

The carbon buyers' club: international emissions trading beyond Paris

The background image shows two hands against a black background. The left hand is holding a crumpled, blue plastic bag, symbolizing waste or carbon emissions. The right hand is holding a stack of Euro banknotes, symbolizing money or trade. The text is overlaid on this image.

Georg Zachmann proposes that the European Union should engage with other nations to determine a set of rules that can serve as a gold standard for emissions trading anywhere in the world

The issue

Mitigating greenhouse gas emissions is more difficult in some countries than in others. International emissions trading can help to reduce the overall cost of mitigation and ensure that companies in different countries face the same carbon price. Lower costs and tackling competitiveness concerns can enable higher levels of climate ambition. The Paris Agreement explicitly provides for international emissions trading, but the rules governing trading still need to be determined.

In the absence of strict rules, international emissions trading might become a loophole leading to reduced climate ambition. And because of its consensus requirements, the United Nations process is unlikely to lead to comprehensive rules. To fill this gap, the European Union should engage with other nations to determine a set of rules that can serve as a gold standard for emissions trading anywhere in the world.

Policy challenge

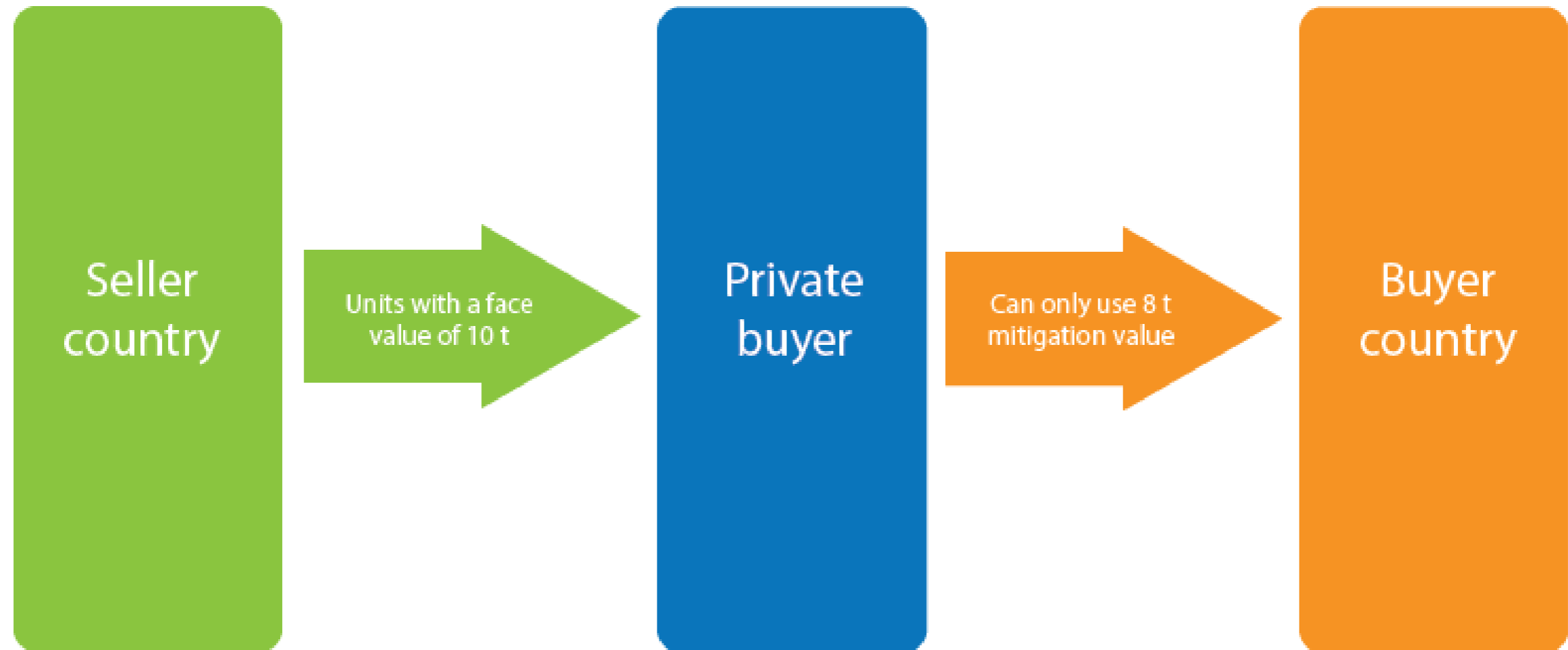
The effort to define rules for international emissions trading faces the strong desire of nation states to develop their own climate policies, which collides with the need for tradable units in one country to be equivalent to tradable units in another country. To overcome this dilemma we propose a club of carbon-buying countries that would regulate only imported mitigation outcomes.

We propose that private parties would be able, if permitted by the participating governments, to transfer any type of privately tradable emissions reduction unit across borders. But they would also be liable if the foreign units do not represent sufficient mitigation in the selling county. To bridge the period before final settlement, private parties would be able to borrow domestic compliance units, based on collateralising a certain amount of foreign units.

The 2015 Paris agreement marked a shift in the international climate policy architecture. While the Kyoto Protocol established binding targets for a number of countries, the Paris Agreement allows countries to commit to self-set

Buying emissions mitigation units: buyer is responsible for quality

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Source: Breugel.

Note: t = tons of carbon dioxide equivalent

targets and policies to limit greenhouse gas emissions. This has resulted in fragmentation¹. The European Union in its Nationally Determined Contribution (NDC), for example, committed to reduce greenhouse gas emissions by 40 percent by 2030 compared to 1990, while the United States intends by 2025 to reduce emissions by 26-28 percent below their 2005 level.

In contrast, China does not directly commit to a fixed limit, but has four indirect targets: (1) peaking of emissions by 2030; (2) a 60 percent reduction in emissions per unit of GDP compared to 2005; (3) reducing the share of fossil fuels in primary energy consumption to 80 percent; and (4) increasing the forest stock compared to 2005.

Because of this fragmented approach, a company in one country might face very different emissions-related costs to a similar company in another country. Some very expensive emissions reductions will be pursued, while much cheaper options in other sectors/countries remain unused. This would be economically inefficient, and might also

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weaken compliance when policymakers realise that their domestic industries face significantly higher emissions costs than foreign competitors.

In principle, making emissions reductions tradable between countries should ensure that the cheapest mitigation options are pursued first, irrespective of where they are found. This would reduce the global mitigation cost and result in a harmonisation of company-level mitigation costs, which in turn could reduce the fear of national competitiveness loss resulting from decarbonisation.

Lower mitigation costs (Box 1) through the international trading of emissions mitigation outcomes would also increase the transparency of national abatement policies and could stimulate the sharing of good practice. In addition, countries – typically developing countries – that can generate cash flows from selling mitigation outcomes might feel more bound by the Paris Agreement.

And those countries that can cut their abatement costs by buying foreign mitigation outcomes might be more willing to increase their commitments. Furthermore, the option to trade in mitigation outcomes makes it more credible that countries will meet their commitments, even if external shocks increase some countries' emissions².

International emissions trading is explicitly permitted by Article 6 of the Paris Agreement. The corresponding provisions are much more flexible than under the Kyoto Protocol. While a set of so-called 'flexible mechanisms' was detailed in the Kyoto Protocol, governments will be relatively free to design new mechanisms under the Paris Agreement as long as they follow some general principles (eg. accounting guidance to avoid double counting)³. This flexibility given by the Paris Agreement calls for a new way of structuring emissions trading, in which countries can offer low-cost mitigation outcomes to willing buyers. The European Union could take the lead.

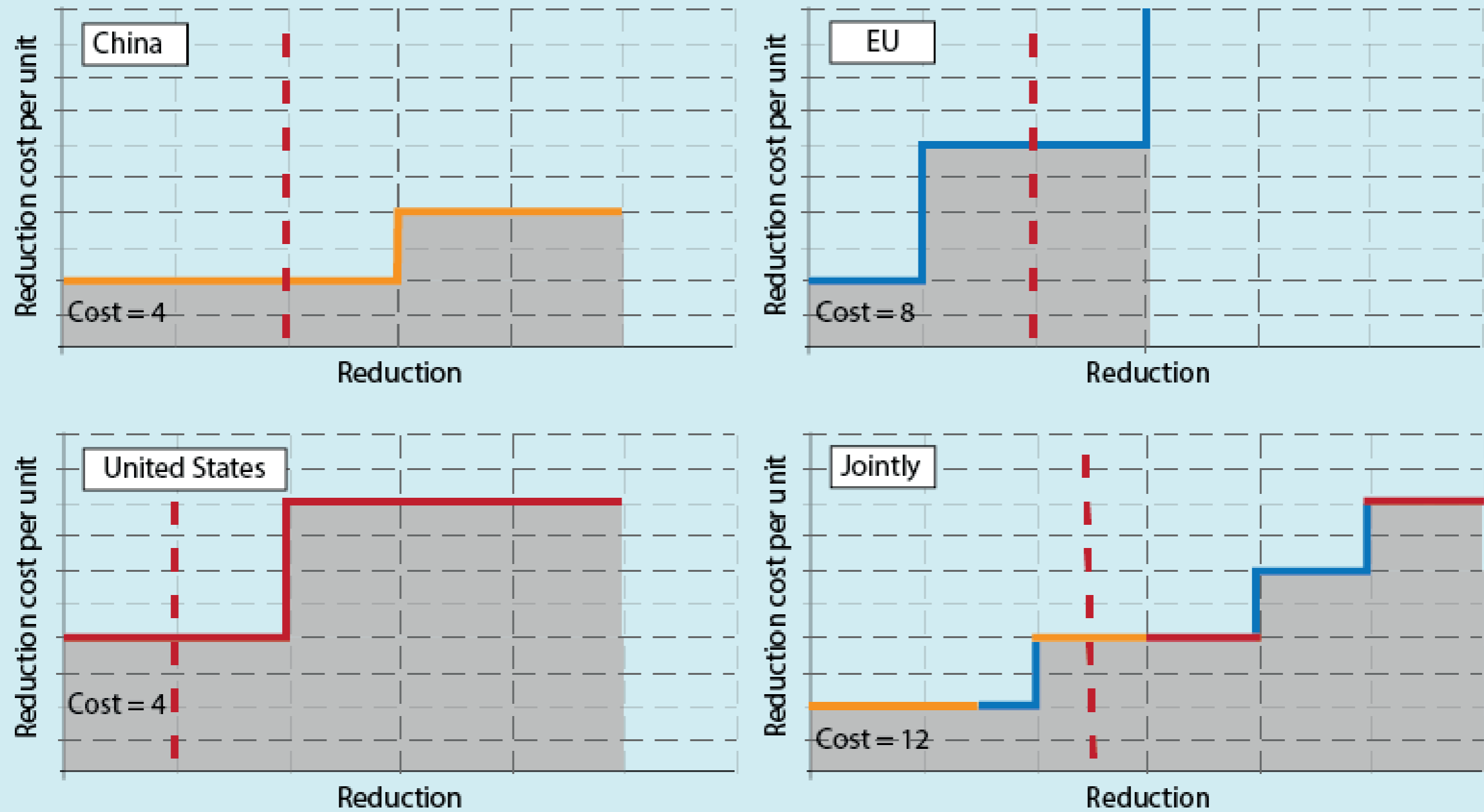
Box 1. The potential benefits of trading mitigation outcomes

Different countries face different costs to reduce emissions. Some countries can reduce emissions substantially by using energy more efficiently at very low additional cost. Other countries might be already more efficient and hence their cheapest option is to switch from coal to gas. To reduce emissions further, countries will have to start to replace fossil fuels in electricity generation, heating and transport. The profile of how much a country can reduce emissions at a certain cost is its so-called 'marginal abatement cost curve.' From countries' abatement cost curves and their emissions reduction commitments (the red lines in Figure 1), the minimum cost to achieve these commitments can be calculated. For example, in Figure 1, the EU would reduce its first emissions unit at a cost of 2 and the second at a cost of 6, for a total abatement cost of 8.

If the countries in Figure 1 decided to reduce emissions jointly, they would have to reduce total emissions by the sum of their commitments (say, 5 units). It would make sense that emissions are reduced first where those reductions are cheapest. As some expensive mitigation (such as the EU reducing one unit of emissions at a cost of 6) would no longer be necessary to meet the reduction target, the total cost of joint action (12) is much lower than the sum of the cost when each country acts individually (16).

The potential benefits from trading mitigation outcomes can be calculated based on the national commitments and the estimated abatement cost curves for the three regions in our example (the EU, China and the US). For the national commitments we used a quantification of the EU, Chinese and US NDCs by climateactiontracker (2016)⁵. For the abatement cost curves, very different estimates have been proposed. Accordingly, the estimated gains from trade vary widely when using the McKinsey cost curves (11 percent saving from emission trading compared to meeting the NDCs domestically), the curves employed by the 22nd Stanford Energy Modelling Forum (21 percent) and the curves from Nordhaus' RICE model (49 percent)⁶. Under all assumptions on abatement cost curves, the gains from trading mitigation outcomes are substantial and abatement is shifted from the EU and the US, which have consistently higher abatement costs, to China.

Figure 1. Illustration of the gains from emissions trading



A carbon club

The EU should – together with other ambitious nations – form a voluntary club of countries that determine their own emissions trading rules. This is crucial because the United Nations Framework Convention on Climate Change process – in which decisions need to be taken by consensus⁴ – is unlikely to come up with stringent rules. The differences between ambitious and less ambitious, developed and less-developed, potential net-buyer and potential net-seller countries would likely result in a watered-down compromise.

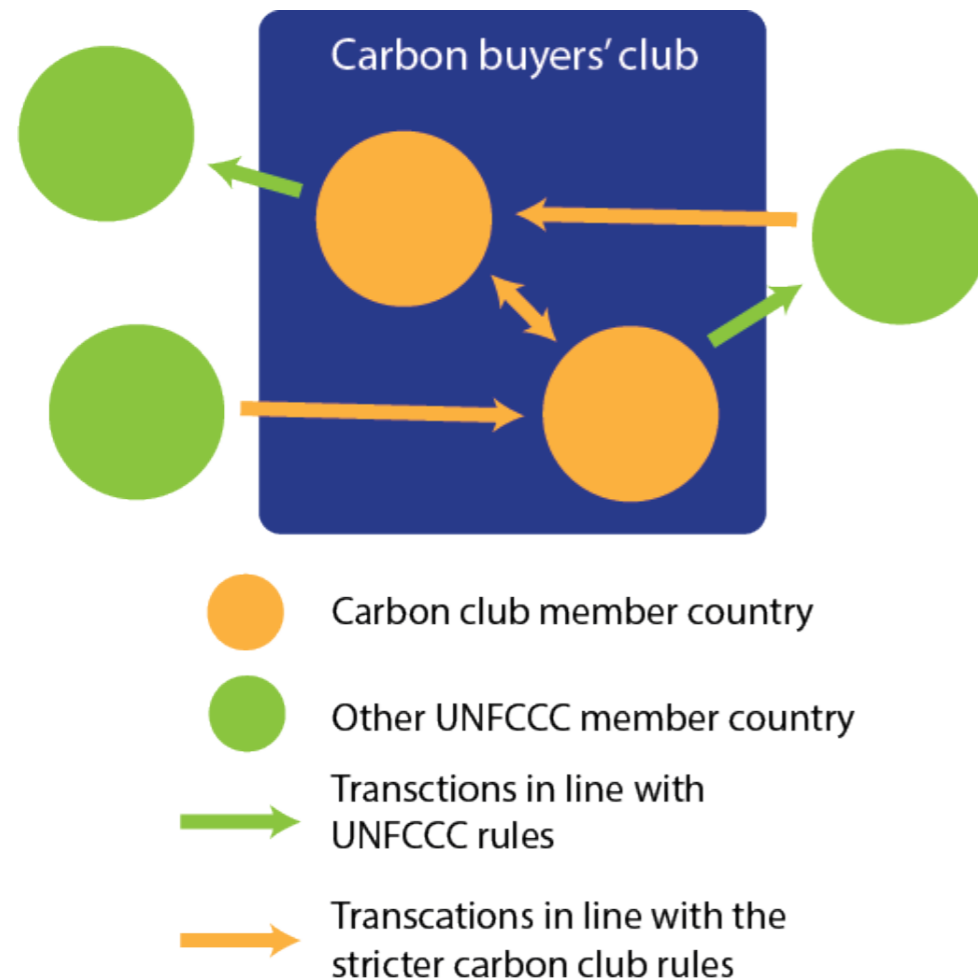
Furthermore, a few countries that try to achieve disproportionate benefits could stall the process. This is especially true at a time when the US is less likely to throw its political weight into climate-related negotiations.

In the absence of specific universal rules on international emissions trading, each country can essentially determine at national level which foreign carbon trading partners and carbon units to accept and how to account for them.

Because of the lack of clarity about what emissions trading activities would comply with Article 6 of the Paris Agreement, a race to the bottom in terms of the rigour of bilateral emissions trading might emerge. Sellers might offer emissions units that do not correspond to additional emissions reductions, and buyers might knowingly accept them because they are cheaper or because they want to support the selling country. Because emissions trading is complex, it would be very difficult to draw a line determining what is acceptable.

A rigorous reference ruleset determined by a group of countries would therefore be very valuable. Countries committed to this ruleset would benefit from a liquid and predictable emissions trading scheme, that meets (and in fact defines) the international standards. Countries that accept less-rigorous rules for international emissions trading would then have to explain how they ensure the general provisions of the Paris Agreement.

Figure 2. A carbon buyers' club



A 'gold standard' of emissions trading established by a club of countries should meet four criteria:

- The members must together amount to a critical mass in terms of share of global GDP, population and emissions.
- They must all share an interest in a rigorous emissions trading system.
- They must be open to welcome new members (otherwise they would have no legitimacy in terms of developing rules that would become a global reference).
- They should start out with a proposal that is rigorous but that also allows members to pursue sovereign decisions on their national emissions reduction policies.

A buyers' club

The carbon club will need to decide as a first priority which areas its rules will regulate. At one extreme, the club could seek to set up a common emissions trading scheme. However, like the EU's emissions trading system, this would necessarily deeply impinge on national sovereignty; otherwise, unilateral policies in one country (eg. weak emissions monitoring) could have undesired

effects in another country. Such a harmonised approach is highly unlikely to be politically acceptable to a wider group of countries.

At the other extreme, the club could only set very general rules that translate the sometimes vague provisions of Article 6 of the Paris Agreement into more concrete language. But that would mean that countries would still need to define the products and trading mechanisms they would like to use separately. The value added would consequently be very limited.

As a middle way, we would propose that the club determines rules on importing foreign mitigation outcomes. Thereby, the club would not constitute a single buyer, but would only determine joint rules on how foreign mitigation outcomes are monitored, transferred to and accounted for by the buyer country (Figure 2). If the club of countries is large enough in terms of economic weight, the rules on how emissions reductions are imported will, however, determine which types of emissions reductions are offered.

Private trading

In an international system, mitigation outcomes could be traded between governments (similarly to Assigned Amount Units under the Kyoto Protocol) or between private parties (similarly to emissions allowances from the EU emissions trading system). Our proposal focuses on exchanges between private parties, but the general accounting rules should also be relevant for intergovernmental transfers of mitigation outcomes.

In our proposal, each country can have its own emissions reduction policies. Some might entail privately tradable emissions reduction units such as credits for certain projects⁷, emissions allowances from domestic emissions trading systems, removal units for investments in carbon sinks or even renewables or energy efficiency certificates that imply greenhouse gas reductions. These units could be very different in their characteristics, and the rules governing their issuance, transfer, accounting and monitoring would be nationally determined (for example, units could include still existing Kyoto Protocol units, units from emissions trading systems, possible future units relating to afforestation and other projects).

To safeguard national sovereignty, each international exchange of privately tradable emissions reduction units would require the permission of the concerned governments. In other words, if a selling country allows the export of units and a buyer country allows the units to be used for domestic compliance under certain conditions, private parties in those countries can trade in them⁸.

Buyer beware

Accepting any type of foreign emissions reduction unit at face value into the domestic system can easily lead to inflation. For example, the 1.4 billion international units accepted into the EU ETS before 2014 raised the cap of the EU ETS, even though they did not correspond to the claimed additional emission reductions.

Global emissions likely increased as a result of the acceptance into the ETS of the international units. Thus, foreign units should be accounted for in the buyer country according to their 'mitigation value' and not their face value. The mitigation value related to a certain emissions reduction unit from the seller's country would be the amount of greenhouse gases removed (eg. one tonne of carbon dioxide equivalent) by not using the unit for compliance in the seller's country. This mitigation value can only be determined after some time (see next section). A definitive exchange rate between a certain type of unit in the selling country and another type of unit in the buyer country cannot be determined in real time.

To address the variable and unconfirmed quality of foreign emission reduction units, the core principle of our proposal is to make private buyers responsible for the mitigation value of the units they purchase. That is, private buyers are liable if the foreign mitigation outcome unit they surrender in their country has a lower mitigation value than claimed. This would give private buyers the right incentive to search for units with the likely greatest and most certain mitigation value and the lowest cost.

Seller systems are evaluated

At one point, the buyer of a foreign emissions reduction unit must be able to use its mitigation value for compliance in the buyer country's system. This requires a definitive evaluation of the mitigation value of the foreign unit. We suggest that the five-year global stocktake envisaged in Article 14 of the Paris Agreement would be a natural date for this evaluation at which one consensus mitigation value (that all members of the club accept) is assigned to each privately tradable emissions reduction unit⁹. The evaluation methodology and the (independent) evaluating institution would need to be determined *ex ante* by the club. We see top-down and bottom-up approaches to determining mitigation values.

The top-down approach would rest solely on the compliance of the selling country with its NDC. If it emits more than envisaged under its NDC, all units it sold would be considered worthless (have a mitigation value of zero). If it keeps emissions below its target, the mitigation value of the exported units would equal the emission reduction compared to the NDC divided by the number of exported units.

That is, if a country reduces emissions by 100 million tonnes of CO₂ equivalent more than foreseen under the NDC, having exported 200 million privately tradable emission reduction units, each of those units has a mitigation value of 0.5 tonnes of CO₂ equivalent. We see three problems with this approach:

- 1) emissions are strongly driven by exogenous factors such as economic growth and energy prices so that foreign units might become a speculation instrument with limited additionality;
- 2) it would give countries a strong incentive to understate their emissions reduction intentions so that they would be able to show a high mitigation value for exported units; and

3) that countries once they likely emit more than their target will not be able to attract foreign investment for emissions reduction projects financed through international emissions trading.

The bottom-up approach would focus on the emissions reductions generated through the individual mitigation unit issuing systems (eg. a sectoral emissions trading system or a crediting mechanism) in the selling country. The emissions reductions would need to be compared to a synthetic benchmark.

The more transparent a country is about the scheme – and its intended reduction effect – the more easily it could be evaluated¹⁰. The drawback of this approach, however, is that selling countries could have an incentive to bundle ‘cheap’ mitigation options into one scheme in order to export the corresponding units. Then a country might fall short of its NDC promises but still export a lot of units.

One solution could be to determine the mitigation value through a combination of the two systems, combining bottom-up (evaluate each system individually) and top-down (evaluate the entire country performance). The simplest, but possibly not the best, approach would be to multiply the individual system’s mitigation value (eg. 0.8 tonnes of CO₂ equivalent) by a country-wide NDC-compliance factor (eg. 90 percent, should the country achieve 90 percent of the aims stated in its NDC) to obtain the final mitigation value (eg. 0.72 tonnes of CO₂ equivalent).

National funds as intermediaries

Under the system we have described, foreign units would trade at a high discount because their true value would only be determined after the global stocktake and they would not be valid for compliance in the buyer country before that. To resolve this, the second core element of our proposal is that individual countries (or several countries jointly) should set up national/multinational funds. These funds would accept foreign units as collateral and lend buyer country compliance units¹¹, ie. foreign units would never be directly used for compliance, but would need to

be exchanged into domestic units first¹². The collateral requirement for each foreign unit would be informed by private or public rating agencies.

This would send a continuous signal to private buyers and the selling country. If the selling country's system for generating units is politically, legally or economically undermined, the corresponding units would lose value – which should give an incentive to selling countries to recalibrate their systems.

The funds would be crucial because they would enable the private buyers (and the buyer countries) to be made responsible for the quality of the purchased mitigation outcomes. Until the ultimate exchange of selling-country units into buyer-country units, the private buyer would only own the selling-country units and would be therefore liable for their quality. At the same time the private buyer would borrow buyer-country units from the fund (in the buyer country), which is would be a second line of defence in case the private buyer becomes overexposed.

After each five-year global stocktake¹³ the definitive mitigation value of foreign units would be established (see the previous section). The fund would issue new buyer country units corresponding to the mitigation value of the surrendered selling-country units. See Figure 3 for an illustration, in which the mitigation value is judged to be 7 units. At this point, the fund would clear the positions of the private buyers.

If the mitigation value of the collateral is greater than the number of borrowed buyer-country units, the private buyer receives the unused collateral in terms of selling-country units. Should the mitigation value of the collateral be less than the number of borrowed buyer country units (as in Figure 4: 7 units of collateral compared to 8 units borrowed), the private buyer would have to remargin the buyer-country units. If the buyer is unable to do so and defaults, the fund would have to bear the loss and sterilise the corresponding amount of units.

Figure 3. With foreign units as collateral, a fund lends compliance units

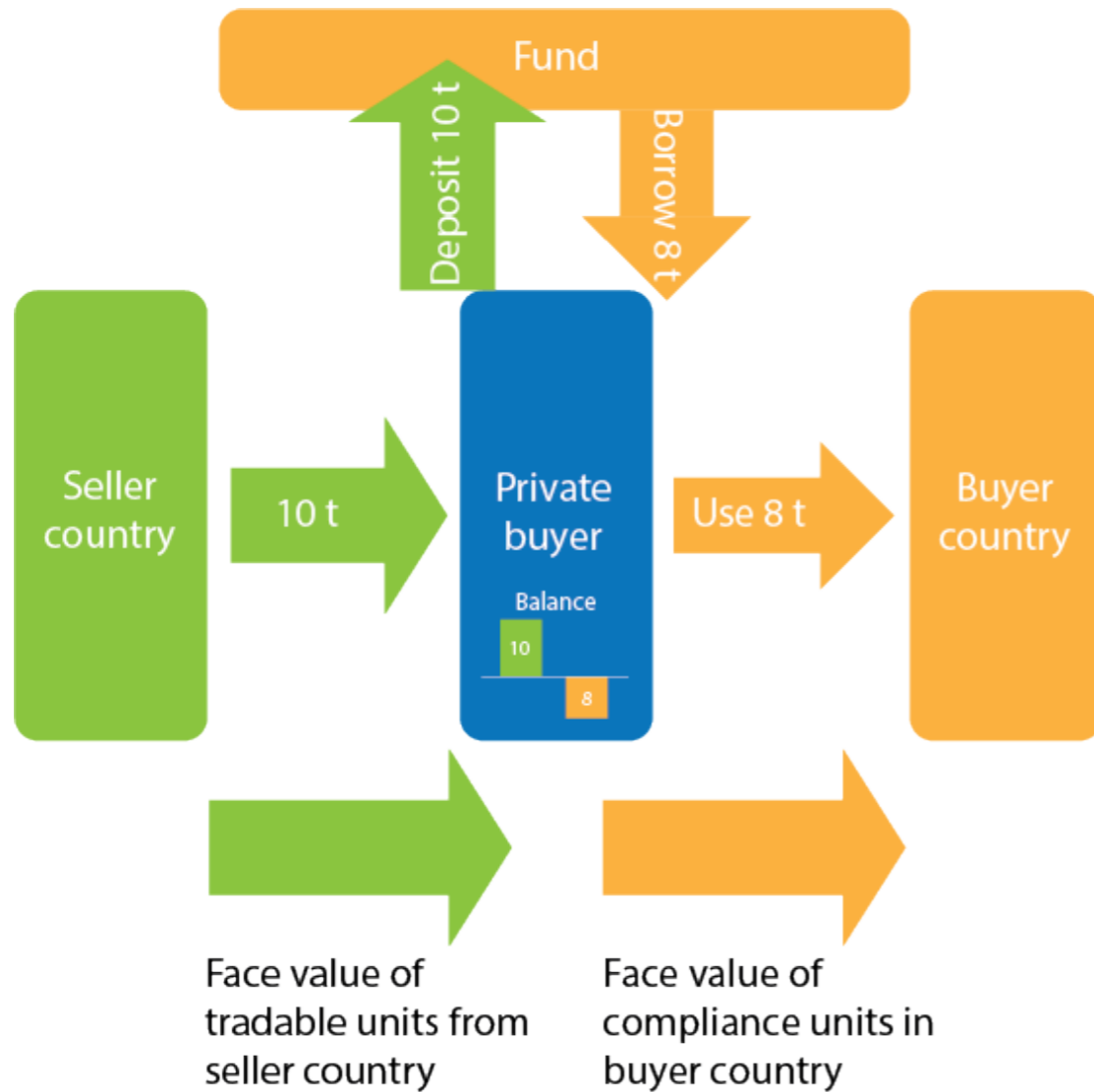


Figure 4. Fund exchanges foreign into domestic units; private buyers might have to remargin

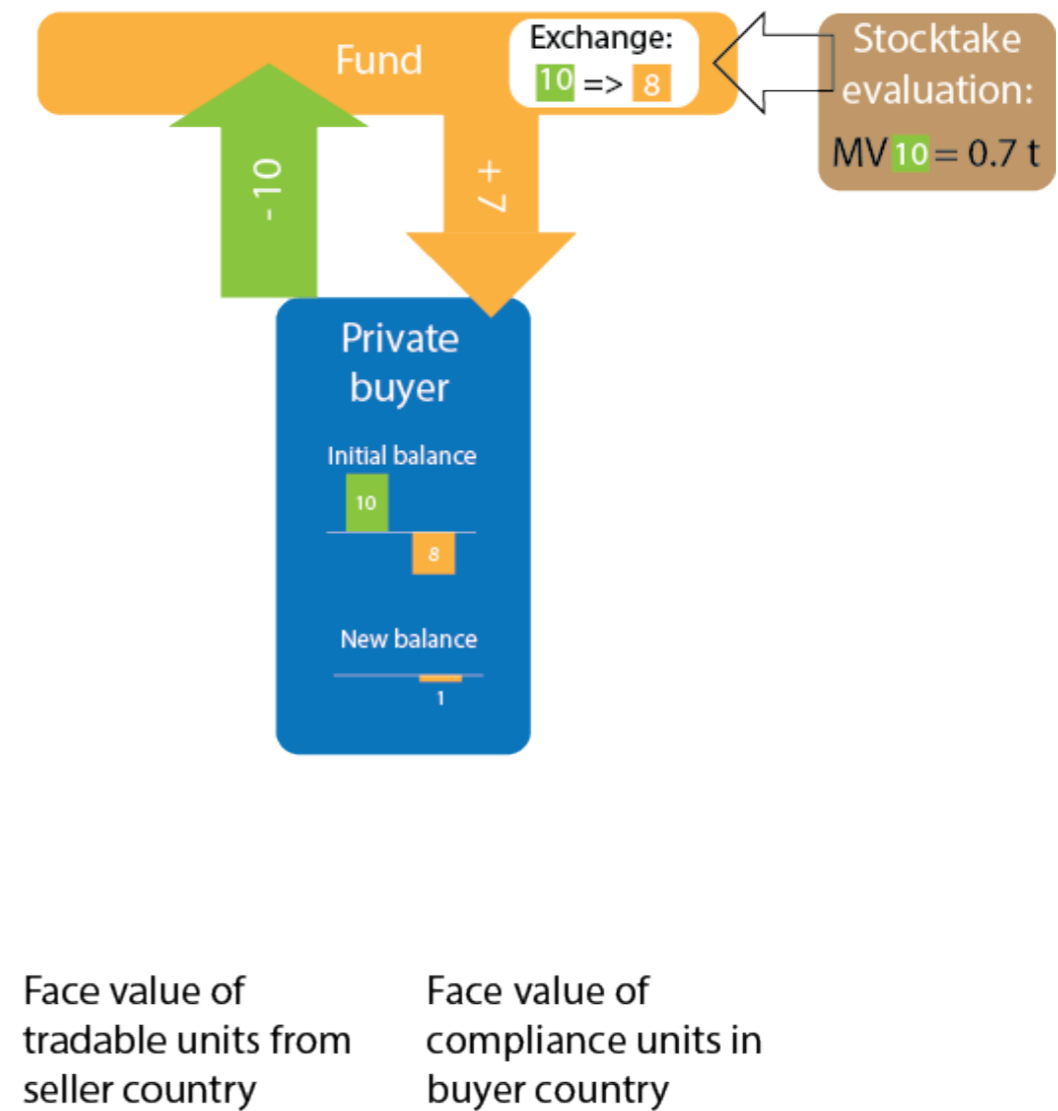
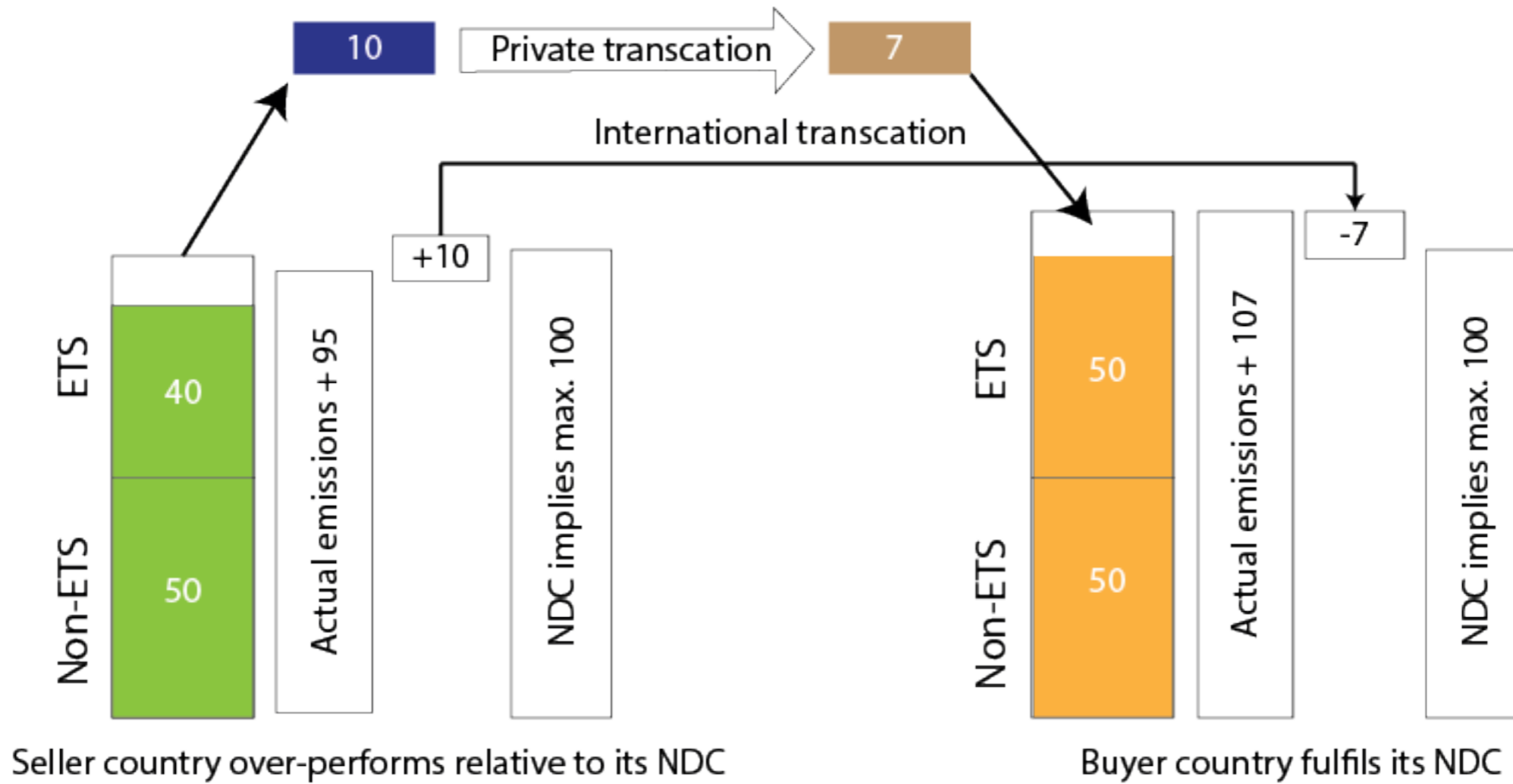


Figure 5. Mirroring the private transaction in international emissions accounting



This ensures that new buyer-country units created through international trading reflect corresponding mitigation in the selling country. Inflows of credits that do not correspond to actual mitigation, like those under the Kyoto Protocol's Clean Development Mechanism, can be prevented.

Trade in accepted mitigation units is mirrored by statistical transfers

Finally the private trade between countries in emission reduction units should be mirrored by corresponding inter-governmental transfers. The buyer country can use the imported mitigation value to comply with its NDC. And it would be sensible if the selling country's emissions balance would increase by the face value of the exported units¹⁴ because this would provide an incentive to harmonise the 'face value' and 'mitigation value' of units.

Hence a transaction involving 10 privately tradable units from the selling country, which are accepted as seven compliance units in the buyer country, would be mirrored by reducing the greenhouse gas emissions of the buyer country by seven tonnes and increasing the emissions of the selling country by 10 tonnes (see Figure 5). In the worst case, a selling country could emit more than envisaged in its NDC. In this case, buyer countries might decide to respond by reducing the selling countries' access to their emissions markets in the future. The repeated nature of the game – with the five-year stocktakes – would thereby serve as a commitment device, discouraging any selling country from deliberately undermining the system.

Conclusion

Our proposed system would allow very different types of emission reduction units to be traded between countries in a way that preserves the integrity of the Paris Agreement architecture. Every country would be able to issue any type of carbon unit in line with its own legislation, and any country would be allowed to accept (or not) whatever foreign unit is offered. The proposal is thus comparatively light in terms of harmonisation requirements.

The two politically most difficult elements of our proposal are (1) the creation of a sufficiently large club of likeminded ambitious countries, and (2) finding an agreement on joint rules and institutions on the *ex-post* evaluation of the mitigation value for the tradable emission reduction units. But as our system would allow countries to opt-out of any type of transaction they do not like, and the determination of the mitigation value would primarily affect the private buyers, a sensible political compromise seems possible.

Such a trading system would reduce total mitigation costs and provide a backstop for countries that face rising emissions because of unexpected events¹⁵. It would also enable co-funding of mitigation investments in developing countries and encourage good governance of emission reduction systems. Companies that invest in low-carbon technologies in developing countries could, if the host countries have appropriate schemes in place, generate a part of the cash-flow for their investments by generating emission reduction units for sale to the club countries. This should encourage host countries to develop the necessary legal and administrative systems, including consistent decarbonisation strategies that make it easier to assess the value of their tradable emission reduction units. ■

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This article was originally published by [Bruegel](#)

The author gratefully acknowledges research assistance by Domenico Favoino, Enrico Nano and Fabio Matera, and input from participants in the Bruegel roundtable on international emissions trading in May 2016. Special thanks to Justin Macinante for very helpful comments on an earlier version of this paper.

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Endnotes

1. We can identify three types of NDC: (1) 'Absolute' type, such as the EU's, with a fixed absolute economy-wide emission reduction target; (2) 'Intensity' type, ie. the government plans to move to a certain level of emissions relative to GDP; (3) 'Other' type, with no explicit emissions reduction goal.
2. The alternative would be that, to avoid risks, countries either engage in lower commitments upfront or there is a mechanism for exceptions from compliance in extraordinary situations. But given, for example, the experience with the EU Stability and Growth Pact, such mechanisms can easily become politicised and open the door for non-compliance for everyone.

3. For a thorough discussion of potential implications of Article 6 (on emissions trading) see Marcu (2016).
4. There is a legal discussion on whether the ad-hoc consensus rule currently applied (for lack of consensus on rules of procedure) implies a veto power for each country. See Vogel (2014).
5. Quantification of the Paris pledges compared to the current policy projections from 2014 implies the following abatement pledges: China: 13.6 instead of 15 GtCO₂e (gigatonnes of equivalent carbon dioxide) in 2030 -> 1.4 Gt of mitigation; US: 5.6 instead of 7 GtCO₂e in 2030 -> 1.4 Gt of mitigation; EU: 3.5 instead of 4 GtCO₂e in 2030 -> 0.5 Gt of mitigation.
6. We do not use the original abatement cost curves, but approximation described in Cline (2011).
7. Similar to Certified Emission Reductions from the Kyoto Protocol's Clean Development Mechanism.
8. Note this gives the buyer countries the last say on which trading partners they accept, even though they are members of the club.
9. Obviously only units that at least one member country of the club accepts for domestic compliance should be evaluated.
10. Aldy (2015) proposes that countries draw up 'Living Mitigation Plans' that would serve as a continuously updated basis for expert evaluations.
11. The fund might either be endowed with buyer country units that it is allowed to lend, or (like a central bank) granted the permission to issue them.
12. In contrast to CERs that companies under the EU ETS were allowed to use for compliance up to a certain amount.
13. That might be one or two years later when all necessary data and analysis is available.
14. This might not be politically feasible because it implies the seller country has to give more than the buyer country gets, when the face value is actually greater than the mitigation value (which is likely to be the norm). Alternatively, both sides would use the mitigation value in their emission balances.
15. Eg. the nuclear accident after the 2011 Tohoku earthquake forced Japan to use more fossil fuels – making it impossible to achieve its emission targets domestically.