Ensuring the environmental integrity of market mechanisms under the Paris Agreement

Market mechanisms that enable the international transfer of greenhouse gas emission permits or emission reduction credits have been part of the international climate regime for two decades. They aim to reduce the cost of achieving mitigation goals by providing flexibility in how and where emissions are reduced.

The Kyoto Protocol established three such mechanisms: the Clean Development Mechanism (CDM), which enables the trading of emission reduction credits from projects hosted by developing countries; Joint Implementation (JI), which does the same with projects hosted in developed countries with mitigation targets; and international emissions trading (IET), which allows developed countries with mitigation targets to trade permits or credits with one another.

The extent to which these programmes have achieved their stated goals has been widely questioned, particularly with regard to environmental integrity.1 As the Paris Agreement nears its entry into force, it is vital to draw on lessons from those experiences to ensure that the market mechanisms established in Paris work as intended.

The Paris Agreement addresses international market mechanisms in Article 6, which allows countries to use such mechanisms to meet their nationally determined contributions (NDCs). International rules governing Article 6 are now being negotiated under the United Nations Framework Convention on Climate Change (UNFCCC). How these rules evolve could have considerable impact on the environmental integrity of market mechanisms under the Paris Agreement. This policy brief identifies key issues and explores options for safeguarding the environmental integrity of market mechanisms under the Paris Agreement, drawing on lessons from the CDM, JI and IET.

What do we mean by environmental integrity?

The term “environmental integrity” is used several times in the Paris Agreement, but is not yet defined. In the context of international market mechanisms, what we mean by environmental integrity is that the transfer of units does not result in higher global emissions than if the NDCs had been achieved only through domestic action.2 Environment integrity is central to both the effectiveness and credibility of market mechanisms.

Four factors are critical for ensuring the environmental integrity of international market mechanisms: the ambition of NDCs; incentives for future mitigation action; the environmental integrity of units; and robust accounting of unit transfers. In the sections that follow, we discuss each factor and explore options for international rules.

Key findings

- Article 6 of the Paris Agreement includes provisions for international carbon market mechanisms, allowing countries to use international units to meet their nationally determined contributions (NDCs) and establishing a new crediting mechanism under UNFCCC authority.
- Ambitious economy-wide mitigation targets are central to ensuring that international emissions trading supports the goals of the Agreement, as they provide strong incentives for countries to ensure the environmental integrity of units they transfer to others. Targets that are weak or of limited scope, in contrast, could undermine the objectives of Article 6.
- Conversely, absent adequate precautions, participation in international market mechanisms could dissuade policy-makers from pursuing ambitious and comprehensive mitigation targets.
- Robust accounting for international unit transfers is crucial and will require not only avoiding double counting, but also appropriately accounting for the vintage of emission reductions, oversight on market mechanisms, and transparent tracking of the issuance, transfer and use of units.

Market mechanisms under the Paris Agreement

Article 6 establishes two approaches to international market mechanisms:

- Article 6.2 refers to countries engaging on a voluntary basis in cooperative approaches to use “internationally transferred mitigation outcomes” to fulfil their NDCs. This language is commonly understood to allow accounting for international unit transfers from mechanisms established and operated by governments or non-governmental or private-sector organizations. This could include, for instance, international linking of emissions trading systems (ETSs),
By contrast, if a country’s NDC target, by either further reducing emissions or purchasing compensation for the transfer in order to still achieve its mitigation action to be additional, real, measurable, long-term, and verified by designated operational entities. The mechanism goes beyond the CDM, however, by aiming to “deliver an overall mitigation in global emissions”.

Ambition of NDCs
Countries with ambitious economy-wide mitigation targets have an incentive to ensure the environmental integrity of market mechanisms. If a country transfers units that lack environmental integrity to another country, it would have to compensate for the transfer in order to still achieve its mitigation target, by either further reducing emissions or purchasing international units. By contrast, if a country’s NDC target is above business-as-usual (BAU) emissions, it could sell units that lack environmental integrity without infringing its ability to achieve its target, so there is no incentive to ensure environmental integrity.

Under the Kyoto Protocol, transfers of assigned amount units (AAUs) and emission reduction units (ERUs) from JI came mainly from countries with mitigation targets above their BAU emissions. The vast majority of these units were assessed to have low environmental integrity. Given that the ambition of NDCs varies greatly, similar problems could arise under the Paris Agreement if countries with unambitious NDCs transfer units to other countries.

Incentives for future mitigation action
The Paris Agreement requires that international market mechanisms “allow for higher ambition”. Market mechanisms could enhance ambition in several ways. First of all, because they reduce the cost of mitigation, they could enable countries to adopt more ambitious targets. Yet in the negotiations of the Kyoto Protocol, the inclusion of market mechanisms did not lead Annex I countries to make more ambitious emission reduction commitments.

Second, implementing mitigation projects under crediting mechanisms could help increase knowledge and awareness of climate issues, which might lead to enhanced mitigation efforts in the future. Market mechanisms could also accelerate technology diffusion in seller countries, possibly providing spill-over effects.

Yet participation in international market mechanisms can also create disincentives to pursue mitigation action. Countries could have incentives to set mitigation targets at unambitious levels, or to define the scope of targets narrowly, in order to accrue more benefits from selling units internationally. Similarly, international linking of ETSs could create an incentive for each system to make smaller cap reductions over time, since this would reduce the amount of units imported or increase the amount exported. And under crediting mechanisms, seller countries could have perverse incentives not to adopt mitigation policies, because they might lower the potential for generating and exporting credits.

This poses a dilemma: If crediting mechanisms require project developers to consider mitigation policies and regulations in the demonstration of additionality (see below), they may discourage policy-makers from adopting such policies. If they allow project developers to ignore mitigation policies and regulations, they credit activities that are not additional, because they would be implemented anyway due to the policies and regulations. Crediting mechanisms could also create perverse incentives for entities that plan to develop offset projects to pursue a more GHG-intensive course of action, so the baseline from which emission reductions are credited is higher.

Environmental integrity of units
The environmental integrity of units is ensured if the issuance and transfer of a unit (representing a 1 tonne CO₂e emission reduction) actually generates a GHG emission reduction in the originating country of not less than 1 tonne CO₂e. The factors that affect the environmental integrity of units depend on the type of mechanism.

Under crediting mechanisms, the environmental integrity of units is ensured if the mitigation action is additional – that is, if it would not occur in the absence of the incentives from the crediting mechanism – and if the emission reductions are not overestimated. However, crediting programmes face considerable challenges and limitations in ensuring environmental integrity. Information asymmetry between project developers and regulators and uncertainty of assumptions on future developments, such as international fuel prices, are major challenges for both assessing additionality and quantifying mitigation outcomes.

Some countries have proposed that Article 6.4 should allow crediting at the sectoral level, as well as for the implementation of policies. Yet demonstrating the additionality of policies is very difficult and uncertain. Policies are adopted for multiple...
reasons, including political factors, and may serve multiple purposes along with mitigation, such as to enhance energy security or public services, to realize savings from improved energy efficiency, or to reduce air pollution.

Another challenge inherent to the concept of crediting is that it subsidizes mitigation action rather than making the polluter pay. The latter can lead to a systematic overestimation of emission reductions, even if projects were fully additional and the direct GHG emissions impact of a project was quantified appropriately.10

In addition, because crediting mechanisms often favour mitigation actions that are cost-effective in the short and medium term, they could neglect mitigation actions that are costlier but foster transformational change and avoid lock-in of more carbon-intensive technologies. For example, crediting landfill gas capture could provide incentives to continue pursuing landfilling, while other waste management practices, such as composting or recycling, would lead to lower GHG emissions.

Under ETSs, the environmental integrity of units mainly depends on whether the ETS cap is set below the emissions level that would occur in the absence of the trading system. Other design features, such as price collars, unit reserves, and provisions for banking of units, also affect the environmental integrity – mainly by altering the cap. Weak caps have left several ETSs with an oversupply of units. If an ETS with a strong cap is linked to one that is overallocated, linking would reduce the overall emissions abatement from the two systems.

The Paris Agreement could also enable bilateral government-to-government transfers, without using a crediting mechanism or linking two ETSs. For example, under the Kyoto Protocol, countries engaged in Green Investment Schemes where the revenues from international transfers of AAUs were invested in “green” activities, designed to assist climate change mitigation. Such transfers could pose considerable risks because they may not necessarily lead to emission reductions, depending on their specific rules and context.

Robust accounting of unit transfers
The Paris Agreement requires “robust accounting” of internationally transferred units. The diversity of NDCs poses considerable challenges in this regard. A key prerequisite for the robust accounting of unit transfers is that NDCs are quantified and that progress towards NDCs is measured. Accounting for the vintage of emission reductions is another important challenge. Many countries have submitted (I)NDCs with mitigation targets for a single year only. International transfers under single-year targets could lead to higher cumulative emissions relative to domestic mitigation only or transfers between countries with multi-year targets. This would occur, for instance, if a country with a mitigation target for 2030 bought international units only for that year to fulfil its target, whereas a country with a multi-year target for 2021–2030 would need to purchase units (or reduce emissions) for each year of the period.11

The Paris Agreement also requires that double counting be avoided.12 Double counting of emission reductions occurs when a single GHG emission reduction is counted more than once towards achieving NDCs. If emission reductions are double counted, actual global GHG emissions could be higher than the sum of what individual countries report. As a result, countries could appear to meet their NDCs, while total emissions exceed these levels.13

Double counting of emission reductions can occur in three ways:14

Double issuance occurs if more than one unit is issued for the same emissions or emission reductions.

Double claiming occurs if the same emission reductions are counted twice towards fulfilling mitigation pledges: by the country where the reductions occur, through reporting of its reduced GHG emissions, and by the country using the units issued for these reductions towards meeting its NDC.

Double use occurs if the same issued unit is used twice to achieve a NDC.

Addressing double counting requires action at three levels: appropriate design of market mechanisms; accounting rules for international unit transfers, in particular appropriate implementation of “corresponding adjustments” to reported emissions or removals (as required under paragraph 36 of the Paris decision); and a system to track the issuance, transfer and use of units.

Endnotes
1 See, for example:


2 For simplicity, we refer to all types of international transfers, including “internationally transferred mitigation outcomes” under Article 6.2 and “emission reductions” under Article 6.4, as “units”, and we assume that units are all expressed as tonnes of CO₂ equivalent (tCO₂e).
Policy recommendations

- To avoid perverse incentives for countries not to progress towards more ambitious NDCs, as envisaged under Article 4.3 of the Paris Agreement, and to provide incentives for countries to ensure environmental integrity of international market mechanisms, we recommend that only countries with targets that are truly below BAU emissions be able to participate in international market mechanisms under Article 6.2. This could be achieved through appropriate eligibility criteria or limits on the amount of units that are transferrable under Article 6.2 of the Paris Agreement.

- To ensure robust accounting, guidance under Article 6.2 should require countries wishing to participate in market mechanisms to convert their NDCs into absolute multi-year emission trajectories.

- To avoid double claiming, appropriate implementation of the “corresponding adjustments”, referred to in paragraph 36 of the Paris decision, is critical. They could be implemented in such a way that countries exporting units add them to their reported GHG emissions and Parties importing units subtract them. The diversity of NDCs could pose considerable challenges for avoiding double claiming.

- To avoid double issuance, guidance should be provided on the appropriate design and oversight of market mechanisms and programmes – for instance, provisions that entities seeking credits must sign declarations that they do not seek credits for the same reductions elsewhere.

- To avoid double use, an international system should be established to transparently track the issuance, transfer and use of units.

3 This assumes that robust accounting will be applied and that countries will achieve their targets. Under robust accounting, each emission reduction can only be counted once (see below). A detailed discussion of the implications of unit transfers is available in Kollmuss et al (2015), Has Joint Implementation Reduced GHG Emissions?

4 Kollmuss et al. (2015). Has Joint Implementation Reduced GHG Emissions?

5 See, for example, country evaluations by the Climate Action Tracker Project (http://www.climateactiontracker.org) and the (I)NDC fact sheets of the Australian-German Climate and Energy College (http://www.climate-energy-college.net/ndc-factsheets).


12 This principle is explicitly spelled out for international transfers under Article 6.2 and NDCs under Article 4.13, and implicitly enshrined in Article 6.5, which is applicable to the Article 6.4 mechanism.


Schneider et al. (2015). Addressing the risk of double counting emission reductions under the UNFCCC. Prag et al. (2013). Made to Measure.

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