



# **JIKO** **POLICY** **PAPER**

**No. 02/2018**

## **Raising Ambition through Cooperation** Using Article 6 to bolster climate change mitigation

**Nicolas Kreibich**



## Disclaimer

The positions expressed in this paper are strictly those of the authors and represent neither the opinion of the Wuppertal Institute nor of the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety.

The Wuppertal Institute is carrying out the "JIKO"-project on behalf of the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety.

### **Internet**

[www.carbon-mechanisms.de](http://www.carbon-mechanisms.de)

<http://wupperinst.org/p/wi/p/s/pd/592>

### **Contact**

Nicolas Kreibich

Email: [nico.kreibich@wupperinst.org](mailto:nico.kreibich@wupperinst.org)

Wuppertal Institute for Climate, Environment and Energy GmbH  
Döppersberg 19 • 42103 Wuppertal • Germany

[www.wupperinst.org](http://www.wupperinst.org)

This work is published under Creative Commons Attribution – NonCommercial – NoDerivatives 4.0 International license | <http://creativecommons.org/licenses/by-nc-nd/4.0/>

February 2018



Cover Photo: Schroeder / NREL / Flickr

**Raising Ambition  
through Cooperation**  
Using Article 6 to bolster  
climate change mitigation

Nicolas Kreibich

# Contents

- Summary ..... II**
- 1 Introduction ..... 1**
- 2 Conceptual foundation and delimitation ..... 2**
  - 2.1 *Ambition in the Paris Agreement* .....2
  - 2.2 *Ambition raising in Article 6* .....3
  - 2.3 *Putting ambition raising into context*.....4
  - 2.4 *The NDCcycle as an overarching framework for ambition raising*.....6
  - 2.5 *What is to be raised?*.....7
  - 2.6 *What types of market-based cooperation may be used for ambition raising?* .....7
  - 2.7 *Accounting for ITMOtransfers through corresponding adjustments*.....8
- 3 Parties’ options to raise their ambition under Art. 6 ..... 10**
  - 3.1 *Raising ambition ex-ante*..... 11
    - 3.1.1 *Ex-ante improvement of NDC* ..... 11
    - 3.1.2 *Use efficiency gains from policy linking for ambition raising* ..... 12
  - 3.2 *Options during ITMO generation and transfer*..... 13
    - 3.2.1 *Use of MOs for overachievement of unconditional NDC or achievement of conditional NDC* 13
    - 3.2.2 *Use of MOs generated outside scope of NDC* ..... 14
  - 3.3 *Options during ITMO use*..... 14
    - 3.3.1 *Use of ITMOs by the acquiring Party for ambition raising* ..... 14
    - 3.3.2 *“Insetting”: Linking use of ITMOs with domestic mitigation activities* ..... 15
  - 3.4 *Raising ambition ex-post* ..... 15
    - 3.4.1 *Phasing-in new GHG sources and phasing-out climate finance*..... 15
    - 3.4.2 *Ex-post adjustment of emissions or NDC target level* ..... 15
- 4 Assessment of options ..... 17**
  - 4.1 *Assessment of ex-ante options* ..... 17
    - 4.1.1 *Ex-ante improvement of NDC* ..... 17
    - 4.1.2 *Use efficiency gains from policy linking for ambition raising* ..... 18
  - 4.2 *Assessment of options during ITMO generation and transfer* ..... 18
    - 4.2.1 *Use of MOs for overachievement of unconditional NDC or achievement of conditional NDC* 18
    - 4.2.2 *Use of MOs generated outside scope of NDC* ..... 19
  - 4.3 *Assessment of options during ITMO use*..... 19
    - 4.3.1 *Use of ITMOs by the acquiring Party for ambition raising* ..... 19
    - 4.3.2 *Insetting”: Linking use of ITMOs with domestic mitigation activities*..... 20
  - 4.4 *Assessment of ex-post options*..... 20
    - 4.4.1 *Phasing-in new GHG sources and phasing-out climate finance*..... 20
    - 4.4.2 *Ex-post adjustment of emissions or NDC target level* ..... 21
- 5 Discussion ..... 23**
- 6 Conclusions ..... 25**
- References ..... 27**

# Summary

Ambition and ambition raising are key concepts of the Paris Agreement (PA): Article 3 of the agreement, for instance, requires Parties “to undertake and communicate ambitious efforts” which “will represent a progression over time” (Art. 3, Paris Agreement). These provisions must be seen in light of the fact that Parties in Paris have acknowledged that the intended nationally determined contributions (NDC) are insufficient and that “much greater emission reduction efforts will be required” (Decision 1/CP.21 para 17).

Despite ambition raising being a pivotal element of the new global climate regime, a clear definition of the concept is missing. This policy paper aims at filling this void. By building on key provisions of the Paris Agreement, a preliminary definition of ambition raising is elaborated which puts the intensification of climate change mitigation targets *and* actions by Parties at its centre. Instead of exclusively focusing on the integration of emissions in Parties’ (not legally binding) NDCs, this definition also considers ambition raising actions with an immediate climate impact. Building on this conceptual clarification, the paper further delimits ambition raising from other related concepts such as “contribution to overall mitigation”.

The paper then takes a closer look at how market-based cooperation under Article 6 of the Paris Agreement could allow for a higher ambition in Parties’ mitigation actions. By looking at five different forms of market-based cooperation, the paper identifies a total of eight ambition raising options, which come in at different stages of the cooperation processes.

The subsequent analysis shows that the ambition raising options identified are associated with different technical, institutional and politi-

cal challenges. In general, options that are limited to using a certain share of ITMOs for ambition raising, as well as those that use accounting to over-adjust the emissions or target level or that lead to an ex-ante improvement of the NDC are technically less complex and do also require limited additional institutional capacities. They do therefore hold the largest potential for being applied by Parties.

At the same time, applicability of the different ambition raising options varies: while some options can be applied across all different forms of cooperation and by all Parties involved, others are limited to the role of the transferring Party in one specific type of cooperation. In light of the fact that Article 6.1 of the PA requires *all* Parties pursuing voluntary cooperation to raise their ambition, a combination of the different ambition raising options identified will be needed to meet this requirement. Combining the different options further allows to achieve the dual objective of having an immediate climate impact and integrating the increased ambition into Parties’ mid and long-term mitigation strategies.

The findings indicate that a menu approach would be best suited to induce a Party-driven process for ambition raising. Instead of the UNFCCC defining one-size-fits-all provisions, such a menu approach would allow Parties to choose the approach that best suits their national circumstances and the design of the respective cooperation. The menu approach would still allow the UNFCCC to carefully fine-tune the ambition raising requirements to best serve the overall goal of the Paris Agreement. Such an approach could promote country ownership and maintain the bottom-up spirit of the Paris Agreement while at the same time maximizing the overall ambition raising impact of Article 6.

# 1 Introduction

In Paris, the Parties to the United Nations Framework Convention on Climate Change (UNFCCC) noted with “concern” that Parties intended nationally determined contributions (NDC) do not fall within least-cost two degrees Celsius scenarios and that “much greater emission reduction efforts will be required” (Decision 1/CP.21 para 17). In other words: Parties must significantly raise their ambition.

Despite the fact that ambition and ambition raising being key concepts of the Paris Agreement, a clear definition of these concepts is missing. This policy paper aims at filling this void by first providing a conceptual clarification of what ambition and ambition raising is: The concept will be explored by building on the provisions contained in the Paris Agreement in order to derive a definition that is close to this very basic document of the new global climate regime. In light of the fact that the Paris Agreement contains other concepts which are closely related to the issue of ambition raising, the paper will then delimit these different concepts.

On the basis of this conceptual exploration, the paper then takes a closer look at market-based cooperation under the Paris Agreement. Article 6.2 of the agreement allows internationally transferred mitigation outcomes (ITMOs) to be transferred among Parties which can be used by the acquiring Party for attainment of its nationally determined contribution. Notably, and in stark contrast to the role of market-based mechanisms under the Kyoto Protocol, the Paris Agreement has established a provision in Article 6.1 that requires that the “cooperation in the implementation of [Parties’] nationally determined contributions [are] to allow for higher ambition in their mitigation and adaptation actions” (Article 6.1 Paris Agreement). While this provision reflects the widely shared argument

that market-based mechanisms have the potential to induce a raise in climate change mitigation ambition, operationalisation of how market-based mechanisms may contribute to ambition raising is still lacking. This policy paper aims at contributing to this debate by presenting a wide range of options of how Parties involved in cooperative approaches can increase their climate change mitigation ambition. Section three presents these eight different ambition raising options by first showing how the different ambition raising options relate to the individual phases of a market-based cooperation process. After having presented the compatibility of the ambition raising options with the different types of cooperation and the roles Parties have therein, the chapter presents the options in detail.

In section four, the ambition raising options are assessed from a technical, institutional and legal/political perspective. While the technical assessment relates to the options’ requirements in terms of data availability and methodological complexity, the institutional assessment focuses on the question of whether existing institutions could be used for its operationalisation. In the legal/political assessment, the compatibility of ambition raising options with the overarching legal framework of the UNFCCC and the potential challenges are explored.

The findings of this analysis are then discussed and put into the larger context of the Paris Agreement’s structure and the current negotiations dynamic. On that basis, recommendations are derived that suggest an approach which allows Parties to maximize their ambition through the use of market-based cooperation.

# 2 Conceptual foundation and delimitation

## 2.1 Ambition in the Paris Agreement

Ambition and ambition raising are arguably key concepts of the Paris Agreement. However, clear definitions of ambition and ambition raising are lacking. Most people think of ambition as a “desire to achieve a particular end” (Merriam-Webster 2017). In global climate policy, ambition is usually meant to judge the extent to which a Party (or the global community) is committed to act on climate change. While the term ambition is also used to describe the willingness to implement adaptation activities, ambition is mostly being used in the mitigation context. The latter is also the focus of this paper: ambition and ambition raising in the context of climate change mitigation. To clarify the concepts of ambition and ambition raising, the paper will first look at the respective sections of the Paris Agreement in more detail. In the agreement, the term ambition is used five times.

Article 3 states that “[a]s nationally determined contributions to the global response to climate change, all Parties are to undertake and communicate ambitious efforts...” and that these efforts “will represent a progression over time” (Art. 3, Paris Agreement). By the same token, Article 4.3 requires that the NDCs represent a “progression beyond the Party’s then current nationally determined contribution and reflect its highest possible ambition” (Art. 4.3), while Article 4.11 allows Parties to adjust their NDCs at any time “with a view to enhancing its level of ambition” (Art. 4.11). Hence, in all three of

these Articles ambition is related to Parties’ NDCs.

In Article 4.5, in contrast, the concept is expanded to actions, by stating that „enhanced support for developing country Parties will allow for higher ambition in their actions“ (Art. 4.5). This broader concept is also used in Article 6.1, which states that the voluntary cooperation among Parties is “to allow for higher ambition in their mitigation and adaptation actions”(Art. 6.1), while Article 6.8 speaks more generally about the goal “to promote mitigation and adaptation ambition” (Art. 6.8). These statements allow to draw some first conclusions about how the concept of ambition is used under the Paris Agreement.

First, ambition is related to targets *and* actions. While some Articles of the PA make reference to the ambition of NDCs, others link the concept more broadly to Parties’ actions.<sup>1</sup> Hence, while ambition cannot be observed or assessed directly, targets and actions can be an expression of high (or low) ambition. This broader conceptualisation somewhat deviates from the international debate, where ambition is often exclusively associated to the target level of Parties’ NDCs. Exclusively linking ambition raising to the NDCs target level might originate from the sense that including the raise of ambition within the NDC will provide more safety in terms of actually achieving the final objective. While the

---

<sup>1</sup> Please note that NDCs may not only include targets. Art. 4.6 of the Paris Agreement, for instance, allows least developed countries and small island developing states to “prepare and communicate strategies, plans and actions” (Art. 4.6 Paris Agreement).



role of NDCs as the key point of reference in the Paris regime cannot be questioned, it should be taken into account that there is no legal obligation for Parties to actually achieve their NDC. With NDCs lacking legal bindingness, climate change mitigation actions gain considerable relevance as an indicator of ambition raises. Linking ambition with targets and actions is also consistent with the conventional use of ambition, understood as a desire to achieve a particular end. Here, actions would indicate whether the desire to achieve a particular overarching end is strong or not.

Second, ambition can be influenced by external circumstances. In this case, the understanding of ambition in the climate policy realm differs somewhat from the colloquial usage, where ambition as a desire to achieve a particular end cannot necessarily be influenced by the means to achieve this end.

Third, the word “higher” in the statement of Article 4.5 indicates that ambition can be compared. Notably, however, it does neither indicate to what it should be compared nor by what level it should be increased.

## 2.2 Ambition raising in Article 6

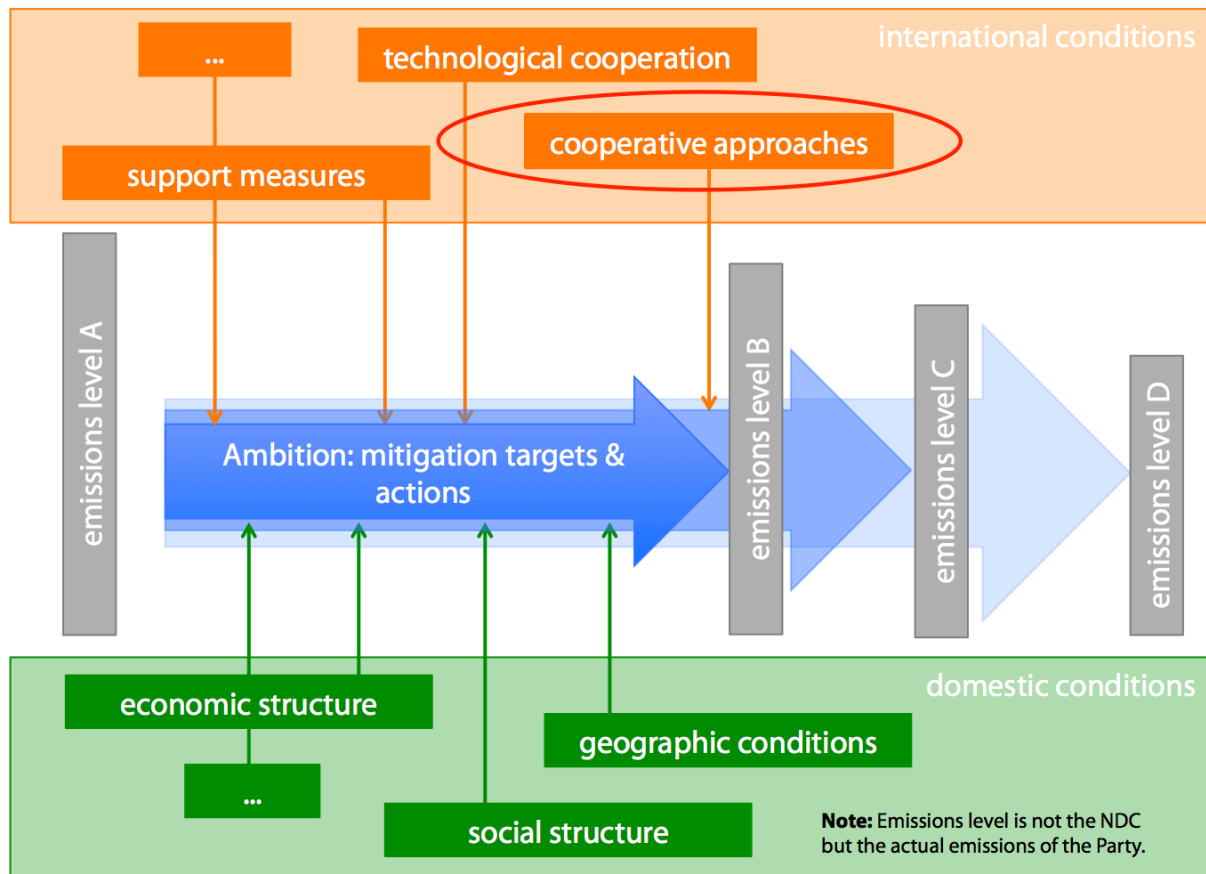
This brings us directly to the concept of ambition raising, which has a temporal/dynamic component and implies that Parties’ mitigation targets and actions are intensified. Ambition raising is also relevant in the context of the use of the cooperation mechanisms of Article 6. Article 6.2 of the Paris Agreement allows Parties to cooperate in implementing their NDCs, inter alia by exchanging internationally transferrable mitigation outcomes (ITMOs) and using them towards their NDCs<sup>2</sup>.

This is largely similar to the basic principle known from the Kyoto Protocol (KP), where the Clean Development Mechanism (CDM) and Joint Implementation (JI) allowed industrialised countries to use emission reductions generated elsewhere for attaining their mitigation targets adopted under the KP. In contrast to the so-called flexible mechanisms of the Kyoto Protocol, however, Article 6.1 requires activities to “allow for **higher ambition** in [Parties’] mitigation [...] actions” (Art. 6.1, emphasis added). A final decision about the scope of this provision will be taken by the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement (CMA) as part of the Paris rule book to be adopted by the end of 2018, at the earliest. In the meantime, the fact that ambition and progression over time are strongly embedded in the Paris Agreement makes ambition raising a key requirement for all types of cooperation taking place under Article 6.

Furthermore, the formulation in Article 6.1 clearly links the use of cooperation mechanisms to individual Parties’ ambition. With this, ambition raising is linked to the mitigation targets and actions of individual Parties.

Another notable aspect is that Article 6.1 can be read as a requirement that does not foresee any differentiation between the Parties involved, as it reads: “Parties recognize that some Parties choose to pursue voluntary cooperation in the implementation of **their** nationally determined contributions to allow for higher ambition...” (Art. 6.1, emphasis added). The word “their” suggests that voluntary cooperation is to allow for higher ambition of *all* Parties involved in Art. 6 activities, transferring countries as well as acquiring countries.

<sup>2</sup> Unless otherwise noted, the term NDC is used to refer to the unconditional elements of the NDC.



**Figure 1:** Cooperative approaches as a tool to enhance a Party's mitigation ambition. *Source Wuppertal Institute*

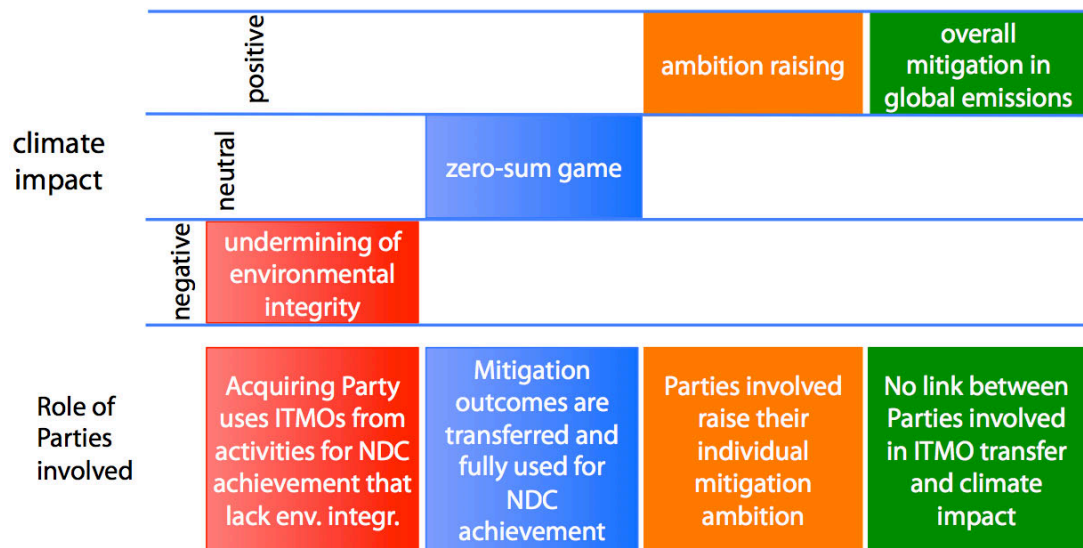
**Figure 2** illustrates the understanding of ambition and ambition raising that underpins this paper: at the centre of the figure is the blue arrow which describes the country's ambition. It consists of mitigation targets and actions. As can be seen from the orange and green boxes and arrows, the country's targets and actions (and hence its ambition) are dependent on domestic as well as international conditions.<sup>3</sup> The country in this figure starts from emissions level A and adopts mitigation targets and implements mitigation actions in order to achieve its ambition level B. However, thanks to the use of cooperative approaches under the Paris Agreement, the country will be able to enhance its ambition, allowing it to reduce its

<sup>3</sup> Note that some of these conditions might also be influenced by the country's ambition level, influence might therefore be reciprocal.

emissions to level C. If ambition is further increased, the country might even be able to achieve emissions level D.

## 2.3 Putting ambition raising into context

Ambition raising cannot be understood without the broader context of other concepts which describe positive, neutral or negative impacts on the climate. These different concepts can be seen in a continuum: The first describes a negative outcome: The **undermining of environmental integrity**. The term "environmental integrity" describes "a situation where the individual elements or mechanisms of an overarching instrument do not undermine the (environmental) goals of this instrument" (Kreibich and Hermwille 2016, 1).



**Figure 2:** Illustration of key differences between ambition raising and other related concepts. *Source: Wuppertal Institute*

For the specific case of emissions trading, for example, this means that environmental integrity is undermined if transfers of ITMOs lead to global emission levels that are higher than those of a situation without these transfers taking place. Environmental integrity can be undermined in many ways. For instance, if mitigation activities that would have been implemented anyway are used for the generation of credits and used for NDC achievement (for an overview see: Kreibich and Hermwille 2016). In this regard, some of the proposals made in the debate about ambition raising, such as limiting carry-over of mitigation outcomes from one NDC period to the next, become relevant. These proposals are aimed at safeguarding a certain ambition level to address the risk of environmental integrity being undermined. They are, however, not directly related to the question of ambition raising.

In order to allow Article 6 activities to result in ambition raising, ensuring environmental integrity can be considered a basic prerequisite. From the author’s point of view, environmental integrity is ensured if international transfers of mitigation outcomes are at least a “**zero-sum game**”. Hence, a situation in which a globally neutral balance in terms of greenhouse gas

(GHG) additions and subtractions to the atmosphere is achieved. The term zero-sum game denotes a scenario in which mitigation outcomes have been generated by additional mitigation activities and are entirely used for NDC attainment (for an analysis on the issue of additionality see: Hermwille and Obergassel 2018). Ambition raising, in contrast, must go beyond that situation by allowing Parties to adopt mitigation targets and implement respective mitigation actions that result in a lower national emissions level.

Ambition raising can further be discerned from the concept of **overall mitigation in global emissions**. Here, actorness becomes key: it is the international community and not individual Parties that take action to generate a climate benefit. The mitigation outcomes are no longer linked to the Parties involved and the Parties’ ambition level stays the same.

The Paris Agreement’s provisions on Article 6 can again be a guiding document for this differentiation: As outlined above, Article 6.1, which serves as a chapeau for all other paragraphs of Article 6, requires cooperation activities to allow for a higher ambition in the mitigation and adaptation actions of the Parties

involved. This requirement is also valid for Article 6.4, which establishes a new “mechanism to contribute to the mitigation of greenhouse gas emissions and support sustainable development”. This new mechanism, however, shall further “deliver an overall mitigation in global emissions” (Art. 6.4 d). This clearly shows that ambition raising and contribution to overall mitigation are two concepts that must not be confounded. While all activities under Article 6 must contribute to a raise of ambition of the Parties involved, only the mechanism enshrined in Article 6.4 additionally requires a contribution to overall mitigation.

The difference can be illustrated by using the example of cancellation of units: If an acquiring Party voluntarily decides to cancel a certain share of the ITMOs imported without these being used by another Party, this can be considered a raise of the Party’s mitigation ambition. If, by contrast, the mechanism under Article 6.4 (Sustainable Development Mechanism) establishes provisions or a procedure that result in the automatic cancellation of ITMOs, these can be considered a contribution to global mitigation. While in the context of ambition raising, there is a clear link between the ITMOs and the country that decided to cancel these ITMOs, such a connection is missing in the case ITMOs have been cancelled by an independent third actor, such as the UNFCCC.

**Figure 2** illustrates key differences of the concepts discussed with regard to their climate impact and the role of Parties involved in the ITMO transfer.

## 2.4 The NDC cycle as an overarching framework for ambition raising

At the core of Paris Agreement’s structure to induce a raise of ambition lies the NDC cycle: Article 4.9 requires Parties to update their NDC

every five years. Notably, successive NDCs must represent a progression beyond current NDC and reflect the highest possible level of ambition (Art. 4.3) (see **Box 1**).

The updating of NDCs is to be informed by other processes, one of it being the global stocktake: here, the CMA assesses the collective progress towards achieving the Paris Agreements long-term goals in regular periods of five years.

### NDCs as a key element of ambition raising

Under the Paris Agreement, each Party is required to “prepare, communicate and maintain successive Nationally Determined Contributions that it intends to achieve” (Art 4.2. NDCs can vary significantly in form and content. The following are key parameters describing a greenhouse gas-based NDC.:

- The **timeframe** is the period in which the NDC is to be achieved. It can be a single year or multiple years (another possibility is peak and decline).
- The **sectoral scope** defines the sectors covered by the NDC (if not covered by the NDC, additional information on the treatment of the land sector might be required)
- The **coverage of GHGs** defines which greenhouse gases are targeted by the contribution.
- The **geographic scope** defines the area covered.

The expected impact of the NDC will primarily be defined by the following two parameters.:

- The reference level relates to the quantity of emissions against which the NDC is compared. The choice of the reference level depends on the contribution type and can be base year emissions, base year emissions intensity or baseline scenario emissions.
- The target level of the NDC describes the reduction of emissions the Party is to achieve.

**Conditionality of NDCs:** In the run-up to the Paris Conference, Parties at COP20 in Lima were unable to agree on the information to be provided when submitting their NDCs (Ott et al. 2015). Hence, almost 80% of all Parties have included conditional elements in their NDC. While 43% have combined it with an unconditional contribution, 33% have adopted a conditional contribution only (Day, Röser, and Kurdziel 2016).

While unconditional elements indicates a Party’s intention to implement these activities unilaterally, a conditional target implies Party’s willingness to adopt a more stringent mitigation target or additional actions under certain conditions. While these conditions are generally associated to increased financial and technical support, there is no clear definition of what these conditions may comprise in detail. In addition, conditional elements have been expressed in different forms and with varying degrees of transparency. In addition to these problems of lack of detail and clarity, it will be challenging at the practical level to separate unilateral from funded mitigation activities (Day, Röser, and Kurdziel 2016).

**Box 1:** NDC as a key element of ambition raising

A decisive element is the enhanced transparency framework for action and support (Art. 13): The transparency framework requires Parties to submit relevant information to inter alia track their progress towards achieving their NDCs. The data submitted by Parties undergoes a technical expert review which is also to identify areas of improvement for Parties. Furthermore, the update of Parties' NDCs is to be informed by the global stocktake of Article 14. While the focus of the global stocktake is on assessing the global progress towards meeting the goals of the Paris Agreement indicating an aggregate assessment, this process may also include disaggregated components (Holz and Ngwadla 2016).

The mechanism to facilitate the implementation of and promote compliance with Paris Agreement established by Art. 15.1 can also be considered an instrument to inform the NDC updating processes. The mechanism consists of an expert-based committee that is to be facilitative in nature and function in a non-punitive manner.

Together, these elements are to induce an enhancement of mitigation ambition both with regard to the level of Parties' NDCs as well as with regard to the action taken by Parties to reach their current NDCs. In addition, the Paris Agreement allows countries to adjust the NDC at anytime to increase the level of ambition (Art. 4.11).

## 2.5 What is to be raised?

One key question when talking about ambition raising is: What should actually be made more ambitious? Following the theoretical explorations made above, a clear answer to this can be provided: **Ambition is raised when Parties' mitigation targets and/or actions are intensified.** Instead of fully relying on the later integration of more stringent mitigation targets in-

to Parties' NDCs, this definition encompasses both: actions on the ground as well as mitigation plans that are at a later point to be translated into concrete actions, such as the mitigation targets contained in countries' NDCs.

## 2.6 What types of market-based cooperation may be used for ambition raising?

Article 6 of the Paris Agreement allows for different types of market-based cooperation that could potentially be used for ambition raising. Depending on the type of cooperation, different options to raise ambition may be possible. The section will first briefly outline the different types of market-based cooperation and then present options how these could be used for ambition raising. It should be noted that for the sake of simplicity, the flow of ITMOs in the types of cooperation presented here only flows in one direction, from the transferring country to the acquiring country. In practice, however, ITMOs might also flow in both directions and the different types of cooperation might even be combined. If ITMOs are to be used for NDC attainment, Parties involved must implement corresponding adjustment in order to account for these transfers (see **Fehler! Verweisquelle konnte nicht gefunden werden.** below).

### *Government-to-government transfers*

This type of cooperation is the most direct one: the government of the acquiring Party provides funds to a transferring Party in exchange of ITMOs. In most cases, these ITMOs will be used for the achievement of the acquiring Party's NDC. However, other applications are also possible; for instance, the acquiring Party might decide to voluntarily cancel these ITMOs.

### *Policy Linking*

Another form of cooperation is (full or partial) linking of national climate policies, such as emissions trading systems. In this scenario, the national policy instrument of the transferring Party is linked to that of the acquiring Party. Entities (companies, installations) covered by the national climate policy in the acquiring Party can use emission reductions generated through the climate policy in the transferring Party in exchange of financial means. The policy of the transferring Party contributes to achieving the NDC of the acquiring Party.

### *Policy crediting*

A third form of international cooperation is policy crediting: Country B assists country A in implementing a national climate policy instrument by providing financial support. In exchange of that support, country B receives (a part of) the emission reductions achieved by the national climate policy of country A. While similar to government-to-government transfers, the emission reductions and the funds transferred are contingent on the results of the specific policy (results-based payments).

### *Sectoral crediting*

Another option is sectoral crediting: The transferring Party establishes a crediting baseline for a specific sector. If emissions in this sector fall below the baseline, the Party can export these in form of ITMOs to the acquiring country, who provides the transferring Party with financial means in return.

### *Activity-based crediting*

Another form of international cooperation consists of the acquiring Party implementing or financing an emission reduction activity (project, programme) in the transferring Party in exchange of (a share of) the emission reductions

generated by the activity. In contrast to policy crediting, this type of cooperation does not actively involve the government of the acquiring Party but only requires the transferring Party's government to authorize the implementation of the activity.

## 2.7 Accounting for ITMO transfers through corresponding adjustments

One concern with the different forms of ITMO transfers described above is that the underlying emission reductions are counted more than once. This is the case, for instance, if one emission reduction reduces the inventory emissions of the transferring country while at the same time being used for NDC achievement of the acquiring country. In order to avoid this and similar situations known as double counting, Parties in Paris have agreed that Parties are to implement "corresponding adjustments (..) for both anthropogenic emissions by sources and removals by sinks covered by their nationally determined contributions" (Decision 1/CP.21 para 36). Corresponding adjustments will be part of the overall accounting system. "Accounting" refers to the set of systems and processes needed for comparing Parties' mitigation targets with the progress made, in order to assess whether mitigation targets have been achieved (Prag 2013). Accounting must therefore be discerned from the concept of reporting, which is related to the mere provision of data. Here, the information provided will not necessarily be tallied against Parties' NDCs (Hood et al 2014).

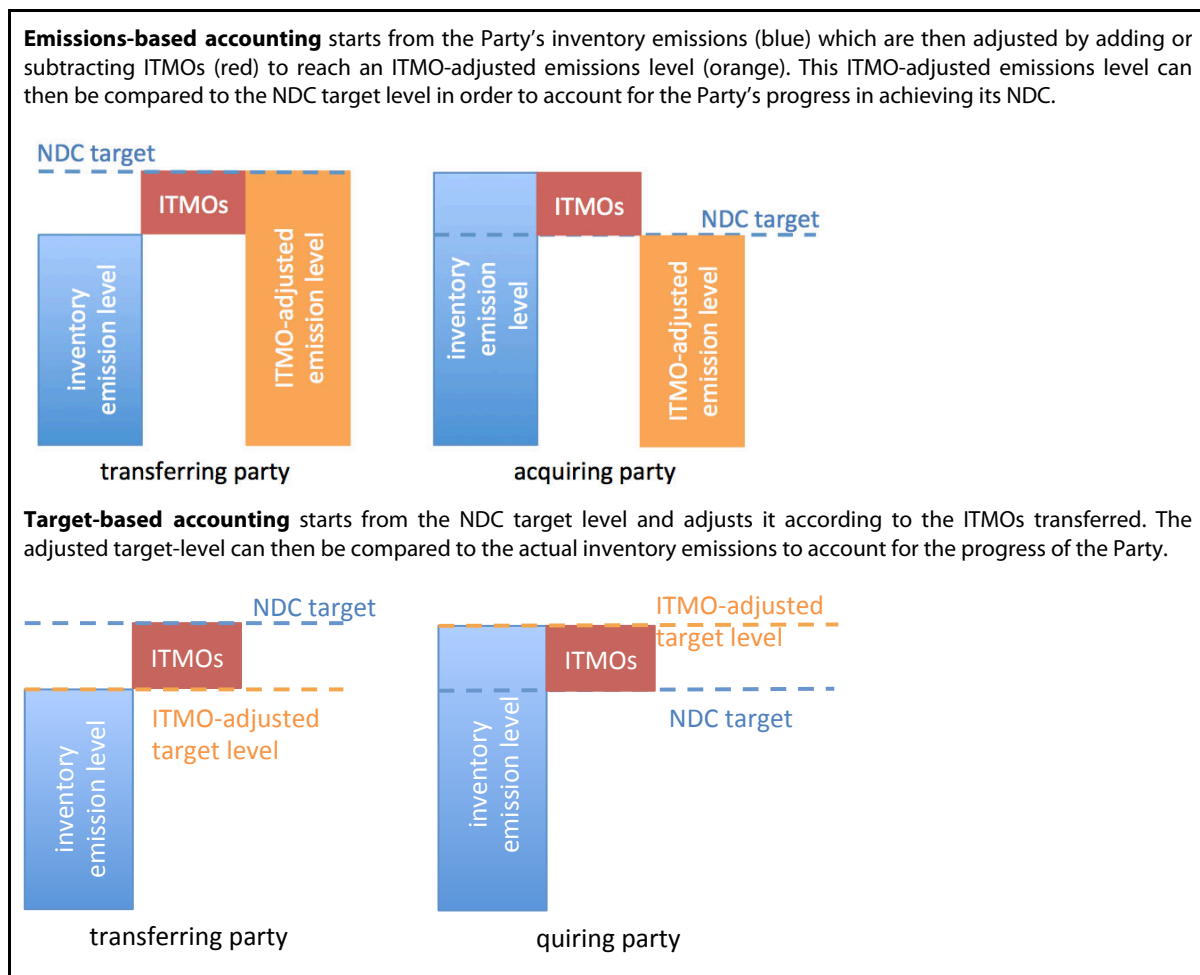
Corresponding adjustment will for instance have to be applied if the transferring Party exports ITMOs that were generated within the scope of its NDC and the acquiring Party intends to use these ITMOs for NDC attainment. The details of how to implement these adjustments still have

to be agreed and be translated into concrete provisions, that will form part of the Paris rule book. In principle, however, two mathematically equivalent approaches can be distinguished: Adjustments of emissions levels (emissions-based accounting) and adjustment of target levels (target-based accounting) (see **Box 2** below).

Accounting for transfers will neither be needed nor be possible in all cases and by all Parties involved. If, for instance, ITMOs are generated outside the scope of an NDC, the transferring Party will not be able to account for these transfers but it can only report on them.

The situation is similar if the acquiring country uses Article 6 in the context of (results-based) climate finance. Instead of using the ITMOs for compliance purposes by accounting these against its NDC, the acquiring country cancels the ITMOs without further adjusting its NDC or its reported emissions.

Hence, applicability of corresponding adjustments will depend on where ITMOs have been generated and how the acquiring Party intends to use them. If corresponding adjustments are not needed or possible, Parties could however be required to report on these transfers.



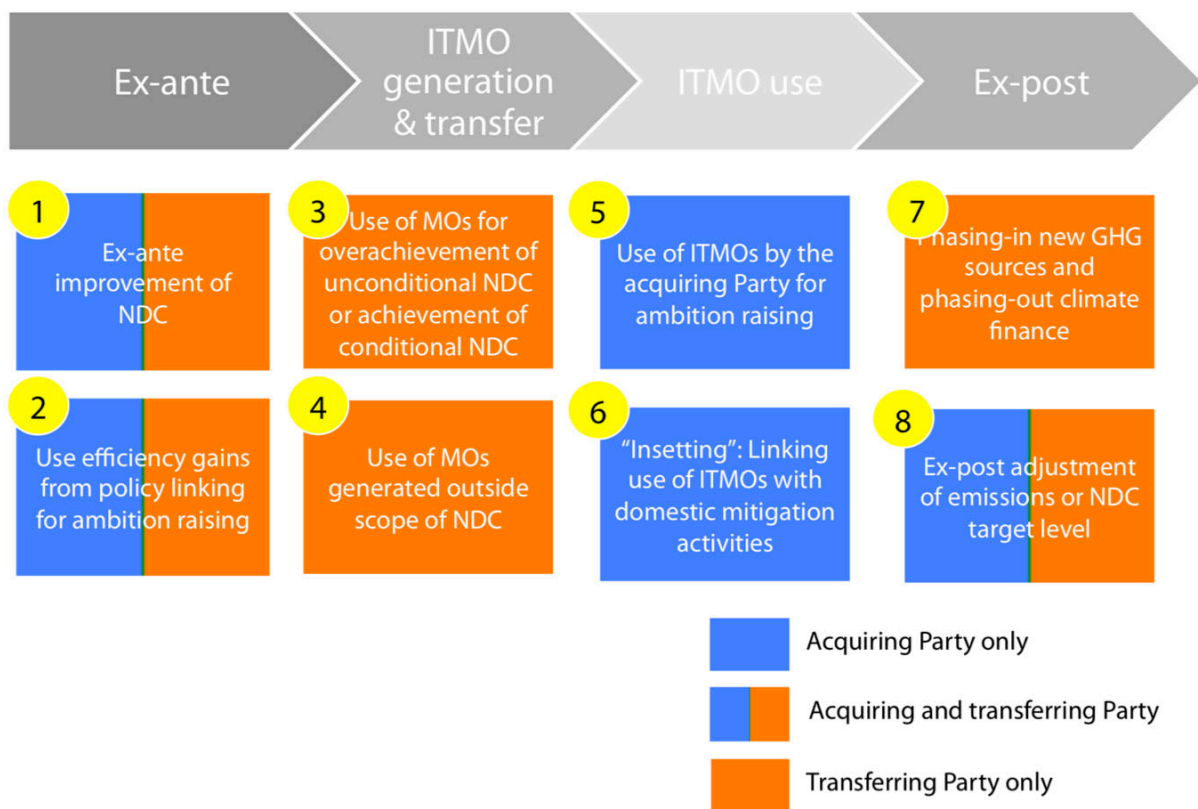
**Box 2:** Emissions-based and target based accounting for ITMO transfers (Source: based on OECD and IEA 2017)

# 3 Parties' options to raise their ambition under Art. 6

This section will look at how market-based cooperation activities under Article 6 of the Paris Agreement may contribute to the enhancement of Parties' ambition. In doing so, the paper builds on the different types of market-based cooperation outlined above.

A total of eight different ambition raising options were found. An overview is provided in **Figure 3** below. As you can see, the ambition raising options are associated to different phases of the cooperation process: Ambition raising options 1 and 2 can be applied before the im-

plementation of the ITMO-generating has begun. For the ambition raising options 3 and 4, the mitigation activity must be implemented, while the ITMO transfer as such must not yet have taken place. It should be noted, however, that for robust accounting, information on the final use of the ITMOs by the acquiring Party will be needed for both of these options. Ambition raising options 5 and 6 are associated to the use of ITMOs. Options 7 and 8 are largely decoupled from the transfer process as such but are stronger linked to the ex-post situation.



**Figure 3:** Overview on ambition raising options. *Source: Wuppertal Institute*



As will be shown in much greater detail, applicability of these options also varies. While options 1, 2 and 8 can be used by all Parties, options 3, 4 and 7 can only be applied by transferring Parties. Options 5 and 6 are restricted to acquiring Parties. Furthermore, applicability of ambition raising options varies among the different types of market-based cooperation presented in chapter 2.6. above. As can be seen from **Table 1** most ambition raising options can be applied in numerous forms of cooperation. Only options 2, 6 and 7 are restricted to specific forms of cooperation.

### 3.1 Raising ambition ex-ante

When engaging in one of the forms of market-based cooperation outlined above, transferring as well as acquiring Parties have different options to raise their climate change mitigation ambition. Parties have the possibility to indicate

their willingness to raise their ambition before actually engaging in a specific form of Art. 6 cooperation.

#### 3.1.1 Ex-ante improvement of NDC

A Party's nationally determined contribution is the key indicator of its ambition, making it also the primordial instrument for ambition raising. Hence, before engaging in cooperative approaches, Parties could indicate their willingness to raise their ambition by modifying their NDC along two dimensions: The form (nature) and content (target level).

With regards to the very nature of the NDC, it must be noted that the UNFCCC could require countries willing to cooperate under Article 6 to adopt an NDC with specific characteristics, as this would contribute to safeguarding environmental integrity and allow for robust accounting (see Box 3 below).

#	Option	Govt-to-Govt transfer	Policy linking	Policy crediting	Sectoral crediting	Activity-based crediting
1	Ex-ante improvement of NDC	✓	✓	✓	✓	✓
2	Use of efficiency gains from policy linking for ambition raising	✗	✓	✗	✗	✗
3	Overachievement of uncond. NDC/achievement of cond. NDC	✓	✓	✓	✓	✓
4	Use of MOs generated outside scope of NDC	✓	✓	✓	✓	✓
5	Use of ITMOs by the acquiring Party for ambition raising	✓	✓	✓	✓	✓
6	"Insetting": Linking use of ITMOs with domestic mitigation activities	✓	✗	✓	✓	✓
7	Phasing-in new GHG sources and phasing-out climate finance	✗	✗	✓	✓	✓
8	Ex-post adjustment of emissions or NDC target level	✓	✓	✓	✓	✓

**Table 1:** Compatibility of ambition raising options and different forms of market-based cooperation. Source: Wuppertal Institute

## Eligibility of NDCs

With the bottom-up approach the Paris Agreement has introduced, Parties are given significant leeway in defining their nationally determined contributions (NDCs). Parties to the agreement are making use of this new freedom, as the NDCs submitted up to date display a large diversity: while some Parties have submitted GHG emission targets, others have adopted non-GHG targets, combined their GHG emission target with non-GHG goals or pledged mere actions (policies and measures) to mitigate climate change. Diversity also exists among those countries that have submitted GHG emission targets: while some submitted continuous multi-year targets that describe a reduction of GHG emissions over a period of time, others submitted single-year targets, which only relate to a certain level of emissions in a specific year (for an overview see: IGES 2017; WRI 2017; Graichen, Cames, and Schneider 2016). This diversity does not only make it difficult to compare contributions and to assess the individual as well as collective progress. The variety of NDCs also poses serious challenges in terms of accounting for ITMOs (Hood, Briner, and Rocha 2014; Schneider et al. 2016).

Restricting the access to Article 6 Parties with a specific type of NDC is being discussed as one possibility to ensure compatibility of NDCs and robust accounting (see inter alia: Schneider et al. 2016; Kreibich and Obergassel 2016). Brazil, for instance, suggested to limit eligibility to Parties with quantified absolute reduction targets (Brazil 2017). In addition, requiring a minimum level of ambition and a sectoral scope has been suggested to avoid the generation of so-called hot air, the use of emission reductions from non-additional mitigation activities (Schneider et al. 2017).

While restricting eligibility to Parties with absolute economy-wide emission targets would certainly reduce risks to environmental integrity, such requirements would at the same time conflict with the bottom-up nature of the Paris Agreement. It remains to be seen whether Parties will find a common ground and approaches agreeable to all in order to balance country ownership and broad participation with environmental integrity of the Paris Agreement.

Box 3: Eligibility of NDCs

Parties could, however, go beyond these eligibility requirements and adopt target types that are particularly clear and transparent. For instance, Parties that have adopted a single-year target could move towards a multi-year target

or develop multi-year trajectories (Lazarus et al. 2014). Similarly, Parties could expand the sectoral scope of their targets and move from a single-sector target to an economy-wide target. Moving from a simple to a more accurate NDC would allow for a more robust assessment of the Party's mitigation activities and presumably lead to an intensification of mitigation activities on the ground.

The main lever to increase ambition, however, is the NDC's target level: In order to demonstrate their willingness to enhance ambition, Parties could adopt a target level that requires a significant intensification of mitigation actions.

### 3.1.2 Use efficiency gains from policy linking for ambition raising

Linking emission trading schemes (ETS) is commonly considered to yield significant gains. In particular, linkage is associated with cost-effectiveness, as the price-signal allows for the achievement of the lowest-cost emission reductions across the linked systems. A larger number of market participants may further result in a more liquid market as well as a reduced risk of carbon leakage. As highlighted by Metcalf and Weisbach (2010), linking does not have to be limited to ETSs and may also include taxes as well as regulatory policies allowing for different scenarios, including situations of mere policy coordination where units are not exchanged (for an overview on linking of different types of policies see: Haug, Frerk, and Santikarn 2015). While the potential implications of linking non-ETS policies under the Paris Agreement are still being explored (Bodansky et al. 2015; Kreibich and Wang-Helmreich 2017), the argument is repeatedly being made that linking policies in general and ETS in particular will lead to efficiency gains that result in an increase of ambition (recently: Keohane, Petsonk, and Hanafi 2017).

For the time being, however, these efficiency gains have not yet been operationalized as a

means for ambition raising. Rather, the expectation was that Parties would take these cost reduction effects into account when defining their future mitigation targets. With the Paris Agreement requiring countries to raise their ambition and Article 6 potentially providing the basis for linking of ETS and other policies (Mehling, Metcalf, and Stavins 2017), there is now the possibility to operationalize this linking benefits. Parties could now use these efficiency gains to demonstrate their ambition raising actions, for instance by factoring in the additional savings achieved through linking at the moment of adapting the design of their national policies. This may result in a higher tax rate level or a lower ETS cap, which in turn would translate into a more stringent NDC.

## 3.2 Options during ITMO generation and transfer

Possibilities to enhance Parties' mitigation ambition are not limited to the situation before the cooperation under Article 6 begins, but Parties can also raise their ambition during and after the transfer of ITMOs.

### 3.2.1 Use of MOs for overachievement of unconditional NDC or achievement of conditional NDC

Whether the transferring Party will be able to use the emission reductions exported for ambition raising depends on how the acquiring country intends to use them and how they relate to the transferring Party's NDC. For this option, the provisions of the Paris Agreement to avoid double counting (see Art. 6.2 and Art. 4.13) and paragraph 36 of the accompanying Decision on "corresponding adjustments" (para 36 of the Decision 1/CP.21) can provide relevant insights. In line with the common reading of these provisions (see: Schneider et al. 2016; OECD and IEA 2017; Spalding-Fecher et al.

2017), the transferring country cannot use ITMOs for achieving its own NDC if these are used by the acquiring country for attaining its NDC. Instead, both countries will have to make "corresponding adjustments" to ensure that emission reductions aren't claimed twice (see **Box 2** above).

This implies that emission reductions that are used for NDC attainment by the acquiring Party cannot be used for ambition raising by the transferring Party. If, however, the acquiring Party does *not* use ITMOs neither for NDC attainment nor for ambition raising, but as a means to disburse climate finance, the underlying emission reductions could theoretically be used by the transferring country for ambition raising.

This option will be explored in greater detail by looking at two cases which are very similar:

The first case is overachievement of an unconditional NDC. For this scenario, the author assumes that a transferring Party has only adopted an unconditional NDC and implements mitigation activities in sectors covered by this unconditional NDC but not (yet) targeted by concrete mitigation measures. All else being equal, this mitigation activity would automatically contribute to the achievement of the unconditional NDC. Hence, there is a large risk that the mitigation measure intended to contribute to ambition raising will crowd-out other activities that would otherwise contribute to the achievement of the unconditional NDC.

Therefore, in order to actually raise its ambition, the transferring country would have to avoid such a crowding-out effect of domestic measures. In addition, the transferring Party could make corresponding adjustments that take into account the amount of ITMOs exported even if they are not used by the acquiring country and would therefore not be necessary in terms of ensuring environmental integrity. Such an adjustment would, however, result in a situation similar to where participating coun-

tries adjust their emissions beyond of what would formally be required to comply with the requirement of “corresponding adjustments” (see section 3.4.2 below).

The second case is achievement of conditional NDC. For this scenario, it is assumed that the transferring Party has also adopted conditional elements as part of its NDC (for an explanation of conditional and unconditional NDC see: **Fehler! Verweisquelle konnte nicht gefunden werden.**). The author will in the following expect that this conditional target only differs from the unconditional one with regard to the level of the contribution, while the sectoral scope, the reference level and all other parameters of the NDC stay the same.

In such a scenario, all mitigation activities implemented within the scope of the NDC will contribute to both targets, the unconditional and the conditional one. When implementing activities that result in ITMOs, however, the transferring Party could decide whether the emission reductions generated are used for attaining to the unconditional or the conditional NDC.

Only in the latter case, the emission reductions will contribute to the conditional part and can therefore be considered ambition raising as they assist the country in moving beyond its unconditional target. The risks about the ITMO-generating activity replacing domestic measures is the same as in the first case with the transferring Party overachieving its unconditional target. Furthermore, in both cases use of mitigation outcomes is only possible if the acquiring Party refrains from using the respective ITMOs.

### **3.2.2 Use of MOs generated outside scope of NDC**

Using the cooperation mechanisms of Article 6 to target emissions that are outside the NDC's scope and which have previously not been

tapped could be another possible way to increase the transferring country's mitigation ambition.

While the use of ITMOs from such emission sources for NDC attainment is problematic in terms of environmental integrity (see **Box 2**) because there is no built-in incentive to ensure additionality, there is no integrity risk if ITMOs are being cancelled by the acquiring country and the transferring country uses Article 6 to raise its ambition.

## **3.3 Options during ITMO use**

### **3.3.1 Use of ITMOs by the acquiring Party for ambition raising**

What are the options for the acquiring country to raise its ambition in this cooperation phase? Can the acquiring Party increase its mitigation ambition by cancelling the ITMOs imported? If the acquiring Party cancels ITMOs without adjusting its emissions downwards, a positive contribution to the climate would be achieved. The question, however, is whether the reductions should be considered a contribution to “overall mitigation in global emissions” or as an enhancement of the Party's climate change mitigation ambition.

Building on the definition of ambition raising elaborated above, the cancellation of ITMOs by the acquiring Party is considered a raise of its mitigation ambition, as it is the Party itself who is responsible. From this point of view, this action is comparable to a raise of climate finance ambition as there is no direct link to the actual mitigation action of the Party.

It should be noted, though, that cancelled ITMOs can only be used for ambition raising if they are not at the same time used or claimed by the transferring country. In contrast, if ITMOs are cancelled (or discounted) by an overarching body to contribute to a mitigation of global

emissions, mitigation ambition of Parties involved would not be affected.

### **3.3.2 “Insetting”: Linking use of ITMOs with domestic mitigation activities**

Offsetting was a key driver of the global carbon market under the Kyoto Protocol. Industrialized (Annex I) Parties with mitigation targets under the protocol made extensive use of this option to comply with their commitments. Under the Paris Agreement, market mechanisms are to go beyond offsetting, by also contributing to the enhancement of Parties’ ambition. One way to operationalize this could be “insetting”: Parties could still offset a share of their emission reductions but the acquiring Party would commit to implement additional domestic mitigation actions when using the imported ITMOs for NDC attainment. The mitigation activities at home could be linked to the ITMO-generating activities abroad, for instance by applying the same technology, by using a similar incentive structure or by simply linking the quantity of the GHG reductions achieved at home to a certain share of the ITMOs imported.

## **3.4 Raising ambition ex-post**

### **3.4.1 Phasing-in new GHG sources and phasing-out climate finance**

This option could be applied in the context of policy crediting and also be relevant for activity-based crediting as well as sectoral crediting.

In a situation where the mitigation activity is implemented in sectors currently not covered by an NDC, the emission reductions generated by that activity would not assist the transferring Party in achieving its NDC. In order to raise its ambition, the transferring country could commit to include the emissions targeted by the mitigation activity in its NDC at a later point in

time. This commitment could have very different forms: it could be a mere political commitment, be underpinned by national law or even be part of the purchase agreement with the acquiring country, which makes payments for ITMOs contingent on addressing of these GHG sources by the national level.

In order to avoid a situation where emission sources are formally covered by the NDC but not targeted by policies, the GHG’s inclusion in the transferring Party’s NDC could further be combined with a commitment by the transferring Party to continue implementing the credited policy once that the crediting period is over.

A similar structure is possible for mitigation activities that are targeting emissions already covered by the current conditional NDC: The transferring country receives (results-based) payments for implementing mitigation activities that assist in achieving its conditional NDC. This external support is then reduced in a dynamic way, requiring the transferring country to transition the conditional elements in its unconditional target.

The moment of inclusion could be linked to the five-year updating cycle of the NDC (see CCAP 2017). Alternatively and given that Art. 4.11 of the Paris Agreement allows Parties to adjust their NDCs at any time, such an inclusion could also take place at a different (potentially earlier) point in time, for instance when the crediting period of the activity or policy ends. The outcome of this process would be an NDC with expanded sectoral scope.

### **3.4.2 Ex-post adjustment of emissions or NDC target level**

In order to show how their participation in Article 6 cooperation increased their level of ambition, Parties could make adjustments of their NDC target level or their emissions after ITMO transfers took place. Parties could in this case modify their NDC target level or their emissions

beyond of what would be required to account for the amount of ITMOs transferred. For instance, the transferring Party could adjust its current emissions level (or NDC target) beyond of what has been used by the acquiring Party for NDC achievement. The acquiring Party, by contrast, adjusts its NDC less than it could according to the amount of ITMOs imported. The difference between the corresponding adjustments is the raise of ambition.

## 4 Assessment of options

In the following section, the options for ambition raising outlined above will be assessed whether they could be applied by Parties under the UNFCCC. The assessment will be made along the following three dimensions: technical, political and institutional/legal.

**Technical** relates to the requirements in terms of data availability, methodological complexity of operationalisation at the different levels involved.

**Institutional** relates to governance at the domestic and the UNFCCC level: who could be tasked with the operationalisation of this option? Are there existing structures that could be used?

**Political/legal** relates to the question of whether such an option is in line with the overarching legal framework of the UNFCCC and its Paris Agreement and whether given the existing realpolitics it seems plausible that political agreement to introduce such an option is attainable.

### 4.1 Assessment of ex-ante options

#### 4.1.1 Ex-ante improvement of NDC

Transferring Parties and acquiring Parties could raise their ambition by improving their NDC in form (i.e. moving from a single to a multi-year target) and content (adopting a more stringent target level).

From a **technical** point of view, this option is not very challenging. The Party could provide evidence on how the NDC was modified in terms of parameters and target level. Technical reports and recent literature on accounting and

transparency could be used as a basis to show that the changes made to the NDC parameters will actually provide more transparency and a more solid basis for (ITMO) accounting. Adoption of a more stringent mitigation target is technically easy, as long as the other NDC parameters remain unchanged.

The **institutional capacities** required for this ambition raising option are limited, as it could build on structures that were used for the development of the NDC. Hence, the institution that developed the NDC could be asked to identify ways to further improve its form and/or content. In doing so, this institution, which could for instance be a cross-sectoral body, would have to take into account different issues, such as data availability as well as mitigation potential and associated costs. While this would require institutional capacities, these would anyway be required for NDC development.

From a **political** and legal point of view, the option to improve the form of the NDC is fully in line with the structure of the Paris Agreement: Article 4.4, for instance, requires developed Parties to adopt economy-wide mitigation targets and does also encourage developing countries to move to such targets over time. By the same token, moving to a more stringent mitigation target is also what the Paris Agreement expects Parties to do. At the domestic level, however, such a move could raise significant political opposition, in particular if countries that have a greater historic responsibility for human induced climate change and which have higher capabilities to take action decide not to adjust their NDC.

#### 4.1.2 Use efficiency gains from policy linking for ambition raising

Another ambition raising option is restricted to the policy linking scenario: Parties could commit to use (part of) the efficiency gains from linking their policies to enhance their climate change mitigation ambition.

This option is associated with significant **technical** challenges, as quantifying ex-ante the efficiency gains and cost-savings from linking two or more policies can be extremely difficult. In the context of ETS linking, for instance, there are numerous factors that can influence the actual cost savings of linking, such as market size, pre-linking price levels, behaviour of market participants, etc.. In addition, administrative costs may significantly reduce the gains from linking and would have to be factored-in.

From an **institutional** point of view, linking of emission trading schemes or other policies will require the establishment of bi- or multilateral institutions. While these institutions could provide a good basis for administering this ambition raising option, additional capacities will be required to assess and quantify the actual savings from linking and interpret these data.

Using the efficiency gains from linking for ambition raising is also associated with significant **political** challenges: Parties will have to agree on a common methodology to quantify cost-savings. In addition, gains will most probably not be distributed evenly among the Parties involved.

## 4.2 Assessment of options during ITMO generation and transfer

### 4.2.1 Use of MOs for overachievement of unconditional NDC or achievement of conditional NDC

An ambition raising option limited to the transferring Party is to use the mitigation outcomes of an ITMO-generating activity that is implemented within the scope of its NDC. If the transferring Party has adopted an unconditional NDC only, the outcome will be an overachievement of that NDC. If the unconditional NDC was further combined with a conditional one, the ambition raising option will contribute to the achievement of that conditional NDC. As outlined above, the use of mitigation outcomes by the transferring Party is only possible if the ITMOs are not used by the acquiring Party.

This option is associated with significant **technical** challenges. The transferring Party will have to provide evidence that the mitigation outcomes do not contribute to the unconditional elements of the NDC and that the ITMO-generating activity does not crowd-out other domestic mitigation activities. This requires sufficient information on both, the conditional and unconditional elements and how both relate to the ITMO-generating activity.

The safest way to ensure this would be to use the mitigation outcomes only *after* the achievement of the unconditional target by domestic measures has been shown. Hence, only after the end of the NDC's timeframe. Therefore, the option to use this ambition raising option would depend on the success of other domestic policies.

This raises significant challenges for some types of market-based cooperation under Article 6: Policy crediting, for instance, would be challenged by the fact that the payments and trans-



fer of ITMOs will not only depend on the performance of the policy instrument that is being supported in the cooperation, but also on the performance of the transferring country's national climate policy in general and its achievement of the conditional NDC.

The **institutional** requirements for this ambition raising option, by contrast, are limited. The transferring country would simply have to indicate that the (specific share of) mitigation outcomes from the ITMO-generating activity will be used for ambition raising.

From a **political/legal** point of view, this ambition raising option is challenging as it requires the acquiring country to forego the use of ITMOs in favour of using the cooperation for climate financing. Hence, a clear agreement between the transferring and the acquiring Party on who will be allowed to use the mitigation outcomes from the ITMO-generating activity is needed. Such an agreement will be challenged by the risk that the ITMO-generating activity could ultimately only replace other mitigation activities intended for NDC achievement.

#### 4.2.2 Use of MOs generated outside scope of NDC

Another option for transferring Parties is to use the mitigation outcomes that were generated outside the NDC's scope for ambition raising.

This option might be associated with significant **technical** challenges. In order to clearly differentiate the mitigation activity from the NDC, sufficient information on the NDC *and* the mitigation activity must be available. This might pose significant challenges of attribution. Another technical but also political challenge is that, in order to actually be considered a contribution to ambition raising, the transferring country will have to demonstrate that the activity would not have been implemented anyway, that it is actually additional. The demonstration of additionality, however, is also associated

with significant technical and also political challenges in terms of attribution and cause-effect relationships (for an in-depth review of additionality with respect to Art. 6 see: Hermwille and Obergassel 2018).

From an **institutional** perspective, use of international structures does not only seem advisable in terms of capacities and cost effectiveness. The fact that ITMOs generated outside the NDC's scope cannot be accounted for and ensuring the additionality of the underlying activity calls for strong international structures. Building such institutions from scratch in bilateral mode and vesting them with strong authority does not seem viable. Therefore, this ambition raising option could be limited to activities implemented under the new mechanism established under Article 6.4.

Using emission reductions generated outside the NDC's scope also raises serious **political/legal** concerns: Transferring countries would be incentivized to maintain a small scope of their NDCs and continue receiving financial support for the activities implemented beyond that scope. This is problematic in terms of accounting, as it makes it difficult to assess whether individual Parties and the global community is on track in meeting the overarching Paris goals. More specifically, it is also not in line with the requirement of Article 4.4 for developing countries to move towards economy-wide emission targets.

### 4.3 Assessment of options during ITMO use

#### 4.3.1 Use of ITMOs by the acquiring Party for ambition raising

The use of ITMOs for ambition raising by the acquiring Party, by contrast, seems much more easy to implement.

From a **technical** point of view, such an option should not pose any major obstacles. The acquiring country would simply import the amount of ITMOs it intends to use for ambition raising and cancel these ITMOs without further adjusting its national emissions or its NDC level. Accounting would again take place at the international level.

In terms of **institutional** feasibility, this option could be straightforward to implement, as it could build on institutions that must be established anyway for accounting of ITMOs. The amount of ITMOs Parties are using for NDC achievement and the amount of ITMOs exported will be recorded by some institution. While it is still unclear whether such a institution would be established in a centralised way at the international level or in a decentralised fashion at the Parties' level, this institutional structure could be used for this ambition raising option by simply adding additional accounts for ambition raising.

**Politically**, this ambition raising option can be expected to be popularly received. It is linked to the concept of discounting which has been discussed for several years now in the context of new market mechanism (see inter alia: CDM Policy Dialogue 2012; Lazarus, Erickson, Peter, and Schneider 2013). In addition, several countries are already making experiences with the voluntary cancellation of units under the CDM as a contribution to the global climate: By September 2017, 22,842,069 Certified Emission Reductions (CERs) have been voluntarily cancelled (CDM EB 2017).

#### **4.3.2 Insetting": Linking use of ITMOs with domestic mitigation activities**

Another ambition raising option is what the author has termed "insetting": Parties wanting to use imported ITMOs for NDC attainment commit to implement additional domestic mitigation actions.

This ambition raising option is associated with some **technical** challenges. The link between the ITMOs and the additional domestic activity can be easily established. However, the acquiring Party would further have to show that the domestic mitigation activity will actually contribute to ambition raising: The activity would have to be additional and should not contribute to the unconditional NDC.

In **institutional** terms, this option requires the establishment of robust rules for the implementation of activities. Ideally, such rules would be established at the international level and application be overseen by an independent body. This is particularly relevant to prevent non-additional activities being used for this option. However, in particular with regard to activities under Article 6.2, Parties don't seem to agree on the need to establish such an international oversight body. Therefore, additional institutions would be required to oversee and track the implementation of the policy in the acquiring country.

From a **legal/political** point of view, the inseting option can be considered to be challenging: On the one hand this ambition raising option seems to be fully compatible with well-known principles, such as complementarity. On the other hand, however, linking the transfer of ITMOs to the implementation (and success) of a domestic policy could raise significant opposition, including from the transferring Party.

## **4.4 Assessment of ex-post options**

### **4.4.1 Phasing-in new GHG sources and phasing-out climate finance**

Integrating new GHG sources into the transferring Party's NDC after the end of the cooperation with the acquiring Party is a promising approach for ambition raising. It could be relevant

for sources that are not covered by the NDC at all and also for sources that are only part of the conditional NDC.

From a **technical** point of view, sufficient information on the NDC is required to clearly identify those GHG sources that are currently not covered by the NDC. This includes information on the unconditional and the conditional elements of the NDC and how they relate to each other. Furthermore, it must be ensured that the emission reductions generated are truly additional, in order to be considered a contribution to ambition raising at a later point in time. Ensuring additionality, however, is associated with significant challenges, as it requires Parties to disentangle the causal relationship between the mitigation activity, the overarching policy intervention under which it is implemented and the general conditions of implementation (see: Hermwille and Obergassel 2018).

In **institutional** terms, different bodies would be involved depending on the phase of the cooperation. In general terms, the implementation of cooperation activities will follow the provisions contained in the guidance for Article 6.2 of the Paris Agreement (for an overview on Parties' positions see Obergassel and Asche 2017). Depending on the UNFCCC decisions regarding international guidance, installing additional bilateral bodies could be one way to ensure the integrity of the ITMOs resulting from the cooperation activities. This is particularly important as there is no in-built incentive for transferring countries to ensure the integrity of the ITMOs generated outside the scope of their NDC. Once the GHG sources are covered by the NDC, the transparency framework for action of Article 13 of the Paris Agreement and its main procedure, the technical expert review, can be applied to track the progress of policies towards NDC achievement.

From a **political/legal** point of view, the idea to target uncapped emissions seems largely

agreeable, as it is well known from the Kyoto Protocol's CDM. On the other hand, in particular developing countries might be hesitant to agree on transitioning additional GHG sources in their unconditional NDC and argue for the need of external support. With regards to the fulfilment of the Paris Agreement's call to raise ambition, criticism could be raised regarding the fact that the actual enhancement of ambition will be made *after* the transfer took place. To counter such criticism, this ambition raising option could be combined with other short term ambition raising options. Another political issue is the need for transparency and independent oversight. While robust rules and in particular the installation of independent oversight bodies could assist in ensuring comparability of approaches applied, for instance for the demonstration of additionality, from a political perspective countries will presumably not be able to agree on the installation of such bodies.

#### 4.4.2 Ex-post adjustment of emissions or NDC target level

Parties participating in cooperative approaches under Article 6 could also make adjustments of their NDC target level or their emissions after ITMO transfers took place.

In **technical** terms, this option is easy to implement. Parties would simply modify the amount of emissions they are to deduct or add to their accounts when implementing "corresponding adjustments".

The additional **institutional** capacities needed for this ambition raising option are limited: In order to safeguard environmental integrity of the Paris Agreement and ensure Parties "apply robust accounting" (Art. 6.2, Paris Agreement) the CMA will have to agree on robust rules and an institutional ITMO accounting framework. This ambition raising option could build on this institutional structure by recording the "ambition raising adjustments" made by Parties' in

addition to the accounting made in the context of ITMO use for NDC attainment.

In **political** terms, the key challenge will be to agree on a procedure on how to take the ex-post adjustment of emissions into consideration if a Party participates in numerous cooperation activities. In order to provide planning security for the (subnational) entities participating in such transfers, Parties could define ex-ante the specific share of ITMOs that will be used for ambition raising.

## 5 Discussion

The analysis has shown that the ambition raising options identified are associated with different technical, institutional and political challenges. In general, options that are limited to using a certain share of ITMOs for ambition raising (option 5), options that use accounting to over-adjust the emissions or target level (option 8) or that lead to an ex-ante improvement of the NDC (option 1) are technically less complex and do also require limited additional institutional capacities. By contrast, options that link the ITMO transfer to the implementation of domestic policies (option 6) and that use the (expected) performance of the cooperation as a basis for deciding on the level of the ambition raising (option 2) are particularly challenging. In general, using mitigation outcomes by the transferring Party, either for overachieving the unconditional NDC or achieving conditional elements (option 3), are challenged by questions of relationship between NDC and activity and issues of additionality demonstration. **Table 2** provides an overview on the assessment results.

With regard to the **climate impact**, an assessment of the individual options cannot be made as the final impact will be highly dependent on political decisions of the individual countries. Hence, for instance, while ex-ante improvements of NDCs might generally yield large climate benefits, the final impact in the application of this option will depend on the respective government and its willingness to actually make substantial changes or only incremental

modifications of the NDC.

Furthermore, the possibility to implement the ambition raising options will depend on the type of cooperation the respective Party is engaging in as well as on other factors, such as data availability, institutional capacities or the political economy in the respective country. Therefore, a top-down decision by the UNFCCC that requires individual Parties to use a specific ambition raising option doesn't seem advisable. A menu-approach, which allows Parties to

#	Option	Assessment		
		Technical	Institutional	Legal/ Political
1	Ex-ante improvement of NDC	+	+	+
2	Use of efficiency gains from policy linking for ambition raising	-	-	-
3	Use of MOs for overachievement of unconditional NDC/achievement of conditional NDC	-	+	-
4	Use of MOs generated outside scope of NDC	-	+/-	-
5	Use of ITMOs by the acquiring Party for ambition raising	+	+	+
6	"Insetting": Linking use of ITMOs with domestic mitigation activities	-	+/-	+/-
7	Phasing-in new GHG sources and phasing-out climate finance	-	+/-	+/-
8	Ex-post adjustment of emissions or NDC target level	+	+	+/-

**Table 2:** Overview on ambition raising options' assessment results

choose the ambition raising form that best suits its national circumstances and the specific type of cooperation it is engaging in seems much more advisable. Such an approach is also much more compatible with the general bottom-up structure of the Paris Agreement.

This does by no means mean that the international level cannot exert any influence on the choices available: Policy makers could require Parties to combine options that, taken together, lead to the desired short-term as well as long-term impact: For instance, a transferring Party could decide to use the mitigation outcomes to overachieve its current unconditional NDC (option 3) thereby achieving a short-term climate benefit while at the same time committing to phase-out climate finance for this type of GHG sources (option 7) in order to achieve a long-term climate benefit.

Integrating such a menu approach into the NDC cycle as the Paris Agreement's overarching framework for ambition raising looks particularly promising:

Under the transparency framework (Art. 13) Parties would be required to provide evidence about the use of market mechanism and which ambition raising options they intend to apply, including information about the expected climate impact. This initial choice of the ambition raising options would then undergo a technical expert review following the general provisions included in Art. 13.11. The review team would then assess this choice by taking into account the national conditions, such as data availability and local institutional capacities, and potentially identify areas of improvement.

In line with the timing of the NDC updating cycle, Parties could be required to provide data on the impact of the ambition raising options that were applied during the five-year NDC cycle and how the raise in ambition was taken into account when updating the NDC. Collective data and experiences could then also inform the global stocktake process.

Furthermore, the committee established under Art. 15 could inform Parties about whether the choice of the ambition raising options and their application is in line with the provisions of the Paris Agreement.

By embedding the menu approach into the overarching reporting and monitoring processes of the Paris Agreement, Parties' ambition raising choices, the impact of the individual application of options could be made transparent and ensures it is part of the public scrutiny process.

At a subordinate level, single institutions and processes of the transparency framework and the updating cycle will perform key tasks during the application of ambition raising options. Furthermore, Article 6 specific processes and respective institutions will perform specific tasks, such as the oversight on ITMO transfers and robust accounting.

However, a strong coordination would be required between the institutions established at the highest level, those responsible for Article 6-specific tasks and institutions potentially established at the national level.

## 6 Conclusions

This policy paper assessed how market-based mechanisms can contribute to enhancing Parties' climate change mitigation ambition. The author started off with a clarification of the concepts of ambition and ambition raising by taking a closer look at how these concepts are being used in the Paris Agreement. From this exercise, a preliminary definition of ambition raising was elaborated which denotes the intensification of climate change mitigation targets and actions by Parties.

This conceptual clarification allowed to clearly delimit ambition raising from other related concepts such as “contribution to overall miti-

gation”. Here, actorhood served as a distinctive feature: While the enhancement of ambition requires some actor (the Party), no such actorhood is required to achieve a contribution to overall mitigation.

Building on this preliminary conceptual work, the paper looked into the variety of market-based cooperation under Article 6 to identify different forms of how Parties engaging in such forms of cooperation could raise their climate change mitigation ambition. In total, nine different ambition raising options were identified. Applicability of these options varies: While some can be applied across all forms of market-

#	Option	Compatibility		Assessment		
		Transferring Party	Acquiring Party	Technical	Institutional	Legal/ Political
1	Ex-ante improvement of NDC	✓	✓	+	+	+
2	Use of efficiency gains from policy linking for ambition raising	✓	✓	-	-	-
3	Use of MOs for overachievement of unconditional NDC / achievement of conditional NDC	✓	✗	-	+	-
4	Use of MOs generated outside scope of NDC	✓	✗	-	+/-	-
5	Use of ITMOs by the acquiring Party for ambition raising	✗	✓	+	+	+
6	“Insetting”: Linking use of ITMOs with domestic mitigation activities	✗	✓	-	+/-	+/-
7	Phasing-in new GHG sources and phasing-out climate finance	✓	✗	-	+/-	+/-
8	Ex-post adjustment of emissions or NDC target level	✓	✓	+	+	+/-

**Table 3:** Ambition raising options: compatibility and assessment results. *Source: Wuppertal Institute*

based cooperation others are limited to the role of the transferring Party in one specific type of cooperation.

The subsequent section assessed the ambition raising options identified and found that the options vary significantly in terms of the technical, institutional and legal/political requirements: While some options do merely require a political decision to be taken and result in a simple deduction of emission reduction from a previous level, others require the assessment of complex interactions of domestic policy performance, the assessment of additionality of activities and other technical as well as political challenges.

As can be seen from Table 3, ambition raising option 1 - ex-ante improvement of NDC - is not only associated with low technical, institutional and legal/political barriers but does also display high compatibility, as it can be implemented by the transferring and the acquiring Parties alike. Option 5, the use of ITMOs by the acquiring Party for ambition raising, was also assessed as being rather simple to implement. This option, however, is restricted to the acquiring Party. Another option with high compatibility and only limited requirements is option 8, the ex-post adjustment of emissions or NDC target level through accounting. Other options, in particular those linked to the (expected) performance of the cooperation (option 2) and those raising issues of additionality (options 3 and 4) are more challenging to implement.

In light of the diversity of ambition raising approaches and taking into consideration the diversity of Parties' domestic capacities as well as the bottom-up approach on which the Paris Agreement is build, the author holds that a menu approach that allows Parties to choose the ambition raising option that best suits its domestic situation is the most promising approach for inducing a ambition raising momentum. Such an approach would not only be in line with the spirit of Paris but further allow to

integrate the application of the ambition raising options identified into the NDC cycle of the Paris Agreement and its institutional processes, such as the transparency framework, the global stocktake and the compliance mechanism. The integration into this institutional framework and its processes could also serve as a safeguard against lack of ambition.

In order to ensure that the ambition raising requirement of Article 6.1 will have the highest possible impact, the CMA should carefully fine-tune the ambition raising requirements linked to the use of market-based mechanisms: By requiring Parties to combine ambition raising options with a immediate (short-term) impact with dynamic (long-term) ambition raising options the overall ambition raising impact of Article 6 activities could be maximised while at the same time allowing countries to choose the combination of ambition raising options that best suit their national circumstances.



# References

- Bodansky, Daniel M., Seth A. Hoedl, Gilbert E. Metcalf, and Robert N. Stavins. 2015. 'Facilitating Linkage of Climate Policies through the Paris Outcome'. *Climate Policy*, July, 1–17. Available at: <https://doi.org/10.1080/14693062.2015.1069175>.
- Brazil (2017): *Views of Brazil on the Guidance referred to in Article 6, Paragraph 2, of the Paris Agreement* (SBSTA 46 Call for Submissions: Views on guidance on cooperative approaches referred to in Article 6, paragraph 2, of the Paris Agreement). Available at: [http://www4.unfccc.int/sites/SubmissionPortal/Documents/525\\_317\\_131354419477778493-BRAZIL%20-%20Article%206.2.%20SBSTA46%20May%202017.%20FINAL.pdf](http://www4.unfccc.int/sites/SubmissionPortal/Documents/525_317_131354419477778493-BRAZIL%20-%20Article%206.2.%20SBSTA46%20May%202017.%20FINAL.pdf).
- CCAP (2017): *CCAP Brief: Using Transfers to Enhance Ambition over the NDC Cycles*. Center for Clean Air Policy. Available at: <http://ccap.org/assets/Center-for-Clean-Air-Policy-Using-Transfers-to-Enhance-Ambition-over-the-NDC-Cycles-Sept-2017-final-1.pdf>.
- CDM EB. 2017. 'Meeting Report CDM Executive Board Ninety-Sixth Meeting - 18 to 22 September 2017'. Available at: [http://cdm.unfccc.int/filestorage/M/3/K/M3KFQP4RZYLS98NBXDHTI62CGEU0V5/eb96\\_report.pdf?t=dIF8b3lkcnyfDCIDkgxcQt2nqPRfwHVijTR](http://cdm.unfccc.int/filestorage/M/3/K/M3KFQP4RZYLS98NBXDHTI62CGEU0V5/eb96_report.pdf?t=dIF8b3lkcnyfDCIDkgxcQt2nqPRfwHVijTR).
- CDM Policy Dialogue (2012): *Climate Change, Carbon Markets and the CDM: A Call to Action - Report of the High-Level Panel on the CDM Policy Dialogue*. Available at: <http://www.cdmpolicydialogue.org/report/rpt110912.pdf>.
- Day, Thomas, Frauke Röser, and Marie-Jeanne Kurdziel. 2016. 'Conditionality of Intended Nationally Determined Contributions (INDCs)'. International Partnership on Mitigation and MRV. Available at: [https://www.transparency-partnership.net/sites/default/files/indc-conditionality\\_0.pdf](https://www.transparency-partnership.net/sites/default/files/indc-conditionality_0.pdf).
- Graichen, Jacob, Martin Cames, and Lambert Schneider. 2016. 'Categorization of INDCs in the Light of Art. 6 of the Paris Agreement Discussion Paper'. Öko-Institut /SEI. Available at: [https://www.dehst.de/SharedDocs/downloads/EN/project-mechanisms/Categorization\\_of\\_INDCs\\_Paris\\_agreement\\_discussion\\_paper.html](https://www.dehst.de/SharedDocs/downloads/EN/project-mechanisms/Categorization_of_INDCs_Paris_agreement_discussion_paper.html)
- Hermwille, Lukas and Wolfgang Obergassel. 2018. 'Additionality après Paris Stronghold for Environmental Integrity? JIKO Policy Paper 01/2018. Available at: [www.carbon-mechanisms.de/en/additionality](http://www.carbon-mechanisms.de/en/additionality)
- Haug, Constanze, Michel Frerk, and Marissa Santikarn. 2015. 'Towards a Global Price on Carbon: Pathways for Linking Carbon Pricing Instruments - Background Report to Inform the G7 Process'. adelphi, on behalf of the German Federal Environment Agency Umweltbundesamt. Available at: [https://www.g7germany.de/Content/DE/\\_Anlagen/G7\\_G20/2015-06-01-carbon-pricing-instruments.pdf?\\_\\_blob=publicationFile&v=5](https://www.g7germany.de/Content/DE/_Anlagen/G7_G20/2015-06-01-carbon-pricing-instruments.pdf?__blob=publicationFile&v=5).
- Holz, Christian, and Xolisa Ngwadla. 2016. 'The Global Stocktake Under the Paris Agreement - Opportunities and Challenges'. European Capacity Building Initiative. Available at: [http://www.eurocapacity.org/downloads/GST\\_2016%5B1%5D.pdf](http://www.eurocapacity.org/downloads/GST_2016%5B1%5D.pdf).
- Hood, Christina, Gregory Briner, and Marcelo Rocha. 2014. 'GHG or Not GHG: Accounting for Diverse Mitigation Contributions in the Post-2020 Climate Framework'. OECD (Organisation for Economic Co-operation and Development)/IEA (International Energy Agency). Available at: <http://www.indiaenvironmentportal.org.in/files/file/GHG%20or%20not%20GHG.pdf>.

- IGES. 2017. 'IGES NDC Database'. Version 3.3. Available at: <https://pub.iges.or.jp/pub/iges-ndc-database>
- Keohane, N., A. Petsonk, and A. Hanafi. 2017. 'Toward a Club of Carbon Markets'. *Climatic Change*, no. 144:81–95.
- Kreibich, Nicolas, and Lukas Hermwille. 2016. 'Robust Transfers of Mitigation Outcomes Understanding Environmental Integrity Challenges'. JIKO Policy Paper 02/2016. Available at: <http://www.carbon-mechanisms.de/en/publications/details/?jiko%5Bpubuid%5D=464>.
- Kreibich, Nicolas, and Wolfgang Obergassel. 2016. 'Carbon Markets After Paris - How to Account for the Transfer of Mitigation Results?' JIKO Policy Paper 01/2016. Available at: <http://www.carbon-mechanisms.de/en/2016/carbon-markets-after-paris/>.
- Kreibich, Nicolas, and Hanna Wang-Helmreich. 2017. 'Linking Carbon Tax Systems under the Paris Agreement: Potentials and Risks. In: Weishaar, S.E., L. Kreiser, J.E. Milne, H. Ashiabor, M. Mehling (Hrsg.): In *The Green Market Transition: Carbon Taxes, Energy Subsidies and Smart Instrument Mixes*, edited by Stefan Weishaar, Larry Kreiser, Janet Milne, Hope Ashiabor, and Michael Mehling, 78–96. .. Critical Issues in Environmental Taxation Volume, XIX.
- Lazarus, Michael, Erickson, Peter, and Lambert Schneider. 2013. 'Potential for International Offsets to Provide a Net Decrease of GHG Emissions'. Working Paper 2013-06. Stockholm Environment Institute. Available at: <https://www.sei-international.org/mediamanager/documents/Publications/Climate/SEI-WP-2013-06-New-Market-Mechanisms.pdf>.
- Lazarus, Michael, Anja Kollmuss and Lambert Schneider (2014): *Single-year mitigation targets: Uncharted territory for emissions trading and unit transfers* ( No. 2014–1): Working Paper. Stockholm Environment Institute. Available at: <http://www.sei-international.org/mediamanager/documents/Publications/Climate/SEI-WP-2014-01-Single-year-pledges.pdf>.
- Mehling, Michael, Gilbert E. Metcalf, and Robert N. Stavins. 2017. 'Linking Heterogeneous Climate Policies (Consistent with the Paris Agreement)'. Working Paper 051.2017. Mitigation, Innovation & Transformation Pathways Series Editor: Massimo Tavoni. Fondazione Eni Enrico Mattei. Available at: <https://research.hks.harvard.edu/publications/getFile.aspx?Id=1593>.
- Merriam-Webster. 2017. 'Definition of AMBITION'. 2017. Available at: <https://www.merriam-webster.com/dictionary/ambition>.
- Metcalf, Gilbert E., and David Weisbach. 2010. 'Linking Policies When Tastes Differ: Global Climate Policy in a Heterogeneous World'. Discussion Paper 10/38. The Harvard Project on International Climate Agreements. Available at: <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.231.5297&rep=rep1&type=pdf>.
- Obergassel, Wolfgang and Friederike Asche. 2017. Shaping the Paris Mechanisms Part III An Update on Submissions on Article 6 of the Paris Agreement. JIKO Policy Paper 05/2017. Available at: <http://www.carbon-mechanisms.de/en/publications/details/?jiko%5Bpubuid%5D=523>.
- OECD, and IEA. 2017. 'Workshop Summary - Workshop on "Corresponding Adjustment" as Part of Article 6 Accounting'. OECD/IEA Project for the Climate Change Expert Group. Available at: [https://www.oecd.org/environment/cc/Workshop\\_Summary\\_OECD\\_IEA.pdf](https://www.oecd.org/environment/cc/Workshop_Summary_OECD_IEA.pdf).
- Ott, Hermann, Christof Arens, Lukas Hermwille, Florian Mersmann, Wolfgang Obergassel, Hanna Wang-Helmreich, and Timon Wehnert. 2015. 'A First Assessment of the Climate Conference in Lima - COP 20 Moves at a Snail's Pace on the Road to Paris 2015'. *Environmental Law and Management* 26 (5):153–60.

- Prag, Andrew, Christina Hood and Pedro Martins Barata (2013): *Made to measure: Options for emissions accounting under the UNFCCC*. Available at: [http://www.oecd-ilibrary.org/environment-and-sustainable-development/made-to-measure-options-for-emissions-accounting-under-the-unfccc\\_5jzbb2tp8ptg-en](http://www.oecd-ilibrary.org/environment-and-sustainable-development/made-to-measure-options-for-emissions-accounting-under-the-unfccc_5jzbb2tp8ptg-en).
- Schneider, Lambert, Derik Broekhoff, Martin Cames, Jürg Füssler, and Stephanie La Hoz Theuer. 2016. 'Robust Accounting of International Transfers under Article 6 of the Paris Agreement – Preliminary Findings Discussion Paper'. Umweltbundesamt. Available at: [https://www.dehst.de/SharedDocs/downloads/EN/project-mechanisms/Robust\\_accounting\\_paris\\_agreement\\_discussion\\_paper.html](https://www.dehst.de/SharedDocs/downloads/EN/project-mechanisms/Robust_accounting_paris_agreement_discussion_paper.html)
- Schneider, Lambert, Jürg Füssler, Stephanie La Hoz Theuer, Anik Kohli, Jacob Graichen, Sean Healy, and Derik Broekhoff. 2017. 'Environmental Integrity under Article 6 of the Paris Agreement Discussion Paper'. German Emissions Trading Authority (DEHSt). Available at: [https://www.dehst.de/SharedDocs/downloads/EN/project-mechanisms/Discussion-Paper\\_Environmental\\_integrity.pdf?\\_\\_blob=publicationFile&v=2](https://www.dehst.de/SharedDocs/downloads/EN/project-mechanisms/Discussion-Paper_Environmental_integrity.pdf?__blob=publicationFile&v=2)
- Spalding-Fecher, Randall, Francois Sammut, Derik Broekhoff, and Jürg Füssler. 2017. 'Environmental Integrity and Additionality in the New Context of the Paris Agreement Crediting Mechanisms'. Carbon Limits, SEI-US Center, INFRAS on behalf of the Swedish Energy Agency. Available at: <https://www.energimyndigheten.se/contentassets/2600659ecfa54ec995b835a4c99d75fb/environmental-integrity---final-report-2017.01.24.pdf>.
- WRI. 2017. 'CAIT Climate Data Explorer. 2017. CAIT Paris Contributions Map'. World Resources Institute (WRI). Available at: <http://www.wri.org/resources/data-sets/cait-paris-contributions-data#>.

**Wuppertal Institute**

for Climate, Environment and Energy

P.O. Box 100480

42004 Wuppertal

GERMANY

[www.wupperinst.org](http://www.wupperinst.org)

