

ARTICLE 6 APPROACH PAPER SERIES

PAPER ONE

Ensuring Environmental Integrity under Article 6 Mechanisms



Public Disclosure Authorized
Public Disclosure Authorized
Public Disclosure Authorized
Public Disclosure Authorized



© 2020 International Bank for Reconstruction and Development / The World Bank

1818 H Street NW

Washington, DC 20433

Telephone: 202-473-1000

Internet: www.worldbank.org

This work is a product of the staff of the World Bank with external contributions. The findings, interpretations, and conclusions expressed in this work do not necessarily reflect the views of The World Bank, its Board of Executive Directors, or the governments they represent.

The World Bank does not guarantee the accuracy of the data included in this work. The boundaries, colors, denominations, and other information shown on any map in this work do not imply any judgment on the part of The World Bank concerning the legal status of any territory or the endorsement or acceptance of such boundaries.

Rights and Permissions

The material in this work is subject to copyright. Because The World Bank encourages dissemination of its knowledge, this work may be reproduced, in whole or in part, for noncommercial purposes as long as full attribution to this work is given.

Attribution

Please cite the work as follows: The World Bank. “Country processes and institutional arrangements for Article 6 transactions,” World Bank Working Paper, Washington, DC.

Any queries on rights and licenses, including subsidiary rights, should be addressed to World Bank Publications, The World Bank Group, 1818 H Street NW, Washington, DC 20433, USA; fax: 202-522-2625; e-mail: pubrights@worldbank.org.

Design and copyediting by Clarity Global Strategic Communications (www.clarityglobal.net)



Table of Contents

Abstract	i
1. Introduction	1
2. Background: Why is this important for Article 6?	1
2.1 Factors affecting environmental integrity	2
2.1.1 Robust accounting	2
2.1.2 Unit quality	2
2.1.3 Ambition and scope of mitigation targets	3
2.1.4 Incentives for or against raising ambition	3
2.2 Ensuring environmental integrity under different scenarios	3
3. Options and approaches	5
3.1 Step 1: Ensure the quality of units used in transfers	5
3.2 Step 2: Modify accounting for transfers to reflect uncertainty and ambition	6
3.3 Step 3: Promote greater ambition	6
4. Progress in the negotiations	7
5. Relationship with other design elements	7
6. Considerations for market participants	7
7. Practical examples of the options	7
7.1 An idealized approach: choosing the minimum of either BAU or NDC-linked emissions	8
7.2 Examples where an NDC-linked baseline can be easily determined	8
7.3 Examples where it is not possible to identify an NDC-linked baseline	9
8. References	11
Annex. Suggested terms of reference for independent assessment of BAU of the power sector NDC	12



Acknowledgements

This technical approach paper has been written for the Climate Warehouse Program at the World Bank, which seeks to operationalize Article 6 through piloting activities. The paper has been prepared jointly by a team of experts that includes Randall Spalding-Fecher (Carbon Limits) and Derik Broekhoff (Stockholm Environment Institute). Harikumar Gadde (World Bank) and Seoyi Kim (World Bank) provided substantive inputs and managed the project. Chandra Shekhar Sinha (World Bank) provided valuable comments and suggestions to the authors. Klaus Oppermann (World Bank), Nuyi Tao (World Bank), and Andrei Marcu (European Roundtable on Climate Change and Sustainable Transition) also contributed to the review. This work also benefited greatly from consultation with the World Bank Article 6 Advisory Group and has been discussed in the Climate Market Club. The Article 6 Advisory Group comprises 20 private sector companies convened by the International Emissions Trading Association (IETA), four governments, and three project implementing entities in World Bank client countries. The Climate Market Club, as of February 2021, has representatives from 13 countries and three non-sovereign entities as its members with the MDB Working Group on Article 6 acting as the secretariat.

Acronyms

BAU	Business as usual
CDM	Clean Development Mechanism
GHG	Greenhouse gas
MOs	Mitigation outcomes
NDC	Nationally Determined Contribution
ETS	Emissions trading scheme
tCO ₂ e	Tonnes of carbon dioxide equivalent
ERs	Emission reductions
GWh	Gigawatt-hours
PV	Photovoltaic

Article 6 Approach Paper: Ensuring Environmental Integrity under Article 6 Mechanisms

Abstract

Ensuring environmental integrity is recognized as an important goal under Article 6. This paper examines factors that affect environmental integrity under Article 6 of the Paris Agreement, and identifies practical approaches for implementing the concept based on lessons learned from the World Bank's pilot activities and feedback from stakeholders in pilot countries. The starting point is the commonly accepted definition that environmental integrity is ensured as long as global greenhouse gas (GHG) emissions do not increase as a result of transfers of mitigation outcomes (MOs) (when compared to the scenario where such transfers did not take place).

Under the Kyoto Protocol, not all countries had mitigation obligations. In contrast, the Paris Agreement requires all countries to voluntarily adopt individual targets, articulated in their Nationally Determined Contribution (NDC). This effectively introduces a national commitment or emissions cap for the entire

economy or for the sectors covered by the NDC. This means that the transfer of MOs will affect the host country's ability to achieve its own NDC if decisions related to such transfers do not take into account the need for corresponding adjustments and the opportunity cost of making such adjustments.

In this context, ensuring environmental integrity—transferring MOs without affecting the country's ability to meet its NDC and ensuring that such transfers do not lead to an increase in global GHG emissions—requires the assessment of two aspects: **1) stringency of NDC compared to business as usual (BAU): Whether the country's emissions cap or NDC is stringent enough** and its targeted GHG emissions are not higher than what would be expected under BAU conditions; and **2) unit quality:**¹ Whether **the volume of transferred MOs generated from a mitigation activity is accurately calculated** by setting a stringent or conservative baseline.

¹ In this paper, the term "unit quality" is used to refer to the level of confidence that the face value of the MOs is correctly calculated and fairly represents the quantity of MOs created. The use of this limited definition is intentional to examine the quality of the unit from the environmental integrity perspective. Potential buyers or policymakers who are interested in a broader unit quality assessment could use the [Mitigation Action Assessment Protocol \(MAAP\)](#) tool, which was developed to enable assessment of mitigation actions and mitigation outcomes with regard to the sustainable development benefit, financial sustainability of the mitigation activity, and capability of the mitigation action management entity.

1. Stringency of NDC compared to BAU

If a country’s emissions target is less stringent than its BAU emissions, MOs generated for transfer may not lead to a decrease in global emissions and would not increase the issuing country’s NDC ambitions. In such cases, environmental integrity will be compromised. Therefore, it is essential to assess the stringency of the issuing country’s NDC (the emissions level that the country aims to achieve based on its NDC) compared to the BAU emissions. However, the independent assessment of the stringency of NDCs might be challenging if they are not transparently presented with all assumptions, data used, sources, and methodologies. The convergence to uniformly consistent, stringent, and independently assessable NDCs may take time. For stringent NDCs, environmental integrity is assured if MO generation and transfer are accompanied by corresponding adjustments

such that the level of ambition of the NDC is enhanced by the quantity of the transferred MOs.

2. Unit quality

Not all NDCs have quantified targets and the independent assessment of the stringency of an NDC can be a complex process. In cases where such assessment is not immediately possible or where the stringency of the NDC is low, it is important to ensure the unit quality of MOs to be transferred. Performing unit quality checks in such scenarios would ensure that the MOs maintain environmental integrity. Even for a country with a stringent NDC, ensuring unit quality will reduce the risk of over-transferring MOs, which would require substantially higher effort by the issuing country to meet the increased ambition.

The aforementioned approaches are summarized in Table 1 below.

Table 1. Approaches for ensuring environmental integrity under different scenarios

	Independent assessment*	NDC stringency	Transferred mitigation occurs...	
			Inside the scope of NDC	Outside the scope of NDC
Issuing ² country’s NDC is...	Possible	More stringent than BAU	Apply corresponding adjustments [**To avoid over-selling/transferring, ensure unit quality]	Ensure unit quality AND [Apply corresponding adjustments, if agreed in the modalities for Article 6.2 for activities outside the scope of NDC]
		Less stringent than BAU	Apply corresponding adjustments AND Ensure unit quality	
	Not possible	Difficult to ascertain	Apply corresponding adjustments AND Ensure unit quality	

* Third-party assessment³ of the stringency of the NDC is a recommended best practice and is possible in cases where the NDC is transparently presented with all assumptions, data, sources, and methodology used made available for the assessment.

** For a stringent NDC (if the NDC is transparently disclosed and independently assessed by a third party to be more stringent than BAU), corresponding adjustments would be sufficient to ensure environmental integrity. Ensuring unit quality is desirable from the issuing country’s perspective to avoid overselling.

² Although the Madrid draft text refers to the term “Participating Party” in general, for the purpose of clarity, the term “Issuing Party” is used in this paper.

³ The best practice to assess the stringency of NDC is through the third-party assessment, and a suggested terms of reference for independent assessment of BAU is available in the annex.

1. Introduction

Article 6 of the Paris Agreement allows countries to engage in voluntary cooperation to implement and achieve their NDCs. While the rules governing Article 6 are still under negotiation, it appears that Article 6.2 will have flexibility for bilateral or plurilateral arrangements between Parties for generating and transferring MOs under a variety of mechanisms, procedures, and protocols. Article 6.4, in contrast, will be governed by the Parties to the Paris Agreement with a greater level of multilateral regulatory supervision. Against this backdrop, this series of Approach Papers for Article 6 piloting presents options for designing cooperative programs and explores the practical implications of different design options currently being negotiated. The purpose of the papers is to enable countries to design pilots based on comprehensive understanding of different approaches and to facilitate a common understanding of issues and implications of each option.

As the first topic in the series, this paper looks at the concept of environmental integrity and discusses ways in which it could be ensured in the context of Article 6 cooperation.

2. Background: Why is this important for Article 6?

Article 6 of the Paris Agreement recognizes the possibility for international cooperation through the transfer of MOs. The Paris Agreement refers to the need to ensure environmental integrity in the implementation of Article 6 transfers:

- Article 6.1 recognizes that Parties may choose to pursue international cooperation to “promote sustainable development and environmental integrity”.
- Article 6.2 indicates that Parties “shall... ensure environmental integrity” in the context of international transfers for MOs.⁴

Environmental integrity has not been explicitly defined by Parties. However, a commonly accepted definition is that environmental integrity is ensured as long as global GHG emissions are no higher as a result of international cooperation (that is, transfers of MOs) than they would have been in a scenario without such cooperation (Schneider and La Hoz Theuer 2019). This section explains the major factors affecting environmental integrity, as well as considerations for ensuring environmental integrity in different scenarios.

⁴ Environmental integrity is also referred to in Article 4.13, as well as paragraphs 92 and 107 of decision 1/CP.21.



2.1 Factors affecting environmental integrity

Within the negotiations and in academic literature, four factors are commonly identified as key determinants of environmental integrity:



Robust accounting of international transfers, in part to avoid double counting of MOs.



Transferred MOs have high quality, meaning they represent additional, permanent reductions that have not been overestimated.



The stringency of mitigation targets in the issuing country (in particular, whether targets are set below BAU emissions), as well as their scope (in particular, whether the targets apply to sources or sinks where transferred mitigation is achieved).



Raising ambition over time to bring targets in line with the long-term goals of the Paris Agreement; if international cooperation were to slow the adoption of more aggressive mitigation targets, for example, then emissions could end up higher than they would have been without such cooperation.

2.1.1 Robust accounting

Article 6.2 requires that Parties must apply “robust accounting” to ensure “inter alia, the avoidance of double counting...”. Paragraph 36 of decision 1/CP.21 states that double counting will be avoided “on the basis of a corresponding adjustment by Parties”. A “corresponding adjustment” is commonly interpreted to be a book-keeping entry applied by Parties. Such an adjustment is intended to ensure that an MO is *not counted* toward the NDC of an issuing country, while it *may be counted* toward the NDC of an acquiring country. Issues concerning how corresponding adjustments will be implemented are addressed in a separate approach paper.

Avoidance of double counting is essential for environmental integrity: if double counting occurs, then—all else being equal—global GHG emissions would be higher than they would have been *without* international transfers. Under some circumstances, robust accounting can ensure environmental integrity even where other criteria, like unit quality, are *not* guaranteed (see section 2.2).

2.1.2 Unit quality

Unit quality refers to the level of confidence that an internationally transferred emissions unit—either an offset credit or a cancelled allowance from an emissions trading scheme (ETS)—is associated with at least one tonne of carbon equivalent (tCO₂e) emission reductions. Unit quality is a key backstop for environmental integrity and has been the focus of prior international crediting mechanisms, such as the Clean Development Mechanism (CDM). Under the Paris Agreement, in situations where environmental integrity is *not* guaranteed by robust accounting methods and ambitious mitigation targets, measures to ensure unit quality can provide assurances that global emissions will not be higher as a result of international transfers. For offset credits, unit quality is ensured if associated MOs are additional, not overestimated, and permanent. For allowances, quality primarily depends on whether the ETS emissions cap is set below levels that would occur in the absence of the scheme (that is, BAU emissions levels), and whether emissions are rigorously monitored (Schneider et al. 2017).

2.1.3 Ambition and scope of mitigation targets

The relative ambition and scope of an issuing country's mitigation targets (as communicated in its NDC) can also have implications for environmental integrity. A less stringent NDC, for example, would be one that targets GHG emissions that are *higher* than what would be expected under BAU. If this were the case, then in principle the country could transfer away GHG reductions that exist only on paper—that is, reductions that appear as the difference between its NDC target and BAU emissions, without any additional mitigation action.⁵ Although robust accounting could avoid double counting these on-paper reductions (often referred to as “hot air”), environmental integrity would still be violated if they were transferred. This is because emission levels in the issuing country would not change compared to a scenario without the transfers, while the acquiring country would increase its emissions relative to such a scenario.

Ensuring unit quality could compensate for this. If the transferred reductions arise from mitigation actions that are demonstrated to be additional, for example, then environmental integrity would still be preserved. However, issuing countries in this situation may have little incentive to ensure unit quality because they would face no penalty for transferring “low quality” (non-additional) units. The same lack of incentive for unit quality could apply to GHG reductions that occur outside the scope of NDC targets (if corresponding adjustments are not required for the transfer of these reductions). For issuing countries, therefore, having an ambitious and broad NDC target—that is, one that would achieve GHG emissions levels that are significantly below BAU emissions across many sectors—could be an important assurance for environmental integrity (Schneider et al. 2017; Schneider and La Hoz Theuer 2019).

2.1.4 Incentives for or against raising ambition

Article 6.1 recognizes that voluntary cooperation among Parties could allow for higher ambition in their mitigation and adaptation actions. At the same time, issuing countries could have an incentive not to raise the ambition of their NDCs if doing so would reduce their opportunities for generating transferrable MOs (Fuessler, Kohli, et al. 2019; Spalding-Fecher 2013). Environmental integrity could be indirectly compromised if, for example, countries fail to raise the ambition of their NDCs over time as much as they would have otherwise. To provide assurances about the overall environmental integrity of Article 6 mechanisms, countries may need to take steps to demonstrate increasing ambition over time in their NDCs, and pursue other measures that could help yield more ambitious action generally (Fuessler, Kohli, et al. 2019), including through regular progression in their NDCs pursuant to Articles 4.3 and 4.4. of the Paris Agreement.

2.2 Ensuring environmental integrity under different scenarios

Although all of these factors could be important for ensuring environmental integrity, not all are equally important under the different circumstances that may arise under the Paris Agreement. Because of the requirement to avoid double counting, for example, there are scenarios in which robust accounting is both necessary and sufficient to ensure environmental integrity. Specifically, if an issuing country has an NDC target that is below (more stringent than) BAU emissions, and it transfers MOs that occurred within the scope of its NDC, then environmental integrity will be preserved as long as the country still achieves its NDC target, regardless of whether the MO was non-additional or overestimated.

In such a situation, however, the issuing country would still have an incentive to ensure unit quality to avoid over-transferring MOs. An over-transfer would occur, for example, if corresponding adjustments were applied in an amount that is greater than the actual GHG reductions achieved by a mitigation action. In this case, the transferring (selling) country would incur additional costs because it would take more effort to reach its NDC target, taking into account the corresponding adjustments.

⁵ For an illustration, see area D in figure 2, section 7.

Table 1. Approaches for ensuring environmental integrity under different scenarios

	Independent assessment*	NDC stringency	Transferred mitigation occurs...	
			Inside the scope of NDC	Outside the scope of NDC
Issuing ⁶ country's NDC is...	Possible	More stringent than BAU	Apply corresponding adjustments [**To avoid over-selling/transferring, ensure unit quality]	Ensure unit quality AND [Apply corresponding adjustments, if agreed in the modalities for Article 6.2 for activities outside the scope of NDC]
		Less stringent than BAU	Apply corresponding adjustments AND Ensure unit quality	
	Not possible	Difficult to ascertain	Apply corresponding adjustments AND Ensure unit quality	

* Third-party assessment⁷ of the stringency of the NDC is a recommended best practice and is possible in cases where the NDC is transparently presented with all assumptions, data, sources, and methodology used made available for the assessment.

** For a stringent NDC (if the NDC is transparently disclosed and independently assessed by a third party to be more stringent than BAU), corresponding adjustments would be sufficient to ensure environmental integrity. Ensuring unit quality is desirable from the issuing country's perspective to avoid overselling.

Source: World Bank.

Table 1 indicates essential measures for ensuring environmental integrity under different scenarios, depending on where mitigation occurs and the relative stringency of an issuing country's NDC target.

While these measures are suggested to propose a sensible approach for countries to consider to operationalize environmental integrity, it should be noted that the most recent negotiations at COP25 (as of February 2020) reflect that many countries prefer to unversally apply corresponding adjustments for all units (regardless of whether they are generated inside or outside the scope of the NDC or through Article 6.2/Article 6.4). Potential pilot developers may want to consider the risks related to such uncertainty when developing pilot projects.

⁶ Although the Madrid draft text refers to the term "Participating Party" in general, for the purpose of clarity, the term "Issuing Party" is used in this paper.

⁷ The best practice to assess the stringency of NDC is through the third-party assessment, and a suggested terms of reference for independent assessment of BAU is available in the annex.

3. Options and approaches

Although international rules and approaches for ensuring environmental integrity are still being discussed, countries engaged in piloting cooperative approaches can take several concrete steps to provide assurances about environmental integrity and/or reduce over-transfer risks.

Three basic steps that countries can follow are discussed below: ensure unit quality, modify accounting for transfers to reflect uncertainty and ambition, and promote greater ambition.

3.1 Step 1: Ensure the quality of units used in transfers

While it is not strictly necessary for mitigation inside the stringent NDC, a unit quality check is critical to ensure environmental integrity for mitigation outside the NDC. Where a country's NDC target is less stringent (or where the stringency is ambiguous), ensuring unit quality can ensure environmental integrity in all cases.

An essential approach for ensuring unit quality is to apply conservative crediting baselines (World Bank Group 2012, 2013, 2017). As detailed in [PMR Technical Note 15](#), the Paris Agreement introduces additional considerations for crediting baselines—in particular, the fact that all countries now have mitigation targets (World Bank Group 2017). This means that issuing countries may need to consider both unit quality and over-transfer risk when establishing baselines. In short, the options are:



Setting a BAU baseline. This could be considered a minimum condition for ensuring unit quality. An emissions baseline that is set above BAU will lead to overestimated emission reductions. Because BAU emissions are subject to uncertainty, applying a baseline that is nominally BAU may not provide much confidence in unit quality, since there is a risk that it could be inadvertently higher than actual BAU emissions.⁸



Setting a below-BAU baseline. To address concerns about conservative BAU baselines, another approach is to explicitly set a crediting baseline that is well below BAU emissions estimates. This helps alleviate concerns that emission reductions might be inadvertently overestimated, but it does decrease the total quantity of reductions that can be credited and transferred, potentially resulting in under crediting.



Setting an NDC-linked baseline. Under the Paris Agreement, one issue that can arise with BAU or below-BAU baselines is that they may end up allowing the transfer of emission reductions that are needed to achieve the country's NDC. This can result in a form of over-transferring, where real mitigation is achieved, but the issuing country must invest in even more mitigation in order to formally meet its NDC target without double counting. To avoid this, one strategy is to explicitly link a crediting baseline to emissions levels associated with the achievement of the country's NDC (see figure 1 in section 7). In this case, only emission reductions that nominally go beyond those needed to achieve the country's NDC target would be credited (area B in figure 1). If the NDC itself targets emissions that are below BAU, this approach will ensure environmental integrity and help avoid over-transferring.

⁸ Another issue is that there can be differing interpretations of "BAU". Under the CDM, for example, it is permissible to define BAU baselines that ignore policies and measures put in place after 2001. This policy was adopted to avoid creating perverse incentives against new regulations. Going forward, many observers argue that a BAU baseline should reflect existing policies and measures in order to ensure unit quality.

An issuing country's NDC may—for a variety of reasons—appear to be unambitious. In this case, an NDC-linked baseline could actually increase concerns about unit quality and environmental integrity. A general solution is to adopt a baseline that represents the minimum of either BAU emissions or NDC-linked emissions in any given year. This is shown in the examples in section 7.

Another complementary approach for ensuring unit quality in the context of the Paris Agreement is to use shorter crediting periods for mitigation activities. For example, crediting periods could be aligned with NDC cycles (Warnecke et al. 2018; Blandford, Davis, and Cozzi 2017). Such an approach, however, would need to be balanced against possible disincentives it could create for investors in mitigation activities.

3.2 Step 2: Modify accounting for transfers to reflect uncertainty and ambition

Although an NDC-linked crediting baseline could be ideal from the standpoint of ensuring environmental integrity and avoiding over-transferring, this approach will not always be feasible. For example, it can be difficult to determine NDC-linked emission levels associated with a specific mitigation activity. This is especially true at the project level, though it could also be an issue for programmatic or sectoral crediting, depending on how NDC targets are defined. If an NDC is less stringent than BAU, then using a BAU or below-BAU baseline would be preferable.

The adoption of BAU baselines could create lingering uncertainties about unit quality and environmental integrity. This can be addressed by modifying the accounting for transfers. Two possible approaches to this are:

- **Discounting.** Under a discounting approach, an acquiring country would count only a fraction of the MOs it purchases toward its NDC mitigation target. For example, an issuing country could apply corresponding adjustments for 1,000 tCO₂e of mitigation, but the acquiring country would apply corresponding adjustments for only 800 tCO₂e.⁹
- If the mitigation was not overestimated, this would result in a net benefit to the climate (equivalent to how some observers define an “overall mitigation in global emissions”) (Schneider et al. 2018). If there is a risk that the mitigation was overestimated, however, then this type of discounting could limit environmental integrity risks. Under a discounting approach, the portion of reductions not counted by the acquiring country could be set based on a fixed, but arbitrary, percentage.
- **Modifying accounting on the basis of relative mitigation value.** A variation on discounting is to explicitly consider the relative mitigation value when determining an appropriate discount (or “exchange rate”) for mitigation transferred between two countries (Macinante 2018). Under this approach, the discount would not be arbitrary. Instead, a mitigation value could be assessed based on the relative ambition of NDC targets in the two countries, along with other factors such as the issuing country's institutional structures, governance, and assurances of unit quality. By quantifying these factors upfront, an appropriate “exchange rate” could be determined, under which an acquiring country might discount—or multiply—the quantity of mitigation acquired when accounting for transfers against its NDC. While this idea has not been introduced in international negotiations, it could be applied voluntarily among countries that agree to this approach, provided it could be reconciled with accounting rules ultimately adopted under the Paris Agreement.

3.3 Step 3: Promote greater ambition

One of the express goals of Article 6 is to “allow for higher ambition” among cooperating countries. To allay concerns about the potential for transfers to discourage higher ambition, issuing countries could increase transparency and reporting, develop low-emission development strategies that directly address and incorporate international cooperation, and explicitly identify technologies or sectors that issuing countries seek to support through carbon markets (Fuessler, Broekhoff, et al. 2019; Fuessler, Kohli, et al. 2019). In particular, issuing countries could clearly communicate how they intend to increase the ambition and scope

⁹ This could be implemented in different ways. For example, the transferring country could effectively “cancel” 200 units prior to any transfer to the acquiring country. Alternatively, the acquiring country could receive 1,000 units, but agree to apply corresponding adjustments for only 800.

of their NDC targets over time, and how Article 6 cooperation would support this increased ambition. This could be accomplished in conjunction with the process of regularly updating NDCs in line with Articles 4.3 and 4.4 of the Paris Agreement. Over the longer term, this could also help to address concerns about low unit quality associated with transfers of “hot air”.

4. Progress in the negotiations

Despite its importance, no detailed decisions have been reached about how environmental integrity will be operationalized and implemented under Article 6. The need to avoid double counting continues to be a primary focus of negotiations around the Article 6 rulebook (Schneider et al. 2019). It is possible that guidelines on the development of crediting baselines could be agreed. They would likely be more specific for Article 6.4 and more general for Article 6.2. With respect to using Article 6 for increasing NDC ambitions, a number of possibilities are being discussed.

5. Relationship with other design elements

Because of the need to avoid double counting, transferring away GHG reductions under a scaled-up crediting program creates an opportunity cost for issuing countries: transferred reductions may not be counted toward an issuing country’s NDC target. This suggests that prospective issuing countries should carefully consider how mitigation transfers will fit within their overall approach to mitigating emissions. At a minimum, it will be important to embed institutional responsibility for crediting program development in the same agencies responsible for defining and structuring the country’s mitigation targets, monitoring systems, and implementation policies.

6. Considerations for market participants

For market participants, especially developers of mitigation projects wishing to sell MOs internationally, it is important to recognize the implications of various approaches to ensuring environmental integrity. Ensuring unit quality, for example, may require adopting conservative crediting baselines that may underestimate GHG reductions. However, baselines that are too conservative may end up discouraging investment in economically desirable mitigation activities. Similarly, discounting or applying limits to international transfers could affect both the supply and demand for mitigation transfers. Relative effects on MO prices, transaction volumes, market size, supplier rents, and costs to buyers should be evaluated before adopting specific discount rates (Schneider et al. 2018).

7. Practical examples of the options

This section shows how the baseline approaches presented in step 1 of section 3 (ensuring the quality of units used in transfers) might work in practice. These examples are based on Article 6 pilot projects within World Bank-managed carbon funds.

From an issuing country’s perspective, two objectives are important in setting a baseline to ensure environmental integrity and avoid the “over-transfer” of MOs. Which of these concerns is most prominent will depend on whether or not the country’s NDC target is “stringent” (that is, clearly lower than BAU emissions), and whether the MOs occur within or outside the scope of the NDC target. The section describes an idealized approach, followed by examples of when an NDC-linked baseline can or cannot be identified.

7.1 An idealized approach: choosing the minimum of either BAU or NDC-linked emissions

As noted in section 3, one way to ensure environmental integrity and avoid over-transferring is to set a crediting baseline at the lower of either BAU emissions or NDC-linked emissions. This idea is illustrated in the following two figures. In figure 1, an issuing country has a stringent (below BAU) NDC target; in figure 2, the NDC target is above BAU. In figure 1, using a BAU or below-BAU baseline still carries the risk of over-transferring for the host country, so the lowest risk approach is to use a baseline linked to the NDC target. In this case, the baseline emissions would be consistent with emission levels achieved by the NDC, so that any credited emission reductions would be in excess of those required by the NDC.

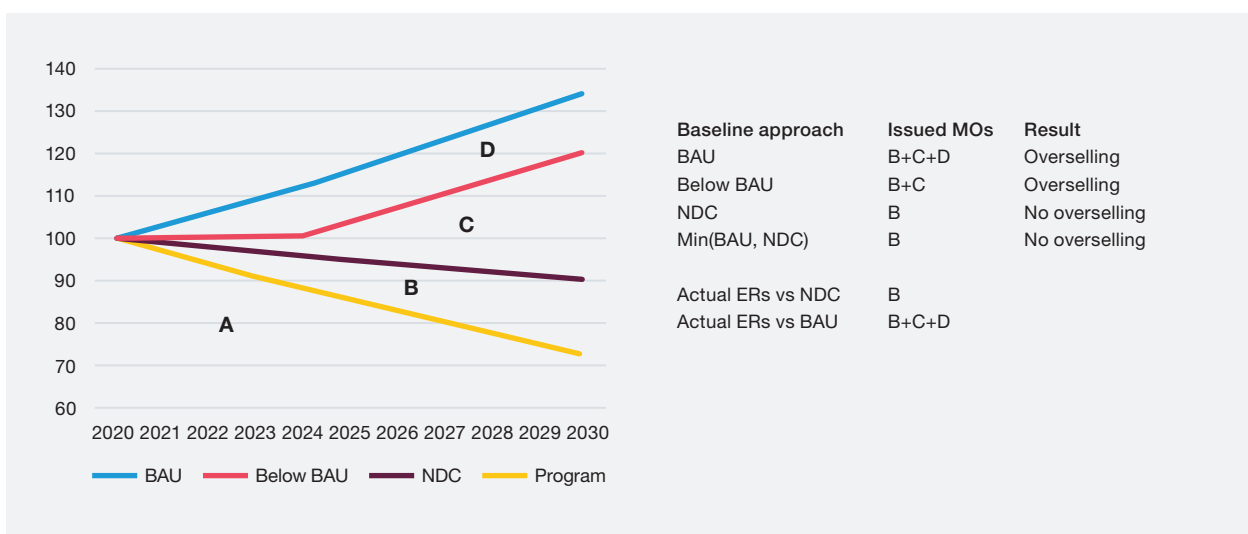
In figure 2, by contrast, using the NDC as the starting point for the baseline would result in transferring “hot air” (that is, units that do not reflect any real reductions compared to BAU). Using a BAU baseline, however, would continue to provide some assurance of environmental integrity. Thus, using the minimum of either the NDC-linked or BAU emissions levels (that is, “Min(BAU, NDC)” in the figures) will produce a baseline that prevents transfers of “hot air” and does not risk over-transferring.

7.2 Examples where an NDC-linked baseline can be easily determined

To illustrate how this approach might work in practice, consider a country that has established an explicit NDC target for its power sector, calling for the production of an additional 2,000 gigawatt-hours (GWh) of renewable electricity by 2030. The country is also considering a sectoral crediting mechanism for the power sector, and needs to define the crediting baseline for this mechanism. In this case, an NDC-linked baseline can be relatively easily determined by modeling the expected emissions that will occur if the NDC target is achieved.

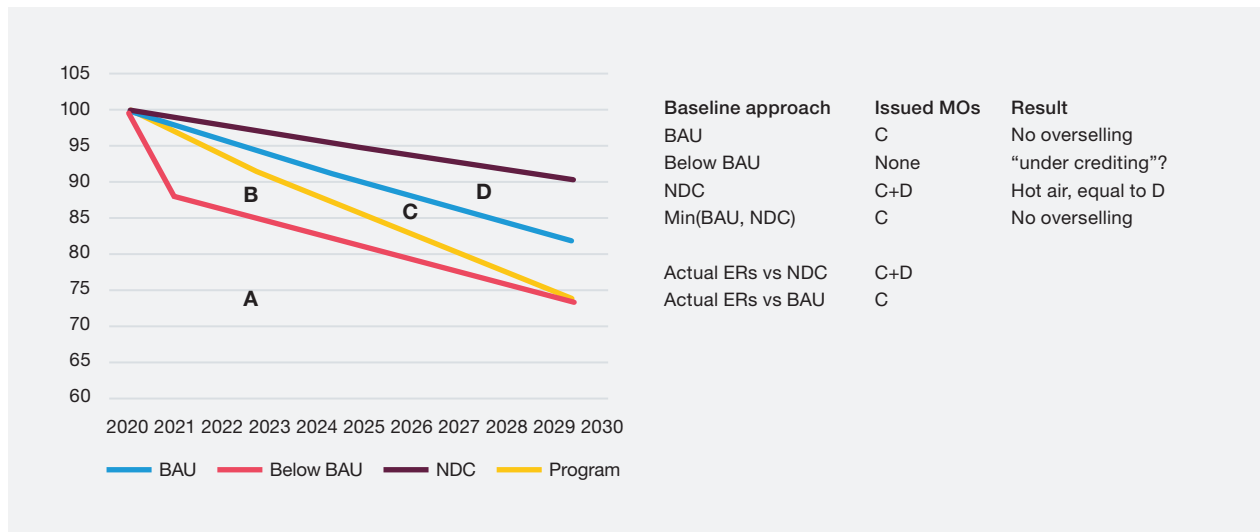
Example A: If the country’s NDC is clearly stringent in that it will lower GHG emissions relative to a BAU scenario, environmental integrity is ensured for any transfer of MOs, as long as the country applies corresponding adjustments for such transfers. However, the country still needs to be concerned about potential over selling. If the crediting baseline is set too high, then it could end up applying corresponding adjustments for “reductions” that are not real, or it could transfer away lower-cost mitigation measures, making it more costly to achieve its NDC target for the power sector. In this scenario, the country establishes a sectoral crediting baseline linked to its NDC target for the power sector. Only reductions above and

Figure 1. Different baseline approaches and associated issuance of mitigation outcomes where NDC-linked emissions are below BAU emissions



Note: MOs = mitigation outcomes; BAU = business as usual; NDC = Nationally Determined Contribution; ERs = emission reductions
Source: World Bank.

Figure 2. Different baseline approaches and associated issuance of mitigation outcomes where NDC-linked emissions are above BAU emissions



Note: MOs = mitigation outcomes; BAU = business as usual; NDC = nationally determined contribution; ERs = emission reductions
Source: World Bank.

beyond this baseline would be credited. In other words, only renewable electricity generation beyond the 2,000 GWh could generate transferable MOs.

Example B: Alternatively, it may not be clear whether the country’s NDC target is below BAU. This might be because various independent projections suggest BAU emissions are lower than the NDC target, or perhaps technology costs have dropped dramatically since the NDC target was established, making it likely that more than 2,000 GWh of renewable power will be generated regardless of any policy actions. In this circumstance, setting an NDC-linked baseline could potentially result in “hot air” emission reductions (as in figure 2). After reviewing the options discussed in section 3.1, the country (in consultation with its partners who seek to acquire MOs) decides to set a crediting baseline at below BAU levels, using a conservative forecast for BAU emissions levels. Adopting a below-BAU baseline provides added assurance of environmental integrity and reduces any risk of “hot air” transfers.

Note that in both examples, the credited mitigation activity occurs within the scope of the country’s NDC target, by definition.

7.3 Examples where it is not possible to identify an NDC-linked baseline

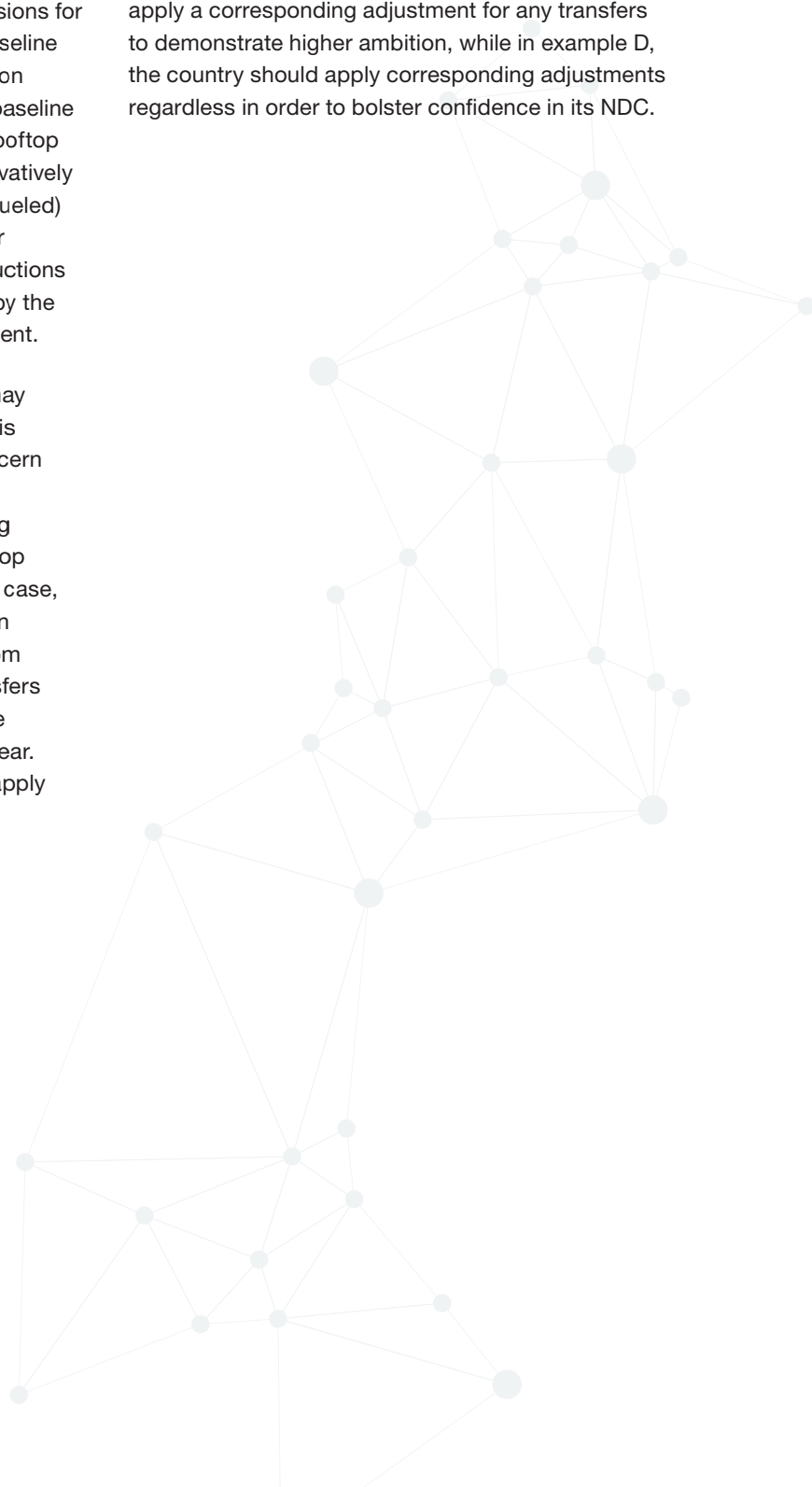
It is frequently difficult or impossible to definitively identify an NDC-linked baseline for a particular mitigation activity. This challenge can occur simply because the mitigation activity occurs outside the scope of the country’s NDC, but it is also an issue when NDC targets are specified at a higher level of aggregation—such as for an entire economy or whole sector—which makes it difficult to determine NDC-linked emissions for any particular activity (such as operations at an individual facility within the sector). Consider another country with an unconditional NDC target of reducing GHG emissions per unit of GDP by 35 percent by 2030. The country is implementing a grid-connected rooftop solar photovoltaic (PV) program, funded in part through carbon finance, producing credited emission reductions that may be transferred to other countries. In this case, it is not possible to determine an NDC-linked emission level relative to the rooftop solar program.¹⁰

¹⁰ Unless, for example, the country were to “devolve” its economy-wide target into explicit targets for each sector, including the power sector. See World Bank Group (2017) for further discussion.

Example C: As in example A, one possibility is that the country’s economy-wide NDC target is significantly below BAU emissions. This means that there is no risk of transferring “hot air” if the country still achieves its NDC. However, the country is concerned about not over-transferring emission reductions to ensure it can still safely achieve its NDC, even though this program will cover a very small portion of national emissions. Because it is not clear what an NDC-linked baseline would be for the rooftop solar program, the country sets a baseline that is significantly below BAU emissions for the power sector. This is done by modifying baseline assumptions for both activity levels and emission factors related to rooftop PV. In this case, the baseline is modeled using a higher rate of adoption of rooftop PV than would occur under BAU, and a conservatively low emission factor for grid-connected (fossil-fueled) power plants. This helps reduce the risk of over-transfer, and it could also mean that some reductions achieved through carbon finance are retained by the country and counted toward its NDC achievement.

Example D: Alternatively, as in example B, it may not be clear whether the country’s NDC target is significantly below BAU. Here, the primary concern is providing assurances about environmental integrity. The solution remains the same: setting a baseline significantly below BAU for the rooftop solar program (as in examples B and C). In this case, doing so provides assurances that the emission reductions are high quality (that is, resulting from truly additional mitigation action) and that transfers will preserve environmental integrity, even if the relationship to NDC-targeted emissions is unclear. As indicated in table 1, the country would still apply corresponding adjustments for any transfer.

In these examples, the country’s NDC is economy-wide, so there is no question about whether mitigation actions fall within or outside the scope of the NDC. As an alternative, consider a scenario where the country’s NDC covers only its transportation sector. In this case, in both examples C and D (stringent or less stringent NDC targets), the country could adopt the same below-BAU baseline to ensure environmental integrity. The difference would be that, in example C, the country could *optionally* apply a corresponding adjustment for any transfers to demonstrate higher ambition, while in example D, the country should apply corresponding adjustments regardless in order to bolster confidence in its NDC.



8. References

- Blandford, Laurence, Stacy Davis, and Paulo Cozzi. 2017. "Using Transfers to Enhance Ambition over the NDC Cycles." Brief. Center for Clean Air Policy. <http://ccap.org/assets/Center-for-Clean-Air-Policy-Using-Transfers-to-Enhance-Ambition-over-the-NDC-Cycles-Sept-2017-final-1.pdf>.
- Fuessler, Juerg, Derik Broekhoff, Anik Kohli, Nicolas Kreibich, Sascha Lehmann, and Randall Spalding-Fecher. 2019. "Trading up: Ensuring That Article 6 Promotes Ambition in the Paris Agreement." *Carbon Mechanisms Review*, no. 3 (November): 4–11.
- Fuessler, Juerg, Anik Kohli, Randall Spalding-Fecher, and Derik Broekhoff. 2019. "Article 6 in the Paris Agreement as an Ambition Mechanism: Options and Recommendations." Swedish Energy Agency.
- Macinante, Justin D. 2018. "Operationalizing Cooperative Approaches under the Paris Agreement by Valuing Mitigation Outcomes." *Carbon & Climate Law Review*, (March): 258–71.
- Schneider, Lambert, Maosheng Duan, Robert Stavins, Kelley Kizzier, Derik Broekhoff, Frank Jotzo, Harald Winkler, Michael Lazarus, Andrew Howard, and Christina Hood. 2019. "Double Counting and the Paris Agreement Rulebook." *Science* 366 (6462): 180–83.
- Schneider, Lambert, Juerg Fuessler, Stephanie La Hoz Theuer, Anik Kohli, Jakob Graichen, Sean Healy, and Derik Broekhoff. 2017. "Environmental Integrity under Article 6 of the Paris Agreement." Discussion Paper. Berlin: German Environment Agency (UBA). https://www.dehst.de/SharedDocs/downloads/EN/project-mechanisms/Discussion-Paper_Environmental_integrity.pdf?__blob=publicationFile&v=2.
- Schneider, Lambert, and Stephanie La Hoz Theuer. 2019. "Environmental Integrity of International Carbon Market Mechanisms under the Paris Agreement." *Climate Policy* 19 (3): 386–400. <https://doi.org/10.1080/14693062.2018.1521332>.
- Schneider, Lambert, Carsten Warnecke, Thomas Day, and Aki Kachi. 2018. "Operationalising an 'Overall Mitigation in Global Emissions' under Article 6 of the Paris Agreement." Berlin: New Climate Institute. <https://newclimate.org/2018/11/21/operationalising-an-overall-mitigation-in-global-emissions-under-article-6-of-the-paris-agreement/>.
- Spalding-Fecher, Randall. 2013. "National Policies and the CDM Rules: Options for the Future." Prepared by Carbon Limits, Oslo, for the Swedish Energy Agency. <http://www.energimyndigheten.se/Global/Internationellt/Carbon%20Limits%20-%20National%20Policies%20and%20CDM.pdf>.
- Warnecke, Carsten, Niklas Hohne, Ritika Tewari, Thomas Day, and Aki Kachi. 2018. "Opportunities and Safeguards for Ambition Raising through Article 6: The Perspective of Countries Transferring Mitigation Outcomes." New Climate Institute. <https://newclimate.org/2018/05/09/opportunities-and-safeguards-for-ambition-raising-through-article-6/>.
- World Bank Group. 2012. "The Nuts and Bolts of Baseline Setting: Why, What and How?" 3. Technical Note. Washington, D.C.: World Bank Partnership for Market Readiness. <https://www.thepmr.org/content/pmr-technical-note-3-nuts-and-bolts-baseline-setting>.
- World Bank Group. 2013. "Options and Guidance for the Development of Baselines." 5. Technical Note. Washington, D.C.: World Bank Partnership for Market Readiness. <https://www.thepmr.org/content/pmr-technical-note-5-options-and-guidance-development-baselines>.
- World Bank Group. 2017. "Establishing Scaled-Up Crediting Baselines under the Paris Agreement: Issues and Options. PMR Technical Note 15." Washington, DC: World Bank Partnership for Market Readiness. <https://openknowledge.worldbank.org/handle/10986/28785>.

Annex. Suggested terms of reference for independent assessment of BAU of the power sector NDC

This annex presents suggested terms of reference that apply only where countries set power-sector NDC targets, both unconditional and conditional. Any additional requirements and/or means of assessment will be determined by the country in focus and the type of target set.

Objective of the assessment

The objective of the independent entity's assessment of the BAU of the energy sector NDC target for the scaled-up renewable energy crediting program is to confirm that the emission reductions from the program are real and quantifiable, while ensuring that it ensures environmental integrity and no double counting.

Terms and definitions

The following definitions apply in the scope of the work:

- **“Assessment”** means the BAU assessment by an independent third party, a Designated Operational Entity or an accredited independent entity of a program, or any qualified person/ agency to perform such tasks.
- **“BAU scenario”** means the scenario that reasonably presents the anthropogenic emissions by sources or anthropogenic removals by sinks of GHG that would occur in the absence of any additional intervention or policy actions from the government in the sector.
- **“Independent third party”** means a properly qualified entity, for the purpose of assessing the stringency of the NDC BAU in the sector, that is independent from the relevant participating parties.

Means of assessment

The independent entity is required to use the standard auditing techniques: a) Document review; b) follow-up actions through interviews, cross-checks using different sources; and c) references to available information relating to the underlying sector. The entity is also required, as needed, to perform additional elaboration, research, or expansion to ensure that all aspects are sufficiently identified, formulated, discussed, and concluded.

Indicative scope of work

The entity shall determine the stringency of the BAU used to determine/set the sector NDC target through comprehensive assessment and description of how the NDC:

- **Established the BAU scenario:** The entity shall determine whether the approach adopted to establish the BAU scenario, the timeframes considered, and the assumptions/data/methodology used for setting the BAU and its trajectory is the more conservative. The entity shall compare the unconditional NDC target (if it exists) for the power sector with the BAU scenario and determine the stringency of the target set. The entity shall also evaluate and assess the methodologies, process followed, and tools adopted for developing any official long-term generation expansion plans or similar, and assess, in case such plans are used for setting the BAU scenario. In addition, the entity shall determine whether the grid emission factor calculation builds on the most conservative and applicable approaches, such as the forward-looking build margin approach and operating margin approach. The entity shall also look into the relevance and appropriateness of the reference year chosen and compare it with the type of target set (i.e. compared to the BAU target, absolute target, policies and measures, and so on).
- **Used different assumptions, calculations, and rationale:** The entity shall perform the above by validating the assumptions, calculations, and rationales used in the NDC. It shall determine

whether documents and sources referred/used to establish the BAU in the NDC are correctly quoted and interpreted. The entity shall cross-check the information provided in the NDC with other verifiable and credible sources. In addition, the entity shall identify the quality of the source of data used, conformance of the data, and its traceability.

- **Considered existing policies, regulations, and circumstances:** The entity shall draw on their knowledge of the sector and/or advice from local bodies/agencies, all public research and discussions under the Paris Agreement, as well as relevant national and/or sectoral policies, regulations, and circumstances, such as sectoral reform initiatives, resources availability, power sector expansion plans, and the economic situation in the project sector.

Based on the above assessment, the entity shall describe the steps taken to assess the requirements and state its opinion on whether:

- a. All assumptions and data used by the country are made available, documented, independently verifiable, and traceable, including their references and sources.
- b. All documentation used by the country/sector as the basis for assumptions and source of data is correctly quoted and interpreted in the NDC.
- c. All values used in the NDC including, grid emission factors, and global warming potentials (if applicable) are considered reasonable in the context of the target setting.
- d. All estimates of the baseline/BAU GHG emissions can be replicated using the data and parameter values provided in the NDC and consider all relevant policies/actions/measures applicable for the sector.

