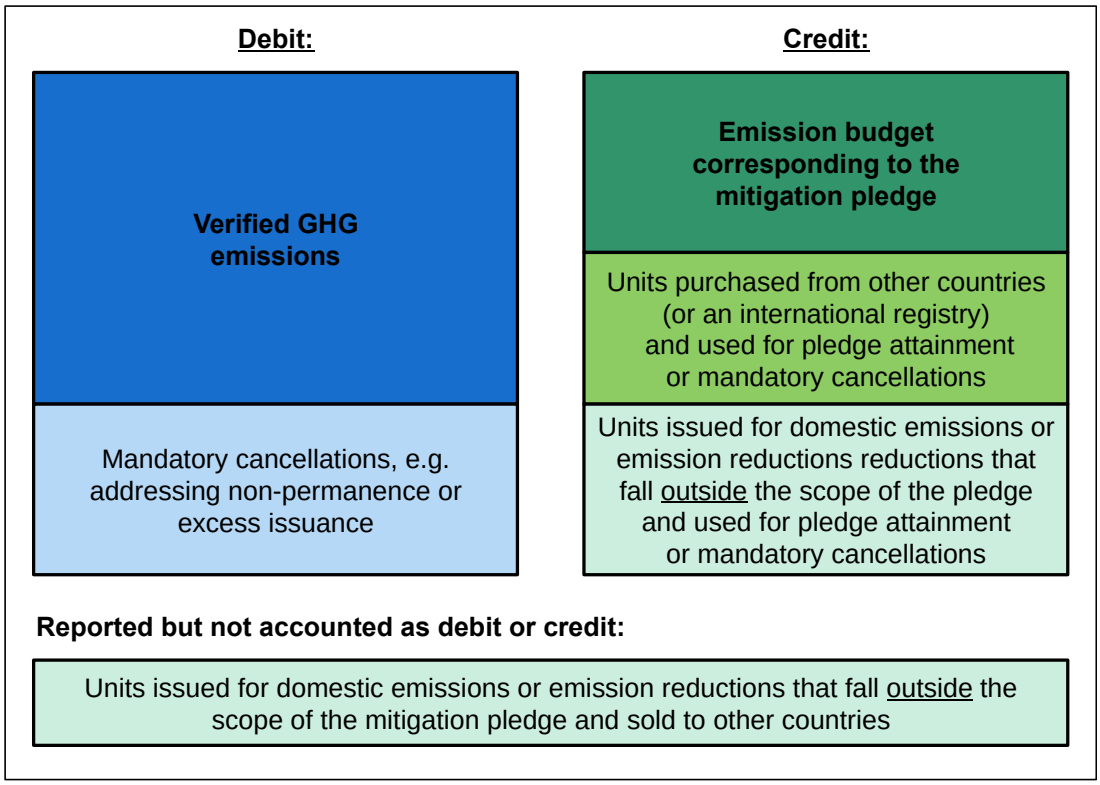
Figure 3: Accounting balance for approach A



Approach B: Restricting the issuance of units

Under this approach, countries would agree under the UNFCCC not to issue units eligible for accounting under the UNFCCC if the emissions or emission reductions fall within the scope of a country's mitigation pledge. Countries could still issue such units in the context of domestic policies, such as allowances under ETS or credits for domestic GHG offsetting schemes, as long as these units are not used by the same country or another country in accounting of UNFCCC pledges, i.e. added as a credit as in the accounting balance under UNFCCC. This ensures that the reductions are only accounted in the GHG inventory of the host country and not also claimed by another or the same country through the use of a unit.

Figure 4: Accounting balance for approach B



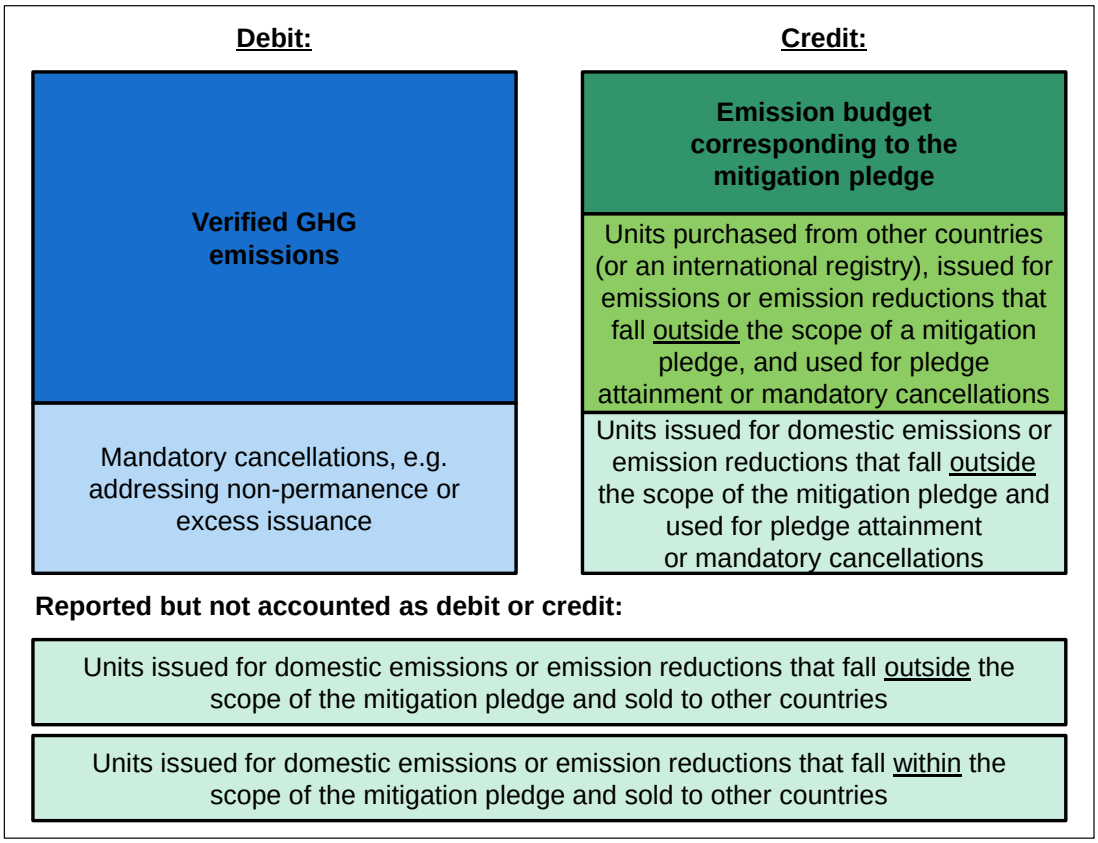
The accounting balance for this approach (see Figure 4) is similar to the one for approach A. Units purchased from other countries and used for pledge attainment are added as a credit. The only domestic emission reductions that can be transferred to other countries are those that fall outside the scope of a mitigation pledge, so they don't need to be accounted as a debit. The debit therefore only consists of verified GHG emissions and mandatory cancellations. Again, a country meets its mitigation pledge if the debit exceeds the credit in Figure 4.

Approach C: Restricting the use of units

Under this approach, units for domestic reductions can be issued and sold to other countries, whether or not they fall within the scope of a mitigation pledge. However, only units issued for emissions or emission reductions that fall *outside* the scope of a mitigation pledge can be used to attain a mitigation pledge. Units issued for emissions or emission reductions that fall *within* the scope of a mitigation pledge could still be issued and transferred, but could only be used to meet other objectives, such as voluntary cancellations. Under this approach, units issued for domestic reductions and sold to other countries are not accounted as credits or

debits, but are reported internationally (e.g. to the UNFCCC). Separate reporting is required for units that fall *within* and *outside* the scope of the mitigation pledge of the host country. Again, a country meets its mitigation pledge if the debit exceeds the credit in Figure 5.

Figure 5: Accounting balance for approach C



Discussion of the approaches

As highlighted above, all three approaches presented above can fully avoid double claiming of emission reductions. However, they only effectively prevent double claiming if both the buyer and the seller country apply the same accounting approach. If, for example, the seller uses approach C and the buyer uses approach A or B, then double counting would still occur. Hence, international agreement on a consistent approach for accounting of units is a prerequisite to avoid double claiming.

Accounting rules could, in principle, be agreed bilaterally between two countries transferring units or multilaterally at UNFCCC level. Bilateral agreements pose considerable practical challenges, however, particularly if countries transfer units to or from several other countries. If different accounting rules were applied under bilateral agreements with different countries, separate accounting balances would need to be established for units purchased from or sold to different countries. More importantly, a bilateral approach may reduce the fungibility of units and the transparency and liquidity of the market.

Another argument for agreeing on a multilateral approach at the UNFCCC level is that, in the case of countries that do not have economy-wide pledges covering all GHGs, double claiming could also occur without international transfer of units. For example, double counting would occur if a country would account domestic units towards meetings its UNFCCC pledge (i.e. adding them as a credit) that were issued for emissions or emission reductions that fall within

the scope of the country's' mitigation pledge. For this reason, international oversight may be required to check that such units are issued for reductions that actually fall *outside* the scope of the mitigation pledge.

Related issues are the use of units to meet single-year pledges or the issuance and use of units for reductions in years prior to the target period, which could, on a cumulative basis, result in a lower mitigation ambition (see Lazarus et al. 2014). In addition, it would be challenging to address in bilateral agreements those forms of double claiming where more than two countries are involved, such as in the case of international trade of electricity, fuels, feedstocks and technologies (see Section 2). Finally, international oversight may be more challenging to implement for bilateral agreements than for multilateral rules. In contrast, multilateral accounting rules could prevent double claiming ex-ante, and overseeing their implementation through international reviews of accounting balances may be easier than in the case of bilateral accounting approaches.

The three presented approaches mainly differ with regard to the treatment of units issued for domestic emissions or emissions reductions that fall *within* the scope of a mitigation pledge. Approaches A and B draw upon accounting approaches under the Kyoto Protocol and existing ETS. Under Approach A, units purchased can be added to the buyer's credit, and units sold need to be subtracted from the seller's credit. The same approach has been taken under the Kyoto Protocol for units issued for domestic reductions, such as Emission Reduction Units (ERUs) issued under JI. Approach B prevents double claiming by not allowing the issuance and use of such units for UNFCCC accounting purposes; similarly, under the Kyoto Protocol, CERs can only be issued for reductions in non-Annex I countries, which have no emission reduction commitments under the Kyoto Protocol. Approaches C avoids double claiming through accounting rules on the buyer's side. Units can only be used for voluntary purposes but not for pledge attainment. Table 6 compares key features of the different approaches, focusing on four key aspects: the fungibility of units, which means whether all unit types can be used for pledge attainment by the buyer; whether a differentiation is necessary between units issued for emissions or emission reductions that fall within and outside the scope of a country's mitigation pledge; compatibility with international linking of ETS; and whether the approach facilitates using units for purposes other than pledge attainment, such as voluntary cancellation of units to account for result-based financing or financial or technology pledges. Other aspects, such as the integrity or transparency, do not differ among the approaches and are therefore not considered in our assessment.

Table 6: Comparison of approaches for accounting of units

	Approach A: Accounting for net flows	**Approach B: Restricting the issuance of units**	**Approach C: Restricting the use of units**
Full fungibility of units	Yes	Yes	No
Necessity to establish two unit types for emissions or emission reductions within and outside the scope of mitigation pledges	Yes	No	Yes
International linking of ETS	Simple	Difficult	Difficult
Flexibility to use units for different purposes than attaining mitigation pledges	Yes, with few limitations	No	Yes

Approach A appears to be the most simple and "logical" way of accounting for units. It ensures full fungibility of units, since units issued for reductions *within* and *outside* the scope of a mitigation pledge can both be used by the buyer for attaining mitigation pledges – though it still requires distinguishing between those units. It also enables international linking of ETS: the net amount of allowances transferred between two ETS can be reflected in the UNFCCC pledges through additions to or subtractions from the credit or debit. However, the approach is a bit limiting in how units can be transferred and used for other purposes than pledge attainment, such as voluntary cancellations to account for result-based financing. To use units issued for reductions that fall *within* the scope of a pledge for such purposes, they would need to be cancelled in an international registry, such as the CDM registry, or be cancelled in accounts of the host country, but they cannot be internationally transferred without affecting the accounting balance of the seller country.

Approach B has limitations because it does limit the issuance of units that could be used for purposes other than attaining mitigation pledges, such as voluntary cancellations. It would also constitute a barrier for the international linking of ETS because the net amount of allowances transferred between ETS could not be reflected in the accounting of UNFCCC pledges. On the other hand, an advantage of this approach is that it avoids the need to differentiate between units for reductions that fall *within* and *outside* the mitigation pledge. Moreover, as under approach A, all units would be fully fungible.

Approach C provides flexibility in how units are issued, transferred and used by countries. It allows units for domestic reductions *within* and *outside* the scope of a pledge to be issued and sold, without requiring the selling country to account for the sold units. This could potentially facilitate the use of such units for purposes other than pledge attainment. However, this option creates two types of internationally recognized units. Most importantly, this option requires the users of units to distinguish between these units and thus limits the fungibility of units. In practice, this would likely imply that unit types that are not eligible for attaining mitigation pledges are excluded from ETS. Nevertheless, such units could be purchased and used through other channels, such as government programs for results-based financing.

In conclusion, approach A is the only one that enables an easy linking of ETS, because it allows reflecting the transferred allowances as credits and debits in UNFCCC pledges. All other approaches constitute significant barriers to international linking of ETS. We would therefore recommend applying approach A to the accounting of *allowances* for both 2020 pledges made under the Cancun Agreements and under a post-2020 climate agreement. With regard to accounting of *credits*, approach A would have the key advantage that the same approach is used for both allowances and credits. Moreover, approach A provides full fungibility of units, while also allowing – with few limitations – the use of units for other purposes than pledge attainment. Approach C provides greater flexibility to use credits for different purposes, with the disadvantage that it would introduce two types of units which are not fully fungible. Approach B is somewhat limiting, since the issuance of internationally eligible units for reductions that fall within the scope of a mitigation pledge is not possible.

Our analysis highlights the importance of clearly defining the scope of a mitigation pledge, determining whether units are issued for emissions or emission reductions that fall *within* or *outside* the pledge, and tagging units accordingly. This is often straightforward but becomes more complex if the scope of a mitigation pledge is more limited (e.g. only some GHGs or some sectors of the economy are covered), or if units are issued for reductions in upstream or downstream emissions, such as for international transfer of electricity, fuels, feedstocks or technologies. The four dimensions for the scope of mitigation pledges – temporal, geographic, GHGs, and sectors/emission sources – need to be considered.

5.4 Options for the design of mechanisms

The design of mechanisms is another key element to prevent double counting. In this section, we discuss options for the design of mechanisms that could address double issuance and double claiming.

Avoiding double issuance through the same entity

Double issuance can occur if one entity claims the same emission reductions under two different crediting mechanisms or within one crediting mechanism. To prevent this type of double issuance, a number of approaches could be considered:

Approach A – attestation by the entities seeking credits: The regulators of a crediting mechanism can require that any entity claiming credits under the mechanism signs an attestation that it has not and will not seek credits for the same emission reductions from another crediting mechanism or the same crediting mechanism. An attestation could be required once when a credited activity is approved or for each issuance request.

Approach B – databases on credited activities: Information on credited activities under different mechanisms is a prerequisite to identify any double issuance or to verify that double issuance is not occurring. This information would need to include at least information on the legal entities involved in the crediting, the location of the mitigation activities, and a description of those activities. The information could be kept in a global database or maintained by each crediting mechanism. In the latter case, it would be useful if the UNFCCC Secretariat or another entity kept general information on each existing crediting mechanism, including which countries, sectors and GHGs are involved.

Approach C – verification at each issuance: Third-party verifiers or the regulators of a mechanism could be required to check for each issuance request whether the same reductions have already been issued as credits in the same or another crediting scheme. This would necessitate having a database on credited activities (approach B) that is publicly available.

Approach D – oversight by the host country government: Host countries could have the responsibility to ensure that no double issuance occurs within their jurisdiction. This approach would require that host countries approve each credited activity; as part of the approval process, they could then check whether there is any overlap with earlier approved credited activities.

Approach E – transparent procedures for transfer of credited activities between mechanisms: The regulators of mechanisms can establish formal and transparent procedures for terminating crediting and transferring a credited activity to or from another mechanism. Such procedures would not directly address double counting but could help prevent it.

Some of these approaches could be combined. Approach A does not guarantee that the entities adhere to their attestations, but it can be formulated as a legally enforceable declaration which would allow the regulatory body or others to seek legal remedies in the case of non-compliance. It could therefore be a rather simple approach with low transaction costs. Approaches B and C provide the necessary transparency to identify any double issuance or to verify that no double issuance is occurring. All existing crediting mechanisms publish already such information, though it could be more easily accessible. Verification at issuance stage (approach C) would provide an independent check of any attestations or declarations by the entities claiming credits and thus provide a higher confidence that no double issuance is occurring; however it would also involve some additional transaction costs for verification or checks by the regulator.

Approach D is different in that it would make host countries responsible for ensuring that no double issuance occurs. Currently not all crediting mechanisms require host country approval, and host countries may thus have limited possibilities for oversight. Even if Parties to the UNFCCC decide that host country approval is required for any units recognized under the UNFCCC, double issuance could still occur with mechanisms that issue units outside the scope of the UNFCCC, such as in the voluntary market. The scope to address double issuance would thus be limited to the compliance market under this approach. Another challenge is that host countries would need to build the necessary capacity to maintain a relevant database and execute oversight of credited activities. Furthermore, it may require to maintain a larger number of databases (for each country) than approaches B and C.

Avoiding double issuance through different entities

Double issuance involving two different entities can be partially addressed through the approaches described above, but it also raises challenges that require additional measures.

Approach A – attestation by the entities seeking credits: Attestations by the entities seeking credits could also be expanded in their scope and include a declaration that no other entities have or will seek credits for the same emission reductions. To be able to sign such a declaration, the entities seeking the credits may need to get agreement from potential other entities that they do not claim such credits. Again, such attestations could be required once when a credited activity is approved or for each issuance request.

Approach B – written attestation from other entities: The regulator of a mechanism can require the entities seeking credits under the mechanism to acquire an attestation from potential other entities, which could claim credits for the same emission reductions, that they have not and will not seek credits for the same emission reductions. Again, such attestations could be required once when a credited activity is approved or for each issuance request.

Approach C – only one type of entity can seek credits: The regulator of a mechanism or Parties could decide that only one type of entity (e.g. the producer, the operator, or the consumer) can seek credits under the mechanism.

Approach D – limitation to activities with clear ownership of credits: The scope of crediting could be limited to activities with clear ownership of credits, e.g. those where the mitigation activity occurs in the same place as most of the emission reductions.

Approach E – verification at each issuance: As in the case of double issuance from the same entity, third-party verifiers or the regulators of a mechanism could check whether the same reductions have already been issued as credits by other entities under the same or another crediting mechanisms. In doing so, they could draw upon a database of credited activities (approach B) described in the section above.

Approach F – oversight by the host country government: As in the case of double issuance from the same entity, host country governments could have the responsibility to oversee that no double issuance is occurring due to different entities seeking credits.

Some of these approaches could pose challenges. Approach A requires entities seeking credits to make declarations on what other entities will or will not do, which could pose legal risks for those entities, especially if they have no contractual arrangements with the other entities that may claim credits, or do not even know who they are (e.g. multiple final consumers of biofuels). It could also be difficult for private entities to get an agreement from other entities that they will not seek credits, as approach B requires. Even if these entities never planned to seek any credits, they may be hesitant to make a written commitment, as they have no

incentives to give away such rights and may not be aware of the consequences. Approaches A and B could therefore pose a considerable burden and possibly prevent activities from being credited even if the actual risk of double issuance is relatively low.

Approach C addresses the risk that two entities seek credits for the same reductions by ensuring that only one type of entity can seek credits. This would avoid this form of double issuance within a mechanism; however, it does not prevent other entities from seeking credits under another mechanism. To prevent double issuance between different crediting mechanisms, an international agreement would be needed on which entities could seek credits for different project types. This could turn out to be practically and politically difficult. First, crediting mechanisms may be designed in different ways. A sectoral crediting mechanism may credit other entities than a project-based crediting mechanism. And second, Parties may have different views – depending on their national circumstances, priorities, and legislation – on which entities should benefit from credits. Thus, we do not believe approach C is viable.

Approach D can effectively prevent different entities from seeking credits for the same emission reductions. However, this approach would largely limit crediting to direct emissions and would exclude project types that mainly reduce emissions upstream or downstream, such as renewable power generation or demand-side energy efficiency measures. The approach would thus reduce the scope of the crediting mechanism. An advantage is that this approach can be applied by a single crediting mechanism, without international coordination.

Verification at each issuance (approach E) could be a pragmatic approach which does not impose a high burden or transaction cost and does not limit the scope of crediting mechanisms, as long as transparent information on credited activities is available. It would also make it possible to reflect the specific risk of the credited activity with regard to double issuance and hence to use verification means which reflect the materiality and risk at stake. Finally, oversight by the host country (approach F) could be a viable alternative or complementary approach. Noting the limitations and challenges discussed above, an advantage of this approach is that the host countries could decide which entities shall be eligible to claim credits, based on their national circumstances and priorities. They could also strategically plan which types of crediting activities should be implemented in which sectors. However, this option requires considerable capacity by host countries and could potentially delay the implementation of credited activities.

Accounting of indirect emissions

Crediting mechanisms often account for indirect upstream or downstream emissions in quantifying emission reductions. As highlighted in Sections 0 and 0 above, this can lead to double counting if the upstream or downstream emissions:

- Overlap with the scope of another mechanism that generates units; or
- Occur in a country that made a mitigation pledge.

Considering only direct emissions – and no indirect upstream or downstream emissions – may appear to be an obvious solution, but it would result in over-crediting in the case of mitigation activities for which the baseline includes direct emission sources and project or leakage emissions include indirect emission sources. For example:

- A project replaces a fossil fuel-fired boiler for heat generation with an electric heat pump. When accounting only for direct emissions, the project would claim the direct baseline emissions from the fossil fuel consumption of the boiler and not account for indirect project emissions from the generation of the electricity used by the pump.

The emission reductions would be overestimated, since the project emissions would be ignored in the calculation.

- Biodiesel production can be associated with significant upstream emissions, such as emissions from fertilizer production and application, or soil carbon emissions. These emissions can exceed the upstream emissions associated with the production of conventional diesel. If a project replaces conventional diesel by biodiesel in a bus fleet, only accounting direct baseline emissions from consumption of conventional diesel and ignoring indirect upstream emissions from the production of biodiesel production could lead to a significant overestimation of emission reductions.

Another problem is that this approach would limit the scope of crediting mechanisms considerably. Project types that cause indirect baseline emissions upstream or downstream of the mitigation activity could not claim any emission reductions. For example, renewable power projects or demand-side energy efficiency projects reducing the electricity demand would not be eligible under this approach. For this reasons, rules are required for the design of carbon market mechanisms with regard to indirect emissions that overlap with the scope of another mechanism or a mitigation pledge.

Overlap of indirect emissions with the scope a mitigation pledge

In these situations, a mitigation activity (partially) increases or reduces indirect emissions in a country, sector, or emission source that falls within the scope of a mitigation pledge. The emission source that falls within the scope of a mitigation pledge could be:

- a baseline emission source;
- a project (or leakage) emission source;
- both a baseline AND a project (or leakage) emission source.

In the case of a **baseline emission source**, the accounting of baseline emissions would lead to double claiming. If baseline emissions were accounted under the crediting mechanism, the same emission reductions would be reflected both as units from the crediting mechanism and in the GHG inventory used to meet the mitigation pledge. Several options are possible to avoid this form of double claiming: either such upstream baseline emissions should not be accounted, or a respective number of other units (e.g. AAUs) would need to be cancelled, or these emissions are issued as a different unit which includes information that it falls within the scope of a mitigation pledge. Similar approaches are implemented under existing crediting mechanisms. Under the CDM, baseline emissions cannot be claimed from sources in Annex I countries. For example, no CERs can be claimed from exporting electricity to Annex I countries.

In the case of a **project (or leakage) emission source**, double counting cannot occur. On the contrary, if the project emissions are accounted both under the crediting mechanism and in the GHG inventory of the country with a mitigation pledge, the atmosphere could see more emission reductions than are accounted. The exclusion of such indirect project (or leakage) emissions from the crediting could arguably be one option. However, under such an accounting approach, the actual mitigation effects of the crediting mechanism would not be appropriately reflected in the amount of credits issued: more credits would be issued than actual reductions occur. The country with the mitigation pledge where the indirect emissions occur would need to compensate for this "over-crediting" by reducing more emissions or purchasing more units. The incongruity of this approach becomes apparent if the country where the upstream emissions occur would also be the buyer of the credits. The country would then partially buy credits to compensate for emissions that are increased in its jurisdiction due to the mitigation activity generating the credits. Such an accounting approach

would also reduce the cost-efficiency of crediting mechanisms: issuing more credits than actual emission reductions occur can result in an inefficient allocation of global GHG abatement options and thereby increase global costs of GHG abatement. Thus, it makes sense to account for any significant indirect project or leakage project emissions, whether or not they occur in a country, sector, or emission source that falls within the scope of a mitigation pledge. We note that this approach can lead to a net mitigation benefit since, overall, in the scope of the mitigation pledge and the crediting mechanism, more emission reductions are achieved than reflected through the accounting system.

In the case that an indirect emission source is both **a baseline and project (or leakage) emission source**, the rules for baseline and project emissions sources can be adapted respectively. If the baseline emissions exceed the project (or leakage) emissions, the difference should not be accounted in calculating emission reductions. If the project (or leakage) emissions exceed the baseline emissions, the difference should be accounted in calculating emission reductions.

It is important to note that accounting for indirect emissions can in some cases pose considerable practical challenges, and pragmatic approaches are needed to estimate these emissions. For some GHG abatement activities, it can be difficult or impossible to locate where the indirect emissions actually occur. For example, a project that switches from coal to oil decreases upstream baseline emissions from coal mining and increases upstream project emissions from oil exploration and refining. As both coal and oil are globally traded commodities, the marginal effect of decreased coal and increased oil demand could affect coal mining and oil exploration in a range of different countries, and not necessarily in those countries from which the project sources its fuels.

Under the CDM, this problem has been addressed by determining the share of oil and coal production between Annex I and non-Annex I countries and determining default emission factors for upstream emissions which reflect that a proportion of the GHG emissions occur in Annex I countries and can thus not be claimed for calculating emission reductions.[19] These practical difficulties in determining where indirect emissions occur also support the approach of accounting for significant project (or leakage) upstream emissions, independent whether they originate from countries, sectors or emission sources with or without a mitigation pledge. In many instances, simple and reasonably conservative approaches can be found to ensure that emission reductions are not overestimated and baseline emissions from countries with mitigation pledges are not accounted for.

Overlap of indirect emissions with activities in the same or another mechanism

In these situations, a mitigation activity (partially) increases or reduces indirect upstream or downstream emissions that are also accounted under a mechanism that generates units (the same or a different one). The units could be credits or allowances, and the emissions could come from a baseline emission source, a project emission source or both a baseline and project (or leakage) emission source for the crediting mechanism and another mechanism that overlaps with the emission source. This gives rise to a large number of possible scenarios.

Where the indirect emissions fall within the scope of a trading mechanism, such as an ETS, which allows international transfer and use of the allowances, the situation is similar to the overlap with the scope of a mitigation pledge, and hence the same arguments hold. In this

[19] Methodological tool "Upstream leakage emissions associated with fossil fuel use", version 1.0.0. http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-15-v1.pdf.

case, project upstream or downstream emissions should be accounted and baseline upstream or downstream emissions should be excluded in calculating emission reductions.

In the case of an overlap between two crediting mechanisms (or two credited activities within one mechanism), several configurations are possible, as both baseline and project emission sources could be involved. We focus on three plausible cases:

1. ***Both mechanisms* account for the emission source as *project emission source*:** Such overlap could occur between an afforestation project and a biomass power project. The latter sources its biomass from the afforestation project's plantation. Both projects could account for the emissions from establishing the plantation (e.g. from soil preparation, irrigation). The situation is again similar to the overlap between project emissions from a crediting mechanism and the scope of a mitigation pledge. In this case, the emission reductions from the projects would be underestimated, and double counting cannot occur. One option is to have only one of the projects account for the emissions. Under the CDM, this approach has been implemented with respect to afforestation and biomass projects. Biomass power projects do not need to account emissions that are accounted by the afforestation project.[20] Accounting the emissions under both projects is another, more conservative, option. This latter option is easier to implement as it does not require assessing whether another mitigation activity, possibly registered under another crediting mechanism, accounts for the same project emissions.

2. **The crediting mechanism accounts for the emission source as project emission source and the upstream/downstream crediting mechanism accounts the emission source as both project and baseline emission source:** Such overlap occurs in the example provided in Section 2, with a project producing biofuels and a project abating N_2O from nitric acid production. The biofuels project uses nitrogen fertilizer in the production of its feedstock crops. The emissions associated with the production of the fertilizer in a nitric acid plant are accounted as upstream project emissions. At the nitric acid plant another project is implemented which reduces N_2O emissions from nitric acid production and thus accounts the same emission source as project and baseline emissions. In this case, double issuance occurs if the biofuel production project would use the actual N_2O emission factor observed at the nitric acid plant after implementation of the nitric acid project. Both projects would then account for the reduced N_2O emissions in calculating emission reductions. Double issuance is avoided if the upstream or downstream project emissions are calculated with an emission factor that reflects the emissions that would occur in the absence of the upstream crediting mechanism. As discussed above, pragmatic approaches are needed in many cases. The producer of a biofuel cannot know and track where the fertilizer used in its plantations has been produced. However, an average default emission factor for emissions from nitrogen fertilizer production could be calculated based on the typical emissions from nitric acid plants without N_2O abatement, rather than with N_2O abatement.

3. **The crediting mechanism accounts the emission source as *baseline* emissions and the upstream/downstream crediting mechanism accounts the emission source as both project and baseline emission source:** Such overlap could occur with a project which reduces the application of nitrogen fertilizer and a project abating N_2O from nitric acid production. The project reducing the application of fertilizer could potentially claim

[20] See, for example: Approved consolidated baseline and monitoring methodology ACM0006 "Consolidated methodology for electricity and heat generation from biomass", version 12.1.1, page 47

upstream baseline emissions from avoiding the production of nitric acid, thereby avoiding N_2O emissions from nitric acid production. As for the previous case, the key question is which emission factor should be used in calculating upstream emissions. In this case, the upstream baseline emission factor would need to be based on the project emissions – and not the baseline emissions – of the nitric acid project, in order to avoid over-crediting. Comparing this case with the previous case, one can conclude that in the case of overlap between crediting mechanisms different upstream emission factors may need to be used, depending on whether baseline or project upstream emissions are calculated.

Accounting of emissions within the scope of trading mechanisms

A related question is how to deal with emissions or emission reductions that fall within the scope of a trading mechanism, such as ETS or green or white certificates. Several existing crediting mechanisms do not allow claiming credits from such capped sources, except if other units from the trading mechanism are cancelled. If trading mechanisms are implemented in countries with a mitigation pledge, this issue would implicitly be addressed through the issuance of a respective unit type. However, if the trading mechanism is implemented in a sector or country without a mitigation pledge, double counting could occur between the two mechanisms. As discussed in Section 3, this form of double counting may not necessarily be addressed under the UNFCCC.

5.5 Options for consistent tracking of units

Consistent tracking of units throughout their life-cycle, including their issuance, transfer, and use, is a final element needed to address all forms of double counting. However, the type and degree of international oversight under the UNFCCC to ensure consistent tracking of units could vary:

- **National registry systems and reporting and review:** Countries could establish their own domestic, bilateral or multilateral registry systems for tracking the issuance, transfer and use of units and report on these systems and relevant unit transactions to the UNFCCC. Parties could also establish a mechanism under the UNFCCC to review reported information and address any non-compliance with UNFCCC rules.
- **National registry systems linked to an international transaction log (ITL):** Countries could establish own domestic, bilateral or multilateral registry systems and link them to an ITL that could check whether transactions are in compliance with UNFCCC rules. This approach was implemented under the Kyoto Protocol.
- **Use of a single UNFCCC registry:** Countries could also agree to establish and use a single international registry for tracking the issuance, transfer and use of units. The international registry could be maintained and operated under the UNFCCC, such as the CDM registry, and be established according to agreed UNFCCC rules. Countries would have access to the registry in order to conduct transactions.

All three options could achieve the objective of avoiding double counting, as long as sufficient information on units is available and as long as internationally agreed rules for accounting of units and the design of mechanisms are followed. Respectively, only internationally agreed unit types could be accepted for accounting towards accounting mitigation pledges or a variety of unit types, issued under different mechanisms could be accepted (Prag et al. 2011). Again, both approaches could effectively avoid double counting, as long as internationally agreed rules are followed.

This leads to the question which type of information on unit transactions should be checked internationally. Towards this end, we consider the three life-cycle stages of units:

- **Accounting of units:** The appropriate accounting of units towards attaining pledges is crucial to prevent double counting, and thus should be governed by internationally agreed rules and implemented under international oversight. Any one of the three routes described above could be followed. National registry systems could report on the accounting of units using electronic templates or tools which enable an identification of each unit used. Double use or selling of units could be detected if a specific unit, identified through a unique serial number, is used twice towards attaining a pledge. Similarly, the appropriate accounting of units could be checked by comparing information reported by the originating country and information reported by the acquiring country. Any inconsistencies could be detected *ex-post* and resolved in a review process. Under the second and third approach, double counting of emission reductions could be prevented *ex-ante*. The ITL or the UNFCCC registry could prevent transactions which would lead to double counting of emission reductions.
- **Issuance of units:** The appropriate issuance of units, in accordance with internationally agreed principles and rules for the design of mechanisms, could be checked through two routes: either through international oversight on the mechanisms that generate units or through international oversight when the units are used. International oversight on the mechanisms that generate units might be easier and more effective. This would ensure *ex-ante* that units were generated in a way that prevents double counting of emission reductions.
- **Transfer of units:** International oversight could also be provided on transfers of units. However, as long as it can be ensured through international oversight that units are issued and accounted according to internationally agreed rules, it may not be necessary to oversee the transfer of units. As highlighted above, any double use or double selling or other inappropriate transactions could in principle be identified with a review and comparison of information on the use and issuance of units. For transparency purposes, however, Parties could also establish to oversee the issuance and transfer of units, through one of the three routes described above.

Another important prerequisite for international oversight on unit issuance, unit accounting, and possibly unit transfers, is that appropriate information is attached to the units. The analysis options on accounting of units showed that it is important to identify whether a unit was issued for emissions or emission reductions within or outside the scope of a mitigation pledge. With this in mind, units should not only be tagged with regard to where the mitigation action occurs, but also where the reductions occur, i.e. in which country they occur, when they occur, and whether they fall within or outside the scope of a mitigation pledge. The example in Box 2 above showed that CERs issued under CDM currently use a country identifier stating where the mitigation action occurs, but not necessarily where the reductions occur. This shortcoming needs to be addressed; for some project types, such those that involve internationally traded electricity, units from the project may need to be apportioned to the reductions occurring in different countries.

The timing of the emission reductions should be tagged as well. Under the CDM, CERs are tagged with the commitment period of the Kyoto Protocol, and CER serial numbers are linked to the verification and monitoring period. However, monitoring periods are not limited in their length and can include several calendar years. In such cases the user of a CER would not know in which calendar year the reduction occurred. This could make it difficult to assess the

exact temporal scope of the reductions underlying a CER. This may constitute a barrier for effectively addressing double counting.

Understanding when the reductions from a unit occur is even more difficult for allowances than for credits. Allowances may be issued for a particular calendar year or compliance period, but they can often be banked between compliance periods. Any allowances banked from a period prior to a mitigation pledge into the year of a mitigation pledge – if allowed – could thus be deemed to fall outside the temporal scope of the pledge. However, any banking thereafter would need to be considered within the scope of the pledge.

International agreement should be sought on the types of information that should be attached to any units that will be recognized for accounting towards mitigation pledges. Each unit should have a globally unique serial number. It would be advisable to include relatively comprehensive information in those serial numbers, through relevant identifiers (e.g. numbers, or acronyms, such as ISO country codes). The more information is included in the serial numbers, the easier it is to ensure transparency and fungibility and to assess the accounting of units by countries. The units could also be distinguished through different unit types, such as CERs and ERUs distinguished under the Kyoto Protocol. In some instances, a single credited activity could address both emissions within and outside the scope of a mitigation pledge. In this case, two different unit types could be issued from a single credited activity.

We recommend including at least the following information in serial numbers of units:

- **Mechanism:** A unique identifier for each mechanism under which a units are generated, including information whether it is a crediting or trading mechanism.
- **Country:** The relevant country(ies) should be identified. For trading mechanisms, the unit should have an identifier for the country which issues the units and which entitles the holder of the unit to emit a tonne within its jurisdiction. For crediting mechanisms, two country identifiers may be needed: for the country where the mitigation action takes place, and, if different, for the country where the emission reduction occurred.
- **Vintage:** Relevant information on the vintage of the unit should be identified. For trading mechanisms, this should include the compliance period for which the units are issued. For example, Kyoto units have a number which identifies the commitment period for which they were issued. For crediting mechanisms, the information should preferably also include the time period in which the emission reductions occurred, i.e. the dates of the start and end of the period covering the issuance request.
- **Scope:** Information should be included whether or not the unit is issued for emissions or emission reductions that fall within the scope of a mitigation pledge. This differentiation is important for appropriate accounting of units. This information may not necessarily be visible from a country identifier, e.g. if the country has a mitigation pledge for CO_2 only and a credited activity reduce both CO_2 and non-CO_2 emissions.
- **Credited activity:** For crediting mechanisms, the relevant activity, e.g. the number of the project, should be identified.
- **Permanence:** Information should be included whether the units are subject to provisions to address potential non-permanence, which could include obligations for unit holders to replace units in the case of non-permanence. Possibly, different identifiers could be used for different approaches to address non-permanence.

In conclusion, international oversight on issuance and accounting of units are important to provide confidence that double counting of emission reductions is effectively prevented. International oversight on transfers of units adds transparency but is not necessarily needed to prevent double counting, as long as appropriate rules on accounting of units and design of mechanisms are agreed internationally and their compliance is ensured through international oversight. A key prerequisite for preventing double counting is that units can be clearly identified through globally unique serial numbers. International oversight and fungibility of units is simplified if the serial numbers of units also include comprehensive information on the mechanism, country, vintage, scope, credited activity, and permanence.

6. SUMMARY AND RECOMMENDATIONS

Avoiding double counting of emission reductions is a key UNFCCC objective, for both the mitigation pledges made under the Cancun Agreements and a post-2020 climate regime. If emission reductions are double counted, global mitigation efforts could be undermined considerably, mitigation pledges would be less comparable, and the credibility of the international climate regime would be undermined. Moreover, double counting could discourage participation in international carbon markets, and thus increase global GHG abatement costs.

Addressing double counting poses political and technical challenges. A major technical challenge is that double counting can occur in several different ways and hence requires actions at various levels to be effectively addressed. Double issuance – the issuance of two units for the same reductions – and double claiming – the accounting of the same reductions both in a GHG inventory and in units towards attaining a mitigation pledge – are the most important forms of double counting in terms of their potential for undermining emissions pledges and the integrity of emission markets. The emerging fragmented carbon market is another important technical as well as management challenge, with multiple mechanisms operating in parallel under separate governance arrangements and addressing emissions at different levels of the economy. A fragmented market can result in overlap between mechanisms or overlap with mitigation pledges.

Consistent tracking and reporting of units is regarded by many Parties and stakeholders as a crucial step in addressing double counting, and it is indeed important, but it is not enough. It is even more important to have common and robust approaches for accounting of units and mechanism design. Moreover, such rules need to be coordinated to be effective; if different countries or mechanisms apply different accounting rules, double counting may not be avoided. Altogether, this makes addressing double counting challenging and complex – but technically possible. Technically, double counting can be avoided effectively through a coherent set of rules for accounting of units, design of mechanisms, and tracking and reporting of units. We believe that international agreement on such rules is the most important prerequisite to preventing double counting.

Politically, addressing double counting is challenging, in particular in the context of the mitigation pledges made under the Cancun Agreements, for several reasons. First, Parties have different views with regard to how much international oversight is needed on mechanisms and the use of units towards attaining pledges. Those differences are blocking progress on an internationally coordinated approach to address double counting. Second, Parties disagree on whether and how double claiming of emission reductions between countries exporting and importing units should be addressed in the context of the mitigation pledges made under the Cancun Agreements. Several countries with such pledges have

expressed an intent to count domestic emission reductions toward their pledges even if they also generate units (e.g. CERs) that other countries can use towards their own mitigation pledges. Not addressing this issue could have significant impact on global mitigation efforts when developed countries increase the ambition of their 2020 pledges and buy more units from developing countries.

Addressing double counting could become less politically controversial in a post-2020 climate regime with a single and coherent architecture applicable to all Parties. If a large proportion of global GHG emissions were covered under economy-wide, multi-year mitigation pledges with a defined basket of GHGs, double counting of emission reductions within these pledges could be addressed through relatively simple rules for accounting and reporting of units. Hence, the broader the coverage of a post-2020 climate regime, the easier it becomes to address double counting. This supports striving for a broad coverage of mitigation pledges in a post-2020 agreement.

In the sections that follow, we provide recommendations on key topics discussed in this working paper, both in the context of the mitigation pledges made under the Cancun Agreements and in a post-2020 climate regime:

- When are internationally agreed provisions on double counting needed?
- How should units be accounted for?
- How should mechanisms be designed to prevent double counting?
- How should unit flows be tracked and recorded?
- What level of international oversight is needed?

In doing so, we reflect the current fragmentation of carbon markets and assume that units from different mechanisms, with potentially overlapping scope, may be recognized for mitigation pledges under both the Cancun Agreements and in a post-2020 climate regime.

6.1 When are internationally agreed provisions on double counting needed?

Double counting of emission reductions can occur in many ways and at different levels. This raises the question of which types of mitigation pledges and mechanisms should have double counting addressed under the UNFCCC, and which under other national, international or non-governmental bodies. The UNFCCC clearly has to address double counting with regard to mitigation pledges made under the UNFCCC and the use of units to meet these pledges. This includes 2020 mitigation pledges under the Cancun Agreements, commitments under the Kyoto Protocol, and pledges under a post-2020 agreement. In addition, to achieve the ultimate objective of the Convention, avoiding double counting is also important with regard to GHGs addressed under other treaties.

Double counting can occur whenever units are used to meet a pledge, i.e. when units are added to a countries' emissions budget (or subtracted from its emissions) in comparing actual emissions with the pledged amounts. Therefore, the scope of any rules established under the UNFCCC to avoid double counting should cover the use of such units. Rules would need to apply in two situations:

1. When units (whether issued under domestic or international governance) are transferred internationally between national jurisdictions and accounted by the buyer country towards meeting UNFCCC pledges;
2. When units are issued for emissions or emission reductions in a country (e.g. for sectors or gases that do not fall within the scope of a mitigation pledge) and are used by the same country towards meeting a UNFCCC pledge.

In addition, Parties could consider (voluntarily) extending UNFCCC rules for addressing double counting to other (domestic) mechanisms or encourage such mechanisms to apply the same rules, for several reasons. First, double counting of emission reductions at the domestic level could make it more difficult for countries to achieve their UNFCCC pledges. Countries implementing domestic mechanisms, such as ETS, have an interest to avoid double counting of emission reductions at the domestic level. If all mechanisms around the world apply a common set of principles or rules to avoid double counting, it may be easier for countries to use these mechanisms, e.g. by linking mechanisms under international or non-governmental governance to their domestic ETS., Moreover, private sector entities would have more transparency and certainty that units issued under a mechanism are accepted for compliance in domestic markets. Second, double counting with voluntary actions could undermine global efforts to reduce GHG emissions. If both the host country and the voluntary user account for the same emission reductions, the voluntary market actually does not provide reductions that are additional to UNFCCC pledges, but rather helps countries to attain their UNFCCC pledges or Kyoto Protocol commitments. The cancellation of units in the voluntary market should therefore be backed by appropriate accounting towards UNFCCC mitigation pledges. Internationally agreed rules to avoid double counting of with units outside the scope of UNFCCC pledges could help ensure that carbon markets are seen as a credible and effective tool to mitigate climate change. Finally, we recommend to also consider double counting between mitigation pledges and financial or technology pledges.

6.2 How should units be accounted for?

Appropriate accounting of units is crucial to prevent double claiming. This paper discussed three potential approaches that all effectively avoid double claiming, as long as all the countries involved use the same approach. Hence, international agreement on a consistent approach for accounting of units is a prerequisite to avoid double claiming.

Among the three approaches discussed in this study, accounting for net flows appears the simplest and most logical (see Section 5.3). Under this approach, the net amount of units acquired from other countries is added to the acquiring country's emissions budget (or subtracted from its reported emissions). Units issued for emissions or emission reductions within the scope of a mitigation pledge and transferred to other countries are deducted from the originating countries' emissions budgets (or added to their reported emissions). Units issued for emissions or emission reductions that fall outside the scope of a mitigation pledge do not need to be accounted by the originating country but should be reported to the UNFCCC (see Figure 3). This approach enables the international linking of ETS, since unit transfers between two ETS are appropriately reflected in accounting for UNFCCC pledges. It also ensures full fungibility of units. We recommend this approach for a post-2020 climate regime.

Up to 2020, accounting of units is politically difficult to address, as highlighted above. Units issued for emission reductions in countries with the mitigation pledges made under the Cancun Agreements may be double counted by both the exporting and the importing country. However, context is important with regard to these pledges. Developing countries argue that their pledges were made assuming international support from developed countries, including through the use of mechanisms with unit transfer. It is also important to note that many developing countries have made a pledge under the Convention for the first time, and have thus made similar types of commitments as some developed countries. In this regard, one could argue that deducting sold units from the emissions budget (or adding sold units to its reported emissions) constitutes a burden for developing countries. On the other hand, not addressing double claiming would result in higher emissions than the pledged amounts and

thus undermine efforts for mitigation. Not addressing double claiming could also put the use of market mechanisms generally in question.

For the period up to 2020, restricting the use of units for attaining mitigation pledges (see Section 5.3 and Figure 5) could be an alternative way forward for the accounting of *credits*, while accounting for net flows (approach A) could be applied to the accounting of *allowances*. Under approach C, only units that fall *outside* the scope of a mitigation pledge can be used by the buyer countries to attain a mitigation pledge. Units that fall *within* the scope of a mitigation pledge could still be issued and transferred, but could only be used to meet other objectives, such as voluntary cancellations for the purpose of results-based financing. Under approach C, developed and developing countries could bilaterally agree to a shared approach for accounting of units. For example, developed countries could only use half of the purchased units for compliance (and transfer the other half to a cancellation account), while developing countries would account for the half of units that are used for compliance when accounting the attainment of their 2020 pledge. This option would avoid double counting, partially support developing countries in achieving their 2020 pledges, and may still reduce the costs for developed countries in meeting their pledges.

In the absence of any international agreement to address double claiming, caution may be needed in considering the use of units for attaining pledges, including for commitments under the Kyoto Protocol. In such a situation, we recommend limiting the use of units with a vintage of 2020 or beyond to voluntary cancellations, e.g. for the purpose of results-based financing. The purchase of units, without using them for compliance, not only avoids double counting of emission reductions, but also effectively supports developing countries in achieving their mitigation pledges under the Cancun Agreements.

6.3 How should mechanisms be designed to prevent double counting?

Appropriate design of mechanisms is important mainly to avoid double issuance of units, but it is also needed to avoid double claiming. To effectively avoid double counting, Parties could internationally agree on generic principles or rules for the design of mechanisms. Such principles and rules could be negotiated under the FVA or in the ADP for a post-2020 climate regime. These principles and rules should apply to any mechanism that intends to generate units that can be used to attain UNFCCC pledges. Parties could further encourage that the principles and rules are also applied by other mechanisms that generate units for domestic use or in the voluntary market. Applying common principles and rules to avoid double counting in all mechanisms – within and outside the scope of accounting under the UNFCCC – could build trust that mechanisms deliver real, additional, and verified mitigation outcomes. Once principles for the design of mechanisms are agreed internationally, the operators of the mechanisms could implement them. Procedures for international oversight, such as an initial and regular subsequent reviews, could ensure that the operators of the mechanisms adhere to the internationally agreed principles (discussed more below).

Transparent information on mechanisms and credited activities is one important aspect of principles and rules governing mechanisms. Such information is key in order to identify possibilities for double counting and to verify that double counting is not occurring. We recommend that general information be reported on each mechanism, and, in the case of crediting mechanisms, on each credited activities:

- **Information platform on mechanisms:** We recommend establishing a centralized information platform under the UNFCCC which includes general information on each mechanism, such as the sectors, countries, emission sources, or project types and

GHGs addressed by the mechanism. A simple review process could be established to verify the submitted information.

- **Information on credited activities:** Each crediting mechanism should maintain a database on credited activities. The database should be publicly accessible and maintain at least generic information to clearly identify the type of activities and emission sources credited, including the location of the mitigation activities, the legal entities conducting the mitigation activities and claiming the credits, a description of the type of mitigation activity, and the baseline, project and leakage emission sources and GHGs addressed, and information on monitoring, verification and units issued, including when the emission reductions occurred. We recommend that Parties agree on the type of information that needs to be published for each credited activity. Some type of review mechanisms could be established to ensure that crediting mechanisms publish the relevant information and that the information is accurate. Alternatively, a global database including information from all crediting mechanisms could be established. Both approaches could provide the necessary transparency. An international database could facilitate access to information but may not be necessary as long as each crediting mechanism publishes the relevant information.

Principles and rules at UNFCCC level should also be established to avoid that one or more entities seek credits for the same emission reductions under the same or different mechanisms. Addressing such double counting is more complex for crediting mechanisms than for trading mechanisms. To effectively prevent double counting, we recommend combining some of the approaches discussed above, most of which are only applicable to crediting mechanisms:

- **Attestation by the entities seeking credits:** Crediting mechanisms should require that any entity seeking credits sign an attestation declaring that it has not and will not seek credits for the same emission reductions from another crediting mechanism or the same crediting mechanism. The attestation should be required once when a credited activity is approved to ensure that the project owner entitlements to the reductions and for each issuance request to ensure that the same reductions are not credited under the same or another crediting mechanism.
- **Host country approval:** Host countries should have control for what type of activities units are issued for reductions within their jurisdiction. This could be achieved if they need to issue letters of approval for any credited activities or international unit transfer. This enables them to prevent double issuance and double claiming within their jurisdiction. It also allows them to plan which type of mechanism will be used in which sector in the future (e.g. project based credited activities, sector based credited activities, ETS). Host country approval should further be sought from all countries in which any baseline emissions are claimed; crediting mechanisms should not claim indirect baseline emissions from any country for which no letter of approval to such claims has been issued. If such approval is not granted, the crediting mechanism could not account for any indirect baseline emissions that occur in other countries.
- **Transparent procedures for transfer of credited activities between mechanisms:** Crediting mechanisms should establish formal and transparent procedures to terminate crediting. If they allow the transfer a credited activity to or from another crediting mechanism, formal and transparent procedures should be established for

such transfers, ensuring that there is no overlap between the two crediting mechanisms involved.

- **Confirmation of no double counting at each issuance:** The regulators of the crediting mechanism should check for each issuance request whether the same reductions have already been issued as credits in another crediting scheme or under the same crediting scheme. The scope of the check could depend on the material risk of double counting, implementing a risk based approach. For credited activities where different entities could seek credits, the check should not be limited to the location of the mitigation activity and the entity seeking the credits. Given that new mechanisms can emerge over time, it is important that this check is done for each issuance request.

Crediting mechanisms often account for indirect upstream and downstream emissions. Accounting of project or leakage upstream or downstream emissions can be necessary to ensure that emission reductions are not overestimated. Accounting of baseline upstream or downstream emissions broadens the scope of the crediting mechanism to measures where the emission reductions occur in a different place than where the mitigation activity takes place, such as renewable power generation or demand-side energy efficiency measures. However, inappropriate accounting of upstream or downstream emissions can lead to double issuance or double claiming if the emissions occur in a country, sector or emissions source that falls within the scope of a mitigation pledge or if they overlap with the scope of another mechanism that generates units. Principles and rules at UNFCCC level to address double counting should therefore also address the accounting of upstream and downstream emissions.

In the case that upstream or downstream emissions **overlap with the scope of mitigation pledges (or trading mechanisms)**, the following principles can avoid double issuance, double claiming or over-crediting:

- Upstream or downstream **baseline emissions** that occur in a country, sector, or emission source that fall within the scope of a mitigation pledge (or trading mechanism) should not be accounted in the calculation of emission reductions (or issued as a different unit which includes information that it falls within the scope of a mitigation pledge);
- Upstream or downstream **project (or leakage) emissions** that fall within the scope of a mitigation pledge (or trading mechanism), should generally be accounted in the calculation of emission reductions;
- In the case that an upstream or downstream emission source is **both a baseline and project (or leakage) emission source** that falls within the scope of a mitigation pledge (or trading mechanism), the same principles can be applied:
    - If the baseline emissions exceed the project (or leakage) emissions, the difference should not be accounted in calculating emission reductions (or issued as a different unit which includes information that it falls within the scope of a mitigation pledge);
    - If the project (or leakage) emissions exceed the baseline emissions, the difference should be accounted in calculating emission reductions.

In the case of an **overlap between two crediting mechanisms (or two credited activities within one mechanism)**, the following two principles are particularly important to avoid double issuance or over-crediting:

- In the case of upstream or downstream **baseline emissions**, the emission factor should reflect the actual emissions occurring with any credited activity implemented upstream or downstream.
- In the case of upstream or downstream **project (or leakage) emissions**, the emission factor should reflect the emissions that would occur in the absence of any credited activity implemented upstream or downstream.

In many cases, pragmatic approaches are needed to implement these principles for accounting upstream and downstream emissions. In some cases it is not known where upstream or downstream emissions occur, and hence whether they fall within the scope of mitigation pledges or other credited activities. Default emission factors, derived in a representative manner reflecting these principles, can address double counting and over-crediting in a reasonable manner.

6.4 How should unit flows be tracked?

Consistent tracking of unit flows is often regarded as a key means to address double counting of emission reductions. In our assessment, transparent information and international oversight on the issuance and accounting of units is key to effectively prevent double counting. Transparent information on issuance and accounting of units allows the detection of any double use of units or any inconsistencies in unit information from the originating and acquiring country *ex-post*. Hence, information and international oversight on transfers of units adds transparency but is not necessarily needed to prevent double counting. However, it could prevent the occurrence of double counting *ex-ante* and thus be a more cautious approach.

An important prerequisite for international oversight on unit issuance, unit accounting, and possibly unit transfers, is that appropriate information is attached to the units. We recommend agreeing internationally on the type of information that should be attached to any units that will be recognized for accounting towards mitigation pledges. Each unit should have a globally unique serial number in order to unambiguously distinguish units. We recommend including relatively comprehensive information in the serial numbers of units through identifiers. The more comprehensive information is included, the easier it becomes to ensure transparency and fungibility and to rule out any double counting of emission reductions. We recommend including at least information on the mechanism, country, vintage, scope, credited activity, and permanence.

6.5 What level of international oversight is needed?

The level of international oversight on the use of units from mechanisms is one of the politically controversial issues in negotiations under the FVA. For the purpose of avoiding double counting, it is important that principles and rules for the issuance, transfer and use of units are agreed on an international levels. Without international coordination it would be difficult to effectively prevent double counting. However, mechanisms and registries could be operated under national, bilateral or non-governmental governance, as long as reporting and review procedures ensure that internationally agreed principles and rules are followed.

The key areas which require international agreement are:

- Rules for the accounting of units towards attaining pledges;
- Principles for the design of mechanisms, including what type of information should be published, rules to prevent that entities seek credits for the same emission reductions, and rules on accounting of upstream and downstream emissions;

- Protocols for globally unique serial numbers of units, including which type of information should be included serial numbers;
- Procedures for reporting, review, and resolution of any non-compliance.

The level of international oversight could depend on the confidence that Parties would want to have that internationally agreed principles and rules are followed. The highest confidence may be provided if mechanisms and registries or ITLs are operated under the governance of UNFCCC, such as the CDM or the ITL under the Kyoto Protocol. In this case, Parties would directly oversee the implementation and could ensure compliance with internationally agreed principles and rules.

For any mechanisms that are not operated under the UNFCCC, we recommend conducting an initial review which establishes the eligibility for issuing units that can be used to attain pledges under UNFCCC. The review could verify that the mechanism has established standards and procedures that comply with internationally agreed principles and rules. The continued compliance could then be assessed through regular subsequent reviews. The supervision of mechanisms under third party governance could be undertaken by a body established under UNFCCC. This body could put incentives and sanctions into place to ensure compliance by mechanisms with internationally agreed principles.

With regard to the transfer of units, we see less need for rigorous international oversight, as long as Parties agree on common rules for attaching all relevant information to units. As highlighted above, any double counting could be detected if the issuance and the accounting of units is under international oversight. Moreover, registry system operators have own incentives to ensure an effective and safe functioning of their registry systems. In practice, several registry systems could also be operated in parallel, e.g. one registry for each mechanism. Units from different registry systems could then be used in the accounting of units towards attaining mitigation pledges.

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