ACCOUNTING FOR BOTTOM-UP CARBON TRADING UNDER THE PARIS AGREEMENT

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Article 6 of the Paris Agreement recognizes that countries may engage in different forms of international cooperation to achieve climate goals, and prescribes broad conditions for such cooperation if it is to count toward achievement of parties' nationally determined contributions (NDCs). In particular, Article 6.2 calls for robust accounting to ensure no double counting of internationally transferred mitigation outcomes (ITMOs). Parties are presently negotiating more detailed accounting guidance, to be adopted at COP 24 in December 2018. In recent years, a growing number of national and subnational governments have entered into formal arrangements governing the transfer of greenhouse gas credits and allowances. These bottom-up arrangements provide an important substrate for the Article 6 accounting guidance. Ideally, the guidance can both build on existing trading arrangements and facilitate their future growth. This brief examines the interplay between these top-down and bottom-up elements, and offers recommendations to ensure they work in a complementary fashion to achieve the objectives of Article 6.

Market-based climate policy mechanisms can help strengthen global climate efforts by providing countries access to cost-effective emission reductions abroad, and by providing incentives to the private sector for earlier and deeper reductions. Roughly half of NDCs submitted by countries under the Paris Agreement anticipate the use of market mechanisms to achieve their climate goals.

In encouraging and sanctioning cooperation among parties, Article 6 encompasses both market and non-market approaches. Article 6.2 allows the use of ITMOs to achieve NDCs and emphasizes a need for appropriate accounting rules. Article 6.4 establishes a new mechanism for certifying emission reduction from projects or programs, and is seen largely as a successor to the Kyoto Protocol's project-based mechanisms. Article 6.8 addresses non-market approaches and is still fairly open as to how it will be operationalized.

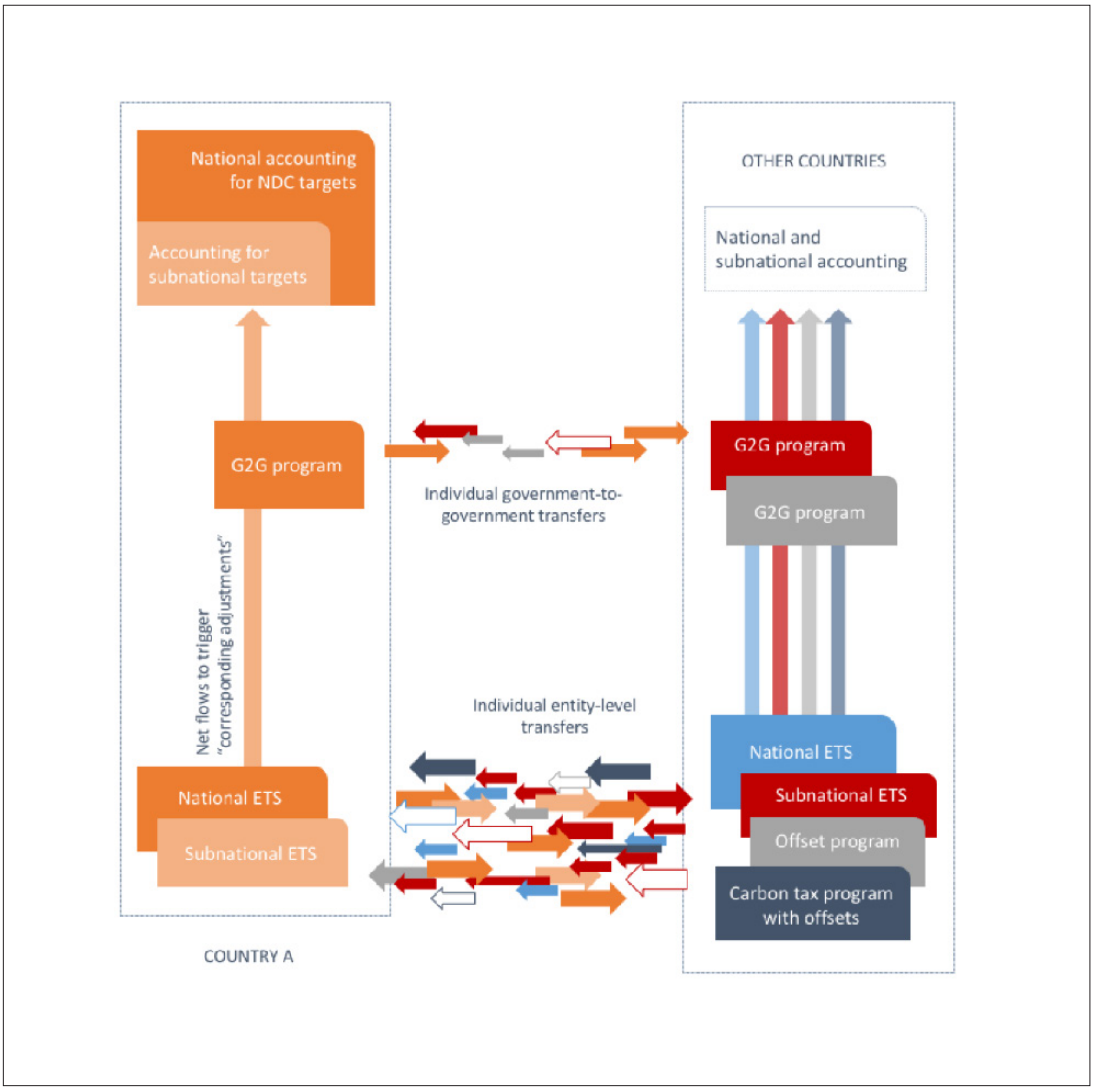
As with the wider Paris Agreement, Article 6 is a decentralized framework. Countries may choose how much they wish to engage in such cooperation and what balance they wish to strike between their own bilateral and plurilateral cooperative approaches under Article 6.2 and activities under the multilateral crediting mechanism given by Article 6.4.

Article 6.2 specifies that countries' use of cooperative approaches is to promote sustainable development and ensure environmental integrity and transparency, including in governance. It is also to be subject to robust accounting that, among other things, ensures no double counting on the basis of countries making "corresponding adjustments" for transfers.[1]

Many of the objectives outlined Article 6.2 are addressed in the bilateral and multilateral trading arrangements—emissions trading systems (ETSs) and crediting systems—emerging among national and subnational governments. In some cases, these arrangements link independent ETSs of different designs. Others were intended from the outset to be multilateral and have built on a common basis of rules and infrastructure across the participating jurisdictions.[2]

The accounting guidance being negotiated under Article 6.2 offers an opportunity for countries to bring

Figure 1: Relationship of trading arrangements and accounting at national and international levels.



these trading arrangements within the context of Article 6 and have their mitigation outcomes recognized toward the achievement of other countries' NDCs. Properly crafted, the guidance can provide for a sensible division of labor between multilateral and bilateral/plurilateral oversight, ensuring that the Article 6.2 objectives are achieved while avoiding gaps and duplication of effort.

NDCs AND TRADING ARRANGEMENTS

The landscape of future carbon markets may be filled with programs and targets at both national and subnational levels, as depicted in the Figure 1 below. The country shown in orange has ETSs at the national level and also at the subnational level, perhaps through the jurisdiction of states or cities. These ETSs are driven by emission obligations set for individual public and private entities. They may be linked to trading systems or crediting programs in other countries, resulting in a diverse array of individual transfers of allowances and credits ("units"). Such transactions are governed by the individual ETS and crediting programs, as well as the linking agreements they have in place.

There are two levels of interaction between countries when transfers are made:

- **Tracking—**The "holding," or ownership, of units under an ETS or crediting system needs to be recorded, along with their initial issuance and any subsequent transfer, cancellation or surrender toward a target, as well as any banking of the units into future ETS compliance periods. The tracking of these transactions occurs through the linked registry infrastructures of each jurisdiction involved in the trading arrangements. The surrender, or "use," of units indicates whether an entity meets its compliance obligations under the ETS.
- **Accounting—**Transferred emission reductions used for NDCs need to be accounted for when assessing NDC achievement and must not be counted toward more than one NDC. Under "emissions-based" accounting, reductions used by an acquiring country are subtracted from the emissions shown in its emissions inventory—as they reduce the country's emissions to be compared against its NDC—and must therefore be added to the emissions shown in the transferring country's inventory.[3] Such adjustments may alternatively be applied in reverse to the levels of emissions allowed under NDCs ("budget-based" accounting). Subnational jurisdictions and ETSs require similar accounting to show achievement of their targets.

Accounting builds upon tracking but is separable from it. While tracking will need to apply to all transfers individually and in real time, accounting adjustments related to the transfers can be made periodically on the basis of net flows between two countries over a specific time period. This can simplify the application of accounting adjustments and their reporting at the international level.

The autonomy of the tracking and accounting stages means that transfers may take place in accordance with the needs of the relevant trading systems; these systems need to supply requisite information for accounting purposes, but otherwise are able to operate independently.

Direct government-to-government (G2G) transfers may also occur, through government cooperation programs that share resulting emission reductions. Such transfers may not involve entity-level transactions and may result only in agreed corresponding adjustments being made.

Two dimensions of consistency in accounting are needed when international transfers are made:

- **Horizontal—**The size of the adjustments in the participating countries are to "correspond" so that mitigation outcomes are not double counted against multiple NDCs. However, "corresponding adjustments" need not always mean "equal adjustments," depending what triggers the adjustments (as will be discussed later). Environmental integrity does however mean the amount transferred must not exceed the emission reduction that really occurred in the transferring country[4].
- **Vertical—**Accounting adjustments made for a transfer or acquisition need to be coherent across different levels of target within a country, including the ETS target for the entity concerned, emission targets at the level of any subnational jurisdictions involved, and emission targets contained within the country's NDC. This requires clarity on how emissions and emission targets at subnational, program and entity levels are "nested" within the national level.

Countries can ensure trading arrangements and targets have the horizontal and vertical consistency required for the robustness of the overall system. They may ensure this when deciding whether to authorize the use of transfers toward the achievement of NDCs, as required by Article 6.3[5].

POSSIBLE ACCOUNTING ELEMENTS

Trading arrangements provide experience with tracking and accounting that may provide helpful lessons for the guidance being set under Article 6.2. The points highlighted below may help support the resolution of some of the pressing issues in the current negotiation of the Article 6.2 accounting.

COMMON EMISSIONS METRIC FOR ACCOUNTING

ETSs and crediting programs measure mitigation outcomes in greenhouse gas emissions, typically using metric tons of CO2 equivalent (tCO2e) emissions. This provides a convenient and common "currency" across entities and trading and crediting systems, underpinned by similarly-denominated measurement, reporting and verification (MRV) standards and crediting standards. The predominant use of such metrics can be expected to continue also in the future, providing for coherence in

the measurement of emissions and emission reductions against emission targets – across all levels of tracking and accounting (trading/crediting systems, subnational targets and national targets).

This coherence can be extended into the accounting under Article 6 through also denominating corresponding adjustments in tCO2e. Adjustments would be expressed in the same way as the greenhouse gas values contained in emission inventories. While accounting adjustments would be consistent with the majority of transfers, countries could still make underlying transfers in other metrics (for example, megawatt hours or renewable energy certificates) and then calculate the emissions impact of the mitigation outcomes to determine the appropriate accounting adjustments.

Defining adjustments in an emissions metric would likely have the effect of encouraging countries to denominate all transfers directly in tCO2e, without the UNFCCC needing to make this mandatory. This may be beneficial in facilitating future linkages among trading and crediting systems. Other variables may however need to be made mandatory—through guidance on accounting or environmental integrity—such as the application of common global warming potentials (GWPs).

COMMON USE OF AN EMISSIONS BASIS WHEN REPORTING ON ADJUSTMENTS

Trading and crediting systems conduct accounting on the basis of emission budgets, with transferred and surrendered units being subtracted and added respectively. G2G cooperation programs can also be set up to transfer credits, therefore also feeding in to budget-based accounting, but may also operationalize transfers through countries directly making mutually-agreed adjustments in their NDC accounting (without first issuing and transferring units). Article 6.2 accounting can in principle allow for both budget and emissions-based accounting approaches to exist alongside each other, with results being translated between the two approaches as needed.

Having countries report adjustments to the UNFCCC with different approaches would however increase the complexity of the information and make it less transparent. In addition, many countries may not wish or need to prepare emission budgets for all emissions covered by their NDCs, or may prepare budgets for only a portion of their emissions. Ensuring all adjustments are reported to the UNFCCC on an emissions basis would promote transparency and comparability across all countries, while not hindering the use at the country level of emissions budgets where this is needed.

TRIGGERS FOR THE APPLICATION OF ADJUSTMENTS

Under trading and crediting systems, acquired units are tracked as being held by the acquiring entity but are only accounted against its ETS target if the entity surrenders them for this purpose. Until they are surrendered, the units may be canceled, banked or further transferred, all of which would impact on the quantity of units available for surrender. The units are however no longer available to the transferring entity once they have been transferred, irrespective of whether the units are subsequently used, cancelled, banked or transferred further by the acquiring entity.

For a recipient country, the accounting adjustments under Article 6.2 would also most appropriately be triggered at the point of use toward an NDC, since the adjustments are to ensure that appropriate account is taken of transfers in the assessment of NDC achievement.

The question remains however as to what should constitute the corresponding adjustment on the side of the transferring country. Following the approach of trading and crediting systems, the adjustment for the transferring country would be triggered at the point of making the transfer, as the transferring country no longer has access to these emission reductions from this point.

Using the transfer of emission reductions as the trigger for adjustments in transferring countries would also give them independence in applying and reporting adjustments, as they would not need to wait for acquiring countries to use the emission reductions against an NDC. Such waiting would complicate the accounting, especially as the NDC period for an acquiring country may potentially extend beyond the NDC period for the transferring country.

A consequence of this approach is that adjustments for use (by the acquiring country) may be lower than adjustments for transfers (by the transferring country). The adjustments would nevertheless correspond to each other at all points in time, as they would reflect

the reality that not all transferred reductions have been used toward NDCs. "Correspond to" need not necessarily mean "equal."

To be transparent and credible, accounting adjustments reported by countries need to be supported by the tracking information maintained by countries. Using transfer and use as triggers would require information to be reported to the UNFCCC or made available in another way. For example, summary information on acquisitions and any cancellation, banking and further transfers of emission reductions would be important in demonstrating the correspondence between transfers and use toward NDCs. This correspondence may be otherwise difficult to establish.[6]

NET FLOW OF INFORMATION ON TRANSFERS

Some linkages between ETSs can be expected to experience many transfers in both directions. While information on all such transfers needs to be electronically tracked in real time, making an accounting adjustment for each transfer would unnecessarily weigh down the accounting system. Adjustments for transfers can instead be made periodically on the basis of net flows. This can simplify the application of accounting adjustments and their reporting at the international level.

Net flows for transferring countries would need to be calculated on the basis of country pairs, where transfers between the two countries would be taken into account. All countries may potentially be paired with all other countries, though in practice the number of country pairs making transfers will be considerably less. Such net flows would also simultaneously take account of cases in which acquired emission reductions are transferred further to third countries.

USE OF ANNUAL DATA

NDCs from different countries have different timeframes. While some are specified to cover multiyear periods, the majority relate only to a single target year (2025 or 2030). Various methods are currently under consideration in the negotiation of the Article 6.2 accounting guidance to ensure that transfers accounted for in the NDC target period are relevant to that timeframe, and representative of transfers occurring in what might be considered a typical year.[7] All these methods involve calculations that require transfers to be distinguished for specific years.

Trading and crediting systems are always quantitative and multiyear in their approach, even where the NDCs they exist within are specified for a single target year. The tracking established for trading and crediting systems either directly maintains transfer data on an annual basis (e.g. single-year ETS compliance periods) or allows it to be derived (e.g. from the timing of reductions for which credits are issued; averaging over multiple-year ETS compliance periods).

The availability of such annualized data on transfers may make it possible for countries to translate their single-year NDC targets into multiyear target periods for accounting purposes, at least for those portions of their emissions covered by an ETS. This could be done using mandatory or expected emission trajectories established by countries under an ETS. Where this is not feasible, annualized data at least provides a strong basis for averaging transfers to ensure the transfers in the single-year NDC target period are sufficiently representative. Transfers through trading and crediting systems can be expected to provide for the bulk of international transfers; there would however be value in the Article 6.2 accounting guidance encouraging bilateral G2G cooperation to generate data on emission reductions and transfers on the same annualized basis.

TIMING OF APPLYING ACCOUNTING ADJUSTMENTS

ETS participants, as well as policy makers and governments, need regular information on compliance with ETS targets and progress toward them. ETSs provide for this as their compliance periods are shorter than the timeframe embodied in NDCs.[8] This raises questions as to when accounting adjustments are to be recorded and applied to NDCs, and what information should be made available over time regarding progress toward the achievement of NDCs.

The final assessment of NDC achievement can only be made after the NDC target period is over. Until then, countries cannot know for certain whether acquired emission reductions will be needed toward their NDCs. Several routes for providing more information over time are however possible:

- **An emission trajectory approach—**As discussed in the previous section, accounting adjustments could

be recorded against each year of the period.

- **A set-aside approach—**Acquired emission reductions could be provisionally earmarked as being used for a country's NDC achievement, with the accounting adjustments being applied as part of the final accounting for NDCs after the NDC target period has ended.
- **A tracking-information approach—**Countries could make available summary information on holdings of emission reduction, on the basis of annual information on transfers, acquisitions, cancellations and banking of emission reductions, with accounting adjustments applied as part of the final accounting for NDCs.

All such approaches could be integrated with the reporting of information needed to track progress on NDC implementation and achievement, as required under Article 13.7. This information is to be provided at least on a biennial basis but could be provided annually.[9] Either of the first two approaches would give clarity on progress being made toward NDC achievement. The third approach would indicate countries' potential, at any point in time, to show progress against NDCs.

COMPATIBILITY OF TRACKING SYSTEMS

Tracking systems provide data on transfers for the accounting of targets. Ensuring consistent transfer information in each country is important in ensuring consistent and reliable accounting, especially where further transfers of the emission reductions may occur. As discussed above, if accounting adjustments are to be transparent and credible, they need to be supported by at least a summary level of the tracking information maintained by countries.

While the technical details for this compatibility can be developed elsewhere, some basic requirements of tracking systems may be useful to highlight in the accounting guidance. This could include the need to identify a basic set of transaction types, means of mapping serial numbers used in different systems, and a set of minimum information to be tracked with transfers.[10] It could involve further measures to facilitate the connectivity of trading arrangements and the consistency of their tracking information, such as through collaboration on communication protocols and infrastructure. This guidance could form a basis for subsequent technical processes among countries to develop the technical implementation.

CONCLUSIONS

The negotiation of Article 6.2 accounting guidance rightly highlights numerous issues that are complex – both technically and politically – and it is helpful to consider the practical experience already gained in implementing bilateral and plurilateral trading arrangements. Domestic interests already prompt the implementation of robust systems and processes in these countries, as this is needed to support strong prices and ensure targets established under trading arrangements will be met. Countries implementing such arrangements, or preparing to implement them, will be well-placed to meet the needs of robust accounting guidance to emerge under Article 6.2.

The above analysis of experience from trading arrangements suggests the following possible accounting elements that could inform the contents of the Article 6.2 accounting guidance:

- Denominate accounting adjustments in an emissions metric (tCO2e) and use common GWPs.
- Ensure all reporting to the UNFCCC of accounting adjustments occurs on an emissions basis (countries may still use a budget basis as needed for domestic purposes).
- Trigger accounting adjustments for acquiring countries on the basis of "use" toward NDCs; trigger accounting adjustments for transferring countries on the basis of "transfers."
- Allow accounting adjustments for transfers to be made for net flows over time.
- Encourage countries to generate and record annual transfer data to support transparency and address different NDC timeframes.
- Encourage countries to report annually under Article 13.7 on their actual or expected accounting adjustments (or at least their holdings of emission reductions).
- Include basic requirements of tracking systems in the Article 6.2 accounting guidance.

In addition to ensuring robustness and avoiding double counting, the Article 6.2 accounting guidance has potential to facilitate the future linking of trading

arrangements. This could be achieved through promoting a common basis of comparability and fungibility on which ETSs and crediting programs may operate together. For example, denominating accounting adjustments in tCO2e may encourage widespread use of this emissions metric for transfers; ensuring the availability of annual transfer data can bridge differences in NDC types and timeframes; and including basic requirements for tracking systems in the Article 6.2 accounting guidance can establish a basis for the compatibility and eventual linking of tracking systems and trading arrangements across countries. The accounting guidance could be developed to emphasize this facilitative role.

ENDNOTES

1. Article 6.2 and decision 1/CP.21, paragraph 36.

2. For example, the European Union Emissions Trading System (EU ETSs), Regional Greenhouse Gas Initiative (RGGI) and the Western Climate Initiative (WCI).

3. These adjustments would not change the inventory itself, as this must remain intact as a record of a country's emissions and removals, but could be recorded in a parallel table.

4. This requires that the reductions are accurate, additional and permanent.

5. Rather than authorizing specific transfers of emission reductions, this authorization can be provided for an ETS or offset program, such that all transfers they generate may count toward NDCs.

6. Using transfer and acquisition of emission reductions as triggers for accounting adjustments would require the same information and also require more adjustments. For example, Kyoto Protocol accounting makes additions for acquisitions, and subtractions for transfers, cancellation and banking.

7. For example, limiting use of transfers to reductions occurring in the NDC target year (although this does not attempt to make transfers in that year representative); assessing the cumulative effect of transfers across a multiyear trajectory of emissions; and averaging transfers across multiple years (as defined, for example, by an ETS compliance period or the timeframe of a mitigation activity).

8. For example, the EU ETS requires entities to surrender against targets every year and the ETS originating from WCI require surrender for three-year compliance periods.

9. Decision 21/CP.21, paragraph 90.

10. This could include, for example, the origin of emission reductions, cooperative approach involved, mitigation activity conducted, year of reduction, relationship to NDCs, or non-permanence information.

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