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Discussion Paper

Using Article 6.2 to foster ambition

How Germany could use the cooperative approaches of the Paris Agreement to raise climate ambition

by:

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Abstract: Using Article 6.2 to foster ambition

Article 6.2 of the Paris Agreement allows Parties to implement cooperative approaches. This paper explores possible uses of Article 6.2 by Germany participating as an acquiring Party in such cooperative approaches in order to raise climate ambition. It first identifies the key principles that should guide the use of cooperative approaches and outlines the basic understanding that shows why Article 6.2 should be considered an open framework that allows for multiple uses for acquiring Parties beyond the attainment of nationally determined contributions (NDCs). The paper explores alternative ways for Germany to engage in cooperative approaches and identifies different options to use Art. 6.2 for compliance as well as voluntary purposes. It finds that using Article 6.2 for compliance purposes is fraught with challenges for Germany, as there is a risk that in the course of the political debate on forms of use, this could have a negative impact on the national ambition level. Also, reporting on the use of Article 6.2 for compliance purposes other than NDC implementation under the Framework Convention on Climate Change is fraught with challenges and could lead to reduced transparency. Using Article 6.2 for voluntary purposes, in turn, may yield strong ambition raising impacts although reporting on these uses could also be challenging. A combination of different use options within one cooperative approach could yield particularly strong ambition raising impacts.

Kurzbeschreibung: Die Nutzung von Artikel 6.2 zur Ambitionssteigerung

Artikel 6.2 des Übereinkommens von Paris (ÜvP) ermöglicht den Vertragsstaaten die Umsetzung von Kooperativen Ansätze. Dieses Papier untersucht, wie sich Deutschland als Käuferstaat an solchen Kooperativen Ansätzen beteiligen könnte, um die Klimaschutzambition zu erhöhen. Zunächst werden die grundlegenden Prinzipien identifiziert, die die Nutzung Kooperativer Ansätze anleiten sollten. Die Autoren stellen dar, warum Artikel 6.2 als offenes Rahmenwerk betrachtet werden sollte, das vielfältige Nutzungsmöglichkeiten für Käuferstaaten zulässt - jenseits eines Beitrags zur Umsetzung national festgelegter Beiträge (NDCs). Das Papier untersucht alternative Möglichkeiten für Deutschland, sich an Kooperativen Ansätzen zu beteiligen, und zeigt verschiedene Optionen auf, wie Art. 6.2 sowohl für verpflichtende Zwecke als auch für freiwillige Zwecke genutzt werden kann. Das Papier kommt zu dem Schluss, dass die Anwendung von Artikel 6.2 zu Verpflichtungszwecken für Deutschland mit Herausforderungen behaftet ist, da die Gefahr besteht, dass sich im Zuge der politischen Debatte um Nutzungsformen diese negativ auf das nationale Ambitionsniveau auswirken könnte. Darüber hinaus ist die Berichterstattung über die Nutzung von Artikel 6.2 zu anderen Verpflichtungszwecken als der NDC-Umsetzung unter der Klimarahmenkonvention mit Herausforderungen verbunden und könnte zu einer Verringerung der Transparenz führen. Die Nutzung von Artikel 6.2 für freiwillige Zwecke hingegen könnte eine starke ambitionssteigernde Wirkung haben, wenngleich auch hier die Berichterstattung ebenfalls problematisch sein kann. Die Kombination verschiedener Nutzungsoptionen innerhalb eines Kooperativen Ansatzes könnte eine besonders starke ambitionssteigernde Wirkung entfalten.

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List of Abbreviations

A6.4ERs	Article 6.4 emission reductions
BTR	Biennial Transparency Report
CAs	Corresponding Adjustments
CDM	Clean Development Mechanism
CMA	Conference of the Parties serving as the meeting of the Parties to the Paris Agreement
COP	Conference of the Parties
CORSIA	Carbon Offsetting and Reduction Scheme for International Aviation
DNA	Designated National Authorities
ETF	Enhanced Transparency Framework
EU	European Union
EUR	Euro
ETS	Emissions Trading System
ESR	Effort Sharing Regulation
GHG	Greenhouse Gas
ICAO	International Civil Aviation Organization
ITMOs	Internationally Transferred Mitigation Outcomes
LT-LEDS	Long-term low greenhouse gas development strategies
MOs	Mitigation outcomes
NDC	Nationally Determined Contributions (in Paris-Agreement)
nETS	Germany's National Emissions Trading System
OMGE	Overall Mitigation in Global Emissions
SBSTA	Subsidiary Body for Scientific and Technological Advice
UNFCCC	United Nations Framework Convention on Climate Change
VCM	Voluntary Carbon Market

Summary

In order to keep the goal of net-zero emissions by 2050 within reach and limit climate change, global greenhouse gas (GHG) emissions must be reduced drastically and rapidly. Ambition levels are, however, well below of what is needed to achieve these targets. International cooperation might help in closing this ambition gap. One option for the voluntary cooperation among Parties has been introduced with Article 6.2 of the Paris Agreement, that allows Parties to engage in cooperative approaches and transfer internationally transferred mitigation outcomes (ITMOs). This paper explores how Germany could use Article 6.2 in order to raise climate ambition and identifies different options to participate in cooperative approaches as an acquiring Party.

After a short introduction to the topic in chapter 1, chapter 2 presents the foundation of using Article 6.2 by building on the Paris Agreement and its Article 6.1. It identifies three basic principles to which all Article 6.2 collaborations must adhere. These are: (1) Environmental integrity, (2) Ambition raising and (3) Sustainable development. The paper discusses all three principles and presents key elements that need to be taken into consideration if principles are to be upheld. While environmental integrity and ambition raising apply to both, the demand side (acquiring Party) and the supply side (transferring Party) of a cooperative approach, sustainable development is considered a principle that only applies to the supply side and is therefore not explored further.

Environmental integrity is understood to be ensured if the cooperation and transfer of ITMOs under Article 6.2 leads to aggregated GHG emissions over time that are not higher than those that would have occurred in the absence of the cooperation.

Ambition raising is understood as a concept that applies to activities as well as the climate targets of the participating Parties. While individual activities can ‘go beyond’ of what is currently possible, for instance by applying technologies that are inaccessible, this ambition raising impact must be secured at the national target level through their dynamic enhancement over time. The concept of ambition raising is also expanded to include a contribution to overall mitigation in global emissions (OMGE).

Contributions to **sustainable development** are understood to be a key requirement for cooperative approaches, while negative social and environmental impacts are to be avoided and, where this might not be possible, minimized.

The section further underscores the crucial relevance of reporting and transparency in the context of Article 6 and the Paris Agreement more broadly. We outline our basic understanding of Article 6.2 which we consider an open reporting and accounting framework that allows for multiple uses. From an acquiring Party perspective, the use of Article 6.2 should therefore not be confined to the attainment of nationally determined contributions (NDCs).

Building on these preliminary observations and the fact that from a German perspective, using Article 6.2 for NDC attainment is neither politically desired nor legally possible, chapter 3 of the paper explores alternative ways for Germany to engage in cooperative approaches as an acquiring Party. We find that **opportunities are manifold in principle** and identified a total of six use options:

- ▶ Contribution to Germany’s long-term low greenhouse gas emission development strategies (LT-LEDS) and national long-term policy targets
- ▶ Use of ITMOs for compliance with obligations under Germany’s national Emissions Trading System (nETS)

- ▶ Supporting German airline operator's access to high quality units for compliance with obligations under the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA)
- ▶ German contribution to OMGE
- ▶ Using Article 6.2 for (private) climate finance
- ▶ Supporting VCM actors' access to high quality units

As outlined in the concluding chapter 4 of the paper, the use options' actual potential of contributing to ambition raising while upholding environmental integrity varies. The analysis of the conditions and reporting options shows that **the actual potential of compliance use options is limited**. The main limitation for the compliance use options is the fact that Germany did not submit its own NDC but committed to the EU NDC, which is domestic in nature. This does not only exclude the use of ITMOs for NDC attainment for the time being but also challenges the use of cooperative approaches in the context of long-term targets and the use of ITMOs under the nETS. Finally, the use of cooperative approaches to support airlines in accessing high quality units for compliance with CORSIA seems the only feasible compliance use options for Germany, despite limited possibilities to report on this option under the United Nations Framework Convention on Climate Change (UNFCCC).

Our analysis finds that the **voluntary use options identified do not only have a larger potential to contribute to ambition raising and uphold environmental integrity but are also easier to implement**. A German contribution to OMGE would make a direct and immediate contribution to ambition raising while the UNFCCC also provides for this option in its reporting framework. Using Article 6 for private climate finance is particularly interesting if combined with the 'contribution claim' approach, which is currently being discussed in the context of the voluntary carbon market (VCM). Since the contribution claim approach builds on the idea that mitigation outcomes remain with the host Party, there are no transfers of ITMOs involved. This use option therefore only uses some elements of the Art. 6.2 framework by building on its reporting infrastructure and as a tool to quantify emission reductions. This allows for a stronger and more visible private sector engagement in climate finance, while Germany could report on this engagement under the Enhanced Transparency Framework. Finally, using cooperative approaches to support VCM actors in accessing high quality units seems to hold particularly large potential, despite the fact that reporting on this option under the UNFCCC is not provided for under the Article 6.2 Guidance. Given that German VCM actors may find it challenging to obtain high quality credits that are authorized by host Parties, the German government could support these actors by building on its diplomatic influence. The main benefit of this option is its potential to influence and increase the quality of units used by German VCM actors, while also allowing the German government to regulate this market: Access to these units could be tied to specific requirements, such as disclosure of emissions data, ambitious climate targets and transparent communication. This approach would contribute to increased transparency in the use of offset credits in Germany, a lack of which has in the past already led to a number of legal cases in German courtrooms about carbon neutrality claims by companies.

Zusammenfassung

Um das globale Ziel der Treibhausgasneutralität im Jahr 2050 in Reichweite zu halten und den Klimawandel einzudämmen, ist eine drastische und äußerst schnelle Reduktion der globalen Treibhausgasemissionen (THG) erforderlich. Das jetzige Ambitionsniveau reicht jedoch nicht aus, um diese Ziele zu erreichen. Die internationale Zusammenarbeit könnte dazu beitragen, diese Ambitionslücke zu schließen. Mit Artikel 6.2 des Übereinkommens von Paris (ÜvP) wurde eine Möglichkeit für die freiwillige Zusammenarbeit zwischen Staaten geschaffen. Diese ermöglicht es den Vertragsstaaten des ÜvP, Kooperative Ansätze zu nutzen und international übertragbare Minderungsergebnisse (internationally transferred mitigation outcomes - ITMOs) zu übertragen. Diese Studie geht der Frage nach, wie Deutschland Artikel 6.2 nutzen könnte, um seine Klimaschutzambition zu erhöhen. Es werden verschiedene Optionen aufgezeigt, wie sich Deutschlands als Käuferstaat an Kooperativen Ansätzen beteiligen könnte.

Aufbauend auf dem ÜvP und dessen Artikel 6.1 werden in Kapitel 2 zunächst die Grundlagen für die Anwendung von Artikel 6.2 vorgestellt. Es werden drei Grundprinzipien identifiziert, an denen alle Kooperationen unter Artikel 6.2 ausgerichtet sein müssen. Diese sind: (1) Gewährleistung der Umweltintegrität, (2) Ambitionssteigerung und (3) nachhaltige Entwicklung. In dem Bericht werden alle drei Grundprinzipien erörtert und Schlüsselemente vorgestellt, die für deren Einhaltung berücksichtigt werden müssen. Während die ökologische Integrität und die Steigerung der Ambition sowohl für die Nachfrageseite (Käuferstaat) als auch für die Angebotsseite (Verkäuferstaat) eines Kooperativen Ansatzes gelten, wird die nachhaltige Entwicklung als ein Prinzip betrachtet, das nur für die Angebotsseite gilt und daher in dieser Studie nicht weiter untersucht wird.

Die **Umweltintegrität** gilt als gewährleistet, wenn die Zusammenarbeit und die Übertragung von ITMOs gemäß Artikel 6.2 im Laufe der Zeit zu aggregierten globalen Treibhausgasemissionen führt, die nicht höher sind als jene, die ohne die internationale Kooperation entstanden wären.

Ambitionssteigerung wird als ein Konzept verstanden, das sich sowohl auf Aktivitäten als auch auf die Klimaziele der teilnehmenden Vertragsstaaten bezieht: Einzelne Aktivitäten können zu einem Ausmaß an Klimaschutz beitragen, das über das jetzige hinausgeht, beispielsweise durch die Anwendung von Technologien, die derzeit nicht zugänglich sind. Diese ambitionssteigernde Wirkung muss zugleich auf der Ebene der nationalen Ziele durch deren dynamische Verbesserung im Laufe der Zeit sichergestellt werden. Das Konzept der Ambitionssteigerung wird auch auf einen Beitrag zur allgemeinen Minderung der weltweiten Emissionen (overall mitigation in global emissions - OMGE) angewendet.

Positive Beiträge zur **nachhaltigen Entwicklung** stellen eine grundlegende Voraussetzung für Kooperative Ansätze dar, während negative soziale und ökologische Auswirkungen zu vermeiden und, wo dies nicht möglich ist, zu minimieren sind.

Das Kapitel betont darüber hinaus die entscheidende Bedeutung von Berichterstattung und Transparenz im Zusammenhang mit Artikel 6 und dem ÜvP im Allgemeinen. Wir skizzieren unser grundlegendes Verständnis von Artikel 6.2, welchen wir als offenen Berichts- und Verrechnungsrahmen betrachten, der vielfältige Nutzungsmöglichkeiten zulässt. Aus Sicht eines Käuferstaates sollte die Anwendung von Artikel 6.2 daher nicht auf die Erreichung der national festgelegten Beiträge (nationally determined contributions - NDCs) beschränkt sein.

Aufbauend auf diesen Beobachtungen und der Tatsache, dass die Nutzung von Artikel 6.2 zur Erreichung von NDCs aus deutscher Sicht weder politisch gewollt noch rechtlich möglich ist, werden in Kapitel 3 alternative Möglichkeiten für Deutschland untersucht, sich an Kooperativen

Ansätzen zu beteiligen. Die Ergebnisse zeigen, dass die Möglichkeiten grundsätzlich vielfältig sind und es konnten insgesamt sechs Nutzungsoptionen identifiziert werden:

- ▶ Beitrag zu langfristigen Strategien für eine hinsichtlich der Treibhausgase emissionsarme Entwicklung (long-term low greenhouse gas development strategies - LT-LEDS) und nationalen langfristigen Politikzielen
- ▶ Nutzung von ITMOs zur Erfüllung von Verpflichtungen aus dem deutschen nationalen Emissionshandelssystem (nETS)
- ▶ Unterstützung des Zugangs deutscher Fluggesellschaften zu hochwertigen Zertifikaten für CORSIA
- ▶ Leistung eines deutschen Beitrags zu OMGE
- ▶ Nutzung von Artikel 6.2 für (private) Klimafinanzierung
- ▶ Unterstützung des Zugangs von Akteuren des freiwilligen Markts zu hochwertigen Zertifikaten

Wie die zusammenfassende Darstellung der Untersuchungsergebnisse in Kapitel 4 zeigt, variiert das tatsächliche Potenzial der einzelnen Optionen, einen Beitrag zur Ambitionssteigerung unter Wahrung der Umweltintegrität zu leisten, erheblich. Die Analyse der Umsetzungsbedingungen und Berichtmöglichkeiten macht deutlich, **dass das tatsächliche Potenzial zur Nutzung von Art. 6.2 zur Erfüllung von verpflichtenden Zielen begrenzt ist**. Die Hauptbeschränkung besteht darin, dass Deutschland kein eigenes NDC eingereicht hat, sondern dem EU-NDC verpflichtet ist, welches ausschließlich im Inland erreicht werden soll. Dies schließt nicht nur die Nutzung von ITMOs zur NDC-Umsetzung vorerst aus, sondern stellt auch die Nutzung Kooperativer Ansätze im Rahmen von Langfristzielen und die Nutzung von ITMOs im nationalen Emissionshandelssystem nETS infrage. Schließlich scheint die Verwendung Kooperativer Ansätze zur Unterstützung von Fluggesellschaften beim Zugang zu hochwertigen Zertifikaten zur Einhaltung von CORSIA die praktikabelste Verpflichtungsnutzung für Deutschland zu sein, trotz begrenzter Möglichkeiten, über diese Option im Rahmen der UN-Klimarahmenkonvention (United Nations Framework Convention on Climate Change - UNFCCC) zu berichten.

Unsere **Analyse zeigt, dass die identifizierten Optionen der freiwilligen Nutzung nicht nur ein größeres Potenzial besitzen, zur Steigerung der Ambition und der Wahrung der Umweltintegrität beizutragen, sondern auch einfacher umzusetzen** sind. Ein deutscher Beitrag zu OMGE erfordert nur eine begrenzte Anzahl von Bedingungen, die in Deutschland erfüllt werden müssen, während die UNFCCC diese Option in ihrem Berichtsrahmen ebenfalls vorsieht. Die Nutzung von Artikel 6 für die private Klimafinanzierung in Kombination mit dem Ansatz des *Contribution Claim*, der derzeit im Zusammenhang mit dem freiwilligen Kohlenstoffmarkt diskutiert wird, scheint besonders vielversprechend. Da der *Contribution Claim* auf der Idee beruht, dass die erzielten Minderungsergebnisse bei dem Gastgeberland verbleiben, sind hier keine Transfers vorgesehen. Der Ansatz nutzt das Artikel 6.2 Rahmenwerk daher in erster Linie zur Quantifizierung von Emissionsminderungen und baut auf der Berichterstattungsstruktur des Rahmenwerks auf. Hierdurch wird eine stärkere und sichtbarere Einbindung des Privatsektors bei der Klimafinanzierung ermöglicht, während Deutschland über dieses Engagement im Rahmen des Transparenzrahmens des ÜvP berichten könnte. Schließlich scheint die Verwendung Kooperativer Ansätze zur Unterstützung von Akteuren des freiwilligen Kohlenstoffmarkts beim Zugang zu hochwertigen Zertifikaten großes Potenzial zu haben, wenngleich die Berichterstattung über diese Option im Rahmen der UNFCCC in den Leitlinien zu Artikel 6.2 nicht vorgesehen ist. Deutsche Akteure des freiwilligen Kohlenstoffmarkts werden aller Voraussicht nach erhebliche Schwierigkeiten dabei haben, sich Zugang zu hochqualitativen

Zertifikaten zu verschaffen, die von den Gastgeberländern autorisiert sind. Die Bundesregierung könnte diese Akteure hierbei unterstützen, indem sie ihren diplomatischen Einfluss geltend macht und den Zugang zu hochwertigen ITMOs erleichtert. Die Unterstützung könnte zugleich an bestimmte Bedingungen geknüpft werden, wie beispielsweise die Offenlegung von Emissionsdaten, die Festlegung ambitionierter Klimaziele oder eine transparente Kommunikation. Der Hauptnutzen dieser Option besteht darin, dass die Qualität der von deutschen Akteuren des freiwilligen Kohlenstoffmarkts verwendeten Zertifikate verbessert wird, während die Bundesregierung zugleich die Möglichkeit erhält, den freiwilligen Kohlenstoffmarkt zu regulieren. Dieser Ansatz würde zu mehr Transparenz bei der Nutzung von Klimaschutzzertifikaten in Deutschland beitragen, deren Mangel in der Vergangenheit bereits zu einer Reihe von Rechtsstreitigkeiten vor deutschen Gerichten geführt hat.

1 Introduction

Science is clear: in order to keep the goal of net-zero emissions by 2050 within reach and limit climate change, global greenhouse gas (GHG) emissions must be reduced drastically and rapidly. However, there is still a gap between the Nationally Determined Contributions (NDCs) submitted by Parties and the Paris Goals (UNFCCC Secretariat, 2021); even if fully implemented, they would lead to an estimated increase in the global average temperature of 2.4 °C (CAT, 2022).

Expectations are high that international cooperation could contribute to closing this ambition gap, in particular if it is market-based (IETA et al., 2019; Mehling, 2021). The Paris Agreement's Article 6 offers Parties three different possibilities for the voluntary cooperation among Parties: Article 6.2 of the agreement introduces an accounting and reporting framework that allows Parties to develop and implement so called cooperative approaches, while Article 6.4 establishes a crediting mechanism overseen by the United Nations Framework Convention on Climate Change (UNFCCC) that can be seen as a successor of the Kyoto Protocol's Clean Development Mechanism (CDM). Both, Article 6.2 and Article 6.4 allow for mitigation outcomes (MOs) to be generated and transferred internationally and are therefore considered market-based approaches. With Article 6.8, a non-market approach has been introduced that does not involve any transfers of mitigation outcomes. At the Conference of the Parties (COP) 26 in Glasgow, Parties adopted the Rulebook for Article 6 laying out the details of the functioning of the voluntary cooperation. While some details in particular on the infrastructure and reporting are still being negotiated, it is in particular Article 6.2 that now leaves the conceptual stage and moves towards implementation, a process accompanied by numerous piloting activities all over the world (Greiner et al., 2020).

Article 6.2 is not only the most advanced instrument among the three approaches so far but the reporting and accounting framework can further be considered the cornerstone of Article 6 for two reasons: First, all transfers, including transfers of units generated under Article 6.4 (Article 6.4 emission reduction – A6.4ERs), must be considered Internationally Transferred Mitigation Outcomes (ITMOs) and follow the Article 6.2 provisions. Second, Article 6.2 is the most versatile element of Article 6: It does not only allow for different types of market-based cooperation but may also be used for cooperative approaches that do not involve such transfers. Against this background, this paper aims to identify and depict different options of how Germany could make use of Article 6.2 to contribute to ambition raising.

Increasing ambition in climate change mitigation is not only an imperative to reduce emissions towards net zero around mid-century. Ambition raising is also one basic principle for the use of Article 6, which must not be undermined by a lack of environmental integrity or come at the expense of sustainable development impacts. These basic principles are briefly described in section 2 of the paper. In this section we also underscore the relevance of reporting on the use of cooperative approaches under the United Nations Framework Convention on Climate Change (UNFCCC) and outline why we consider that Article 6.2 is an open framework that allows for multiple uses while not being confined to NDC attainment.

From a German perspective, using Article 6.2 for NDC attainment is neither politically desired nor legally possible since Germany as a member state of the European Union (EU) has committed to the EU NDC which is to be fully achieved domestically. Building on this observation, section 3 of the paper explores alternative ways for Germany to engage in cooperative approaches, and finds different options to use Art. 6.2 for compliance as well as voluntary purposes. For each option, we analyse the feasibility taking into account the German policy background, discuss the ambition raising potential and environmental integrity aspects

and assess whether reporting on this option under the UNFCCC is possible. Finally, section 4 of the paper concludes by summarizing the findings and providing an overall assessment of the options identified.

2 Foundations of using Article 6.2

Before exploring the different options for Germany to use Article 6.2 we take a look at the fundamental elements of Article 6.2: We present the principles that all cooperative approaches must adhere to, discuss the reporting structure established by Article 6.2 and outline how we read specific areas of the Art. 6.2 Guidance that still offer considerable room for interpretation. On the basis of these considerations, the most promising options for Germany to use Article 6.2 are identified in the subsequent section 3.

2.1 Basic principles of Article 6

With the adoption of Article 6, Parties have introduced some basic principles that must be adhered to in the context of voluntary cooperation. Building on the Paris Agreement and its Article 6, the following three basic principles can be identified:

- ▶ Principle 1: Environmental integrity
- ▶ Principle 2: Ambition raising
- ▶ Principle 3: Sustainable development

All three are key principles of Article 6.2 (and Article 6 more broadly) as they are included in Article 6.1 of the Paris Agreement, the so-called ‘chapeau’ that sets the framing for all Article 6 activities:

*“Parties recognize that some Parties choose to pursue voluntary cooperation in the implementation of their nationally determined contributions to allow for **higher ambition** in their mitigation and adaptation actions and to promote **sustainable development and environmental integrity**.”*
(UNFCCC, 2016, Article 6.1 PA, emphasis added)

The following will provide a definition for each principle and outline how it will be applied in the context of this paper.

2.1.1 Environmental integrity

‘Ensuring environmental integrity’ is a term that is often referred to, but, has not been clearly defined yet (Schneider, Füssler, La Hoz Theuer, et al., 2017). Building on previous work (Kreibich et al., 2022), we will consider environmental integrity to be ensured, if the use of Article 6.2 leads to aggregated GHG emissions over time that are not higher than those occurring in the absence of the cooperation. The following two aspects are key to ensure environmental integrity (Kreibich et al., 2022; Schneider & La Hoz Theuer, 2018):

- ▶ **Unit quality.** Units transferred as ITMOs under Art. 6.2 need to have quality in order to not undermine environmental integrity. One key requirement for ensuring high quality of units in the context of crediting is additionality. **Additionality** is about causation (Gillenwater, 2012): It must be ensured that there is a causal relationship between the mitigation activity and the overarching policy intervention that has triggered it, which is the cooperative approach in our case. Due to its counter-factual nature, ensuring additionality has always been challenging and is set to become even more challenging under the new framework conditions of the Paris Agreement (see: Michaelowa, Hermwille, et al., 2019). Other aspects to take into consideration in the context of unit quality relate to the correct **estimation of the emission reductions** (or removals), which can be put at risk by inflated baselines, the underestimation of activity emissions, non-permanence and leakage as well as rebound effects. Establishing robust rules for additionality demonstration, baseline setting as well as

provisions for the measurement, reporting and verification (MRV) will be important steps to address these risks. The Article 6 Guidance agreed by Parties in Glasgow makes reference to environmental integrity and operationalizes unit quality in the context of reporting provisions by requiring Parties to address the following aspects (UNFCCC, 2021b, Annex, para 18h): avoidance of net increase in global emissions, robust transparent governance and quality of mitigation outcomes, minimized risk of non-permanence.

- **Robust accounting.** Robustly accounting for the ITMOs transferred is another key requirement for ensuring environmental integrity. One key aspect (though not the only one) of robust accounting is the avoidance of double counting. Robust accounting requires accounting systems and accounting rules to be in place, as well as unit tracking systems. The Article 6 Guidance agreed in Glasgow has established the basis for robust accounting. Accounting rules require Parties to implement 'Corresponding Adjustments' (CAs) to avoid emissions being claimed twice by both the transferring and the acquiring Party (UNFCCC, 2021b, Annex, para 6). Unit tracking is ensured through international and national registries while Parties are to regularly report on for instance how ITMOs have been generated and used. Cooperative approaches under Article 6.2 will be able to build on this infrastructure, limiting the risk of emission reductions being counted more than once. However, some open questions remain, for instance regarding the compatibility of metrics and target years.

Since this paper focuses on how Germany could use Article 6 as an acquiring Party, we will focus on additional factors that could adversely impact environmental integrity on the demand side, while assuming that unit quality and robust accounting of units is ensured.

2.1.2 Ambition Raising

With the adoption of the Paris Agreement, ambition raising has become an imperative for international market-based cooperation. This new role stands in contrast to the function of the 'flexibility mechanisms' of the Kyoto Protocol, which were aimed at reducing costs and providing Parties with increased flexibility in achieving their pre-defined mitigation targets. Under the Paris Agreement, however, voluntary cooperation under Article 6 is to allow Parties to increase their climate ambition. While ambition raising is seen as a key principle of Article 6 by many, there is no commonly agreed definition of this concept in the context of Article 6 and there are also different views within the community on how ambition raising could be achieved through voluntary cooperation. In order to further disentangle this concept, this section aims to provide a brief definition of ambition raising, which will be used in this paper.

The general focus of attention in the debate about ambition raising is on the **supply side**. At the activity level, different approaches were developed of how ambition could be raised through design, such as by setting stricter baselines well-below business as usual or short crediting periods that reduce the amounts of creditable emissions (Hermwille, 2020; Michaelowa et al., 2021). Other approaches include the use of positive lists of technologies that will allow the cooperative approach to focus on activities that are beyond the host Party's reach, the so-called inaccessible abatement options (Warnecke et al., 2018), for instance by introducing technologies that are currently not available in the host Party, such as Nearly Zero Energy Buildings in Colombia (Kachi et al., 2019). However, the increased mitigation impact achieved at the activity level will not necessarily translate into an increase of the national ambition level, as the mitigation impact could also be used to offset emission reduction activities in other areas which were originally planned to contribute to the host Party's NDC. **In order to lead to increased ambition, these 'gains from crediting' must hence be embedded in the host Party's NDC –**

the ambition raising impact must be secured at the target level which is dynamically improved over time.

It should be noted, however, that the wording of Article 6.1 indicates that ambition raising is not limited to the host Party but also refers to the **Party that uses the ITMOs** generated by the cooperative approach. Here, ITMOs must not simply be used to offset emissions but their increased mitigation impact must be reflected at the target level and allow for a dynamic improvement of mitigation targets. This will be particularly relevant if ITMOs are used for NDC attainment but also if the cooperative approach is used for other targets or purposes, such as results-based climate finance or the achievement of voluntary targets by the private sector (e.g., climate neutrality claims). **The use of ITMOs must hence lead to an additional benefit for the climate, while using ITMOs for mere offsetting of emissions is not sufficient.**

Another concept introduced by the Paris Agreement and its Article 6 is the contribution to **overall mitigation in global emissions (OMGE)**. Ambition raising and OMGE are two concepts that are closely related and perceptions in the literature differ whether the latter should be considered part of the former (see: Fuessler et al., 2019; Kreibich et al., 2022; Wang-Helmreich et al., 2019). Looking at the Article 6 text agreed in Paris, both concepts can be clearly differentiated: While the concept of ambition raising is linked to the Parties involved (“to allow for higher ambition in **their** [...] actions” (UNFCCC, 2016, Annex, Article 6.1 PA, emphasis added) and a requirement for any voluntary cooperation under Article 6, OMGE is delinked from Parties and only referred to under Art. 6.4 of the Paris Agreement. With the adoption of the Article 6 Rulebook in Glasgow, this clear delimitation has, however, been deleted. Para 39 in section VII on ambition in mitigation and adaptation actions of the Art. 6.2 Guidance encourages Parties and stakeholders to cancel ITMOs and make a contribution to OMGE. Both concepts are therefore no longer delinked. We will in the following build on this observation and **consider a contribution to OMGE to be part of ambition raising.**

Another observation regarding the relationship between **ambition raising and adaptation** can be made. As can be seen from the Paris Agreement’s Art. 6.1 quoted above, the Paris Agreement applies ambition raising to both mitigation and adaptation. This is also reflected by the Art. 6.2 Guidance, which strongly encourages Parties to commit to contributing resources for adaptation in its section on ambition (UNFCCC, 2021b, Annex, para 39). Despite this link being made, we will in the following focus on ambition and ambition raising in the context of mitigation, while contributions to adaptation will not be taken into consideration. Since this paper explores different options for Germany to use Article 6.2 as an acquiring Party the focus is put on options to raise ambition on the demand side, while the ambition raising impact on the supply side will not be explored in detail. This is also due to fact that the ambition raising impact on the supply side will be largely depend on the design of the mitigation activity and other considerations that are beyond the scope of this paper.¹

2.1.3 Sustainable Development

While Article 6.1 requires all activities under Article 6 to promote sustainable development, a clear definition of this concept is not provided. How to define sustainable development and which criteria should be used for the assessment of contributions to sustainable development has been a contentious issue for decades under the Kyoto Protocol’s CDM. In particular large CDM host Parties have been eager to ensure that defining what constitutes sustainable development is a national prerogative. This has led to a situation in which host Party’s

¹ The selection of host Parties and the eligibility of mitigation activities will be explored in another part of the project that will also take the ambition raising impact into consideration.

Designated National Authorities (DNAs), the national entities tasked with approving CDM activities, applied different and at times ill-defined criteria when assessing CDM project's contributions to sustainable development. Overall, the CDM has been criticized for making only limited contributions to sustainable development (Michaelowa, Shishlov, et al., 2019), in particular in its first years of operation (Burian, 2006; K. H. Olsen, 2007). This criticism ultimately led to the development of the Sustainable Development Tool, which allowed CDM project proponents to highlight positive contributions of their activities, while significant room for improvement remained (K. Olsen et al., 2018). Adverse impacts on sustainable development as well as cases of human rights violations in some CDM projects have further highlighted the need to establish safeguard in future market-based mechanisms. The rationale behind safeguards is clear: in order to be able to contribute to sustainable development, activities must not hinder or negate some sustainable development aspects in favour of promoting others (Arens & Mersmann, 2018).

Under Article 6.2 and its cooperative approaches, deciding on sustainable development objectives is still a national prerogative of the host Party. However, the reporting and review framework established under Art. 6.2 and the Transparency Framework allows the international level (the UNFCCC Secretariat and other experts) to support host Parties with the development of tools and approaches to assess and report on sustainable development. Sustainable development assessment is hence no longer exclusively seen as a national issue (K. Olsen & Arens, 2021). The Article 6.2 Guidance requires Parties to report on sustainable development impacts in both, the initial report as well as regularly in the biennial transparency reports (BTR). The provisions require Parties to report on how negative environmental, economic and social impacts are minimized and, where possible, avoided. Participating Parties must further confirm that the cooperative approach is consistent with the and contributes to the sustainable development objectives of the host Party. In addition, Parties must report on how the cooperative approach reflects the eleventh preambular paragraph of the Paris Agreement, according to which Parties "should" respect, promote and consider their obligations on human rights and other rights. In order to meet these requirements, host Parties will have to decide on their individual approaches for sustainable development assessment and reporting. They could use the tools to be developed by the Supervisory Body for the Art. 6.4 mechanism or they could make use of other tools and approaches. Key elements to be defined relate to the governance of the cooperative approach, the definition of criteria for the assessment, safeguards or do-no-harm principles as well as stakeholder involvement processes (for details see: SDI, 2020).

Sustainable development impacts are of utmost importance when designing and implementing mitigation activities on the supply side but not linked to how ITMOs are used on the demand side. Sustainable development will therefore not be taken into consideration when assessing different options of how Germany could use Article 6.2 as an acquiring Party.

2.2 UNFCCC Reporting

Transparency lies at the very core of the Paris Agreement, with the NDC cycle and its 'ratchet mechanism' building on reliable information to be provided to the UNFCCC and made accessible to the wider public. Similarly, voluntary cooperation under Article 6.2 also relies on transparency and trust between participating Parties. The transparency provisions under the Enhanced Transparency Framework (ETF) and the reporting rules for Parties participating in cooperative approaches agreed by Parties in Glasgow are therefore of utmost relevance for Germany as a Party using Article 6.2. As will be shown, however, the actual relevance of the reporting rules will vary depending on which of the options identified in section 3 Germany is engaging in. In cases where Germany is only playing a supportive role, for instance by assisting

VCM actors in accessing high-quality units (see section 3.6), reporting obligations will be limited. By contrast, if ITMOs are to be used for compliance with international targets (see section 3.1), Germany would have to engage as a participating Party and fully comply with the reporting obligations. More generally, in this analysis the UNFCCC reporting framework will be considered a possibility for Germany to communicate its engagement in international climate action and not solely seen as obligations that have to be met when engaging under Article 6.2.

Box 1: Reporting provisions under Article 6.2

The Article 6.2 Guidance (UNFCCC, 2021b) establishes detailed reporting provisions for Parties participating in cooperative approaches. Germany, as an acquiring Party, would have to submit an initial report, annual information that is recorded in the Article 6 database as well as regular information that is included as an Annex to its Biennial Transparency Report (BTR).

The information to be submitted with the **initial report** inter alia relates to:

- ▶ The fulfilment of participation responsibilities of Art. 6.2
- ▶ The NDC against which progress will be tracked
- ▶ ITMO metrics and how CAs will be applied

The **annual information** to be provided by Germany as an acquiring Party includes:

- ▶ Annual information on acquisition, holdings, cancellation, voluntary cancellation, voluntary cancellation of mitigation outcomes or ITMOs towards overall mitigation in global emissions and use towards NDCs
- ▶ Information for each ITMO in terms of the cooperative approach, the first transferring participating Party, the year in which the mitigation occurred, the sector(s) and activity type(s), and the unique identifiers

The **regular information** Germany as an acquiring Party includes:

- ▶ Reporting on how participation responsibilities are met;
- ▶ Reporting on corresponding adjustments undertaken in the latest reporting period and how key environmental integrity requirements are ensured

The Article 6.2 Guidance contains numerous reporting provisions that apply to each participating Party of a cooperative approach. Box 1 provides an overview of different reporting requirements under Article 6.2. When exploring different use options of cooperative approaches, we will assess whether reporting on this use is provided for under Article 6.2 and the Enhanced Transparency Framework (ETF). In cases where reporting is challenging and details are still under discussion under the Subsidiary Body for Scientific and Technological Advice (SBSTA), we assess whether and how this might impact transparency under the UNFCCC.

2.3 Article 6.2 as an open framework

Article 6.2 has been conceptualised as an open framework that allows for multiple uses. The following are key aspects that allow Article 6.2 to be used in multiple ways:

- ▶ Neither Article 6.2 nor the Guidance clearly define the **nature of cooperative approaches**. From the wording in Article 6.1 of the agreement and the Art. 6.2 Guidance, which both refer to participating Parties, one could assume that a cooperative approach would involve at least two Parties. However, the Guidance does not prescribe the number of participating Parties of cooperative approaches, allowing for Article 6.2 also to be used unilaterally.
- ▶ The **authorization of ITMOs** is a key step in the process of using Article 6.2. Host Parties can authorize ITMOs for three different purposes: NDC achievement, international mitigation purposes (such as the Carbon Offsetting and Reduction Scheme for International Aviation – CORSIA) or other purposes (e.g. the Voluntary Carbon Market – VCM). Any mitigation outcome authorized must comply with the provisions of the Art. 6.2 Guidance, including on accounting through the implementation of corresponding adjustments (CAs). By implication, this means that any MOs that are not authorized will not trigger corresponding adjustments. They will therefore automatically contribute to the host Party’s NDC.
- ▶ The concept of **corresponding adjustments** has been developed to avoid one mitigation outcome being claimed by two Parties, which is commonly referred to as double claiming, a specific form of double counting. To avoid double claiming between two Parties when transferring mitigation outcomes, the acquiring Party adjusts its reported emissions downwards, while the transferring Party makes an upward adjustment to its emissions balance that corresponds to the adjustments made by the acquiring Party. The two adjustments correspond, hence ‘corresponding adjustments’. However, the Article 6.2 Guidance also allows for ITMOs to be authorized for “other purposes” which do not necessarily trigger an adjustment on the acquiring side, for instance when underlying units are used for voluntary offsetting purposes by VCM actors. To denote the fact that there is no such correspondence, we will use the term ‘adjustments’ in cases where only the transferring Party adjusts its reported emissions.
- ▶ One of the open questions that policymakers had to deal with after the adoption of the Paris Agreement was the **nature of ITMOs**. Article 6 of the Agreement does not define whether ITMOs are units that are issued and can be transferred and used or whether ITMOs are merely reported amounts (Schneider, Füssler, Kohli, et al., 2017). With the adoption of the Article 6.2 Guidance, the question has been answered to some extent, while some uncertainty remains. On the one hand, the Guidance in its para 1 includes a number of features that describe what ITMOs are. Some of these features are quality criteria that usually apply to units such as carbon credits, such as ITMOs being real, verified, and additional. Following this reading, ITMOs could be considered units. On the other hand, there is no section that describes the issuance of ITMOs or whether these could be held by non-Party actors. Furthermore, the reporting and accounting infrastructure introduced with the Article 6.2 Guidance treats ITMOs as reported amounts. It allows for the generation, authorization, transaction and accounting of ITMOs by Parties, who will have to report on these activities utilizing tabular reporting formats. The situation will presumably become clearer with the progress of the ongoing UNFCCC negotiations tables and outlines for reporting and the infrastructure requirements on recording and tracking for which the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement (CMA) invited submissions.² We will in the following build on the assumption that ITMOs are not units but reported amounts. All processes related to the certification of emission reductions or removals will therefore follow rules established outside of Article 6.2 while at the same time having to ensure that they align with the provisions of Article 6.2. It should be noted,

² The submissions are publicly available on the website of the UNFCCC (UNFCCC Website, 2022)

though, that the need to issue units will depend on how the results of the cooperative approaches are to be used and by whom. The issuance of units will therefore be particularly relevant for cooperative approach that involve non-Party actors.

3 Envisaging the use of Article 6.2 by Germany

This section explores different options for using Art. 6.2 in line with the key principles defined above. Our analysis only considers options where Germany is involved as a buyer of ITMOs or as a supporter of the mitigation activity, while the activity as such is being implemented outside Germany (Germany as an acquiring Party). Therefore, the implementation of Article 6.2 activities in Germany is not taken into account. The overarching research question is as follows: How can Germany contribute to increasing ambition through Art 6.2 cooperative approaches without using ITMOs for its own NDC while reporting the mitigation impacts under the UNFCCC?

As can be seen, the use of cooperative approaches for the achievement of Germany's NDC is not the focus of the analysis. Despite this, we have also explored this 'zero option' to highlight challenges relevant for some of the six different use options identified (see Box 2). It should be noted that the six different use options we differentiate are not mutually exclusive. Rather, a combination of the different options – including a mix between compliance and voluntary use options within one cooperative approach – could yield important benefits.

Box 2: The 'Zero Option': Using ITMOs for NDC attainment

Article 4.2 of the Paris Agreement requires every Party to "prepare, communicate and maintain successive" NDCs that it intends to achieve and to pursue respective mitigation measures (UNFCCC, 2016, Annex, Art. 4 PA). Hence, while the achievement of the NDCs is not legally required, the Paris Agreement establishes legally binding obligations of conduct (Obergassel et al., 2016). Article 6 of the Paris Agreement allows Parties to cooperate internationally in the implementation of their NDCs. A conventional form of such cooperation is offsetting, i.e., ITMOs are transferred from the seller to the purchasing Party, allowing the latter to use the ITMOs towards its NDC.

As a Member State of the European Union (EU), Germany has committed to the EU NDC and its "binding target of a net **domestic** reduction of at least 55% in greenhouse gas emissions by 2030 compared to 1990" (EU, 2020, emphasis added). This formulation excludes the use of emission reductions (or removals) achieved abroad and does therefore not allow ITMOs to be accounted towards the EU NDC. The German government can therefore neither use its engagement under Article 6 for assisting installations affected by the EU Emission Trading System (EU ETS) nor to achieve its national target under the Effort Sharing Regulation (EU, 2018). It must hence be ensured that any use of Article 6 and purchase of ITMOs by Germany does not contribute to the achievement of the EU NDC.

At the same time, the domestic maxim does not per se exclude the use of ITMOs for NDC achievement, as it is only linked to the current version of the EU's first NDC, covering the time period until the year 2030. This would allow for two alternative 'sub-options':

- The first consists in the EU submitting an updated NDC for the time period until 2030, which does allow for the use of mitigation outcomes achieved abroad, possibly in combination with a more ambitious mitigation target. It should be noted that the Paris Agreement allows Parties to adjust its existing NDC at any time if the adjustment enhances its level of ambition (UNFCCC, 2016, Annex, Art. 4.11 PA). In Glasgow, Parties have further been requested to revise and strengthen the 2030 targets in their NDCs by the end of 2022 (UNFCCC, 2021a, para 29).
- The second sub-option consists in the adoption of an NDC for the time period 2030 to 2040 which does not limit emission reductions to the domestic area.

Both options, however, would require a fundamental policy change at the EU level.

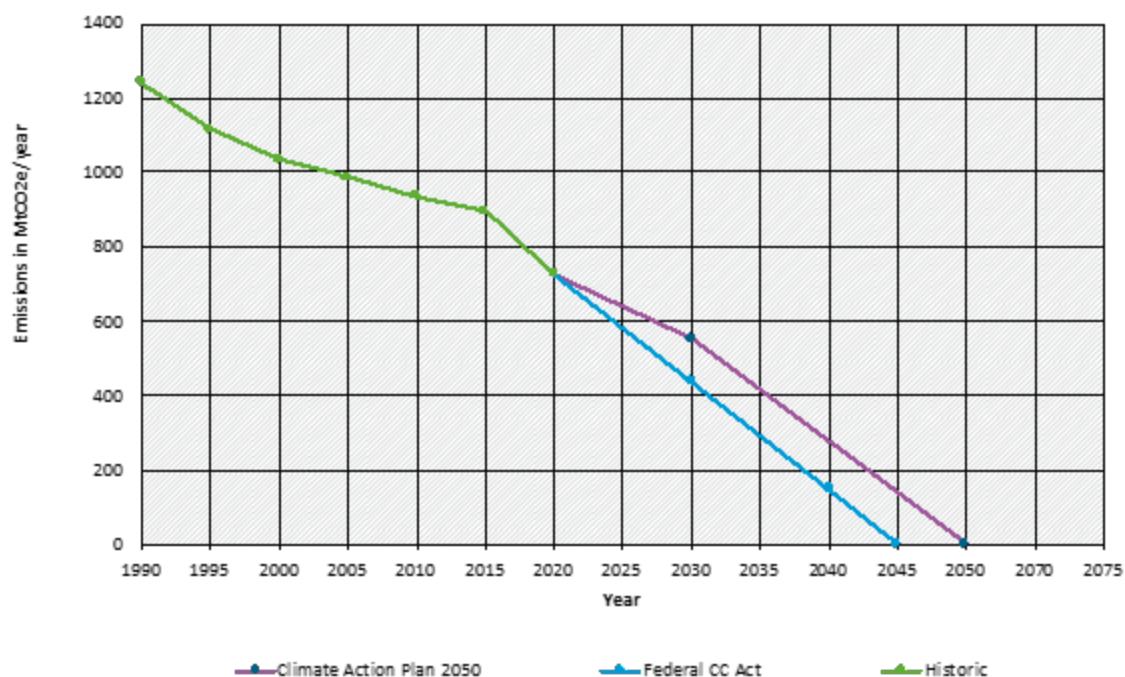
3.1 Using ITMOs for the achievement of LT-LEDs and national long-term policy targets

Nationally Determined Contributions are not the only binding targets for which the use of ITMOs could be explored, as several Parties have adopted complementary climate targets at the international as well as domestic level. At the international level, the Paris Agreement calls on all Parties to communicate long-term low greenhouse gas emission development strategies (LT-LEDs) (UNFCCC, 2016, Annex, Art. 4.19). Ideally, such LT-LEDs are to guide Parties' NDCs. Both elements should be fully aligned, with the mitigation targets put forward in NDCs being concrete milestones along the decarbonization pathway resulting from the LT-LEDs (Falduto & Rocha, 2020). Depending on how the LT-LEDs is defined, it could also be (partially) achieved through the use of ITMOs. The ITMOs to be used with this option would have to be authorized by the host Party and backed by adjustments. From the three purposes for which ITMOs can be authorized, the authorization for other purposes seems best suited. Involvement of the German Government would represent a precondition for this option.

3.1.1 German policy context and feasibility considerations

Germany submitted its Climate Action Plan 2050 as such an LT-LEDs in 2016 (BMUB, 2016), which includes the aspirational goal of becoming "largely greenhouse gas neutral by mid-century" and defines targets and measures for the different economic sectors for the year 2030 (see Figure 1). The document contains no reference to the purchase of emission reductions generated abroad as a strategy for achieving these targets. Since the use of ITMOs for achieving the German LT-LEDs is neither envisaged nor excluded, it could be considered a possible option for future Article 6 engagement.

At the domestic level, Germany amended its Federal Climate Change Act following a constitutional court ruling in June 2021, which stated that Germany's climate targets were too weak, imposing a disproportionate burden on future generations (Bundesverfassungsgericht, 2021). The amended Federal Climate Change Act includes the target to achieve climate neutrality by 2045, as well as milestone targets of minus 65 per cent by 2030 and minus 88 per cent by 2040 (compared to 1990 levels) (Deutsche Bundesregierung, 2021). The text further contains an explicit reference to international climate change mitigation mechanisms, stating that the "above shall apply without prejudice to the possibility of achieving national climate targets by using intergovernmental mechanisms to achieve part of the reduction in greenhouse gas emissions" (Deutsche Bundesregierung, 2021, Section 3, para 3). Figure 1 below provides a comparison of both long-term targets.

Figure 1: Comparison of Germany's long-term targets

Source: own illustration (Wuppertal Institute), based on Umweltbundesamt (2022), BMUB³ (2016) and Deutsche Bundesregierung (2021). Note: The Climate Action Plan's targets allow for some flexibility and have therefore been interpreted in the following way: carbon neutrality by 2050, emissions in 2030 to lie at 552.5 million tCO₂e.

Table 1: Overview of LT-LEDs and national long-term policy targets

	Coverage	Year of submission / adoption	Objective	Target year	Role of climate action abroad
Climate Action Plan submitted to the UNFCCC as long-term strategy (LT-LEDs)	Germany	2016	"largely greenhouse gas neutral"	By mid of the century	Not mentioned
Climate Change Act (Klimaschutzgesetz)	Germany	2021	GHG-neutral	By 2045	Not excluded
			Minus 65%	By 2030	
			Minus 88%	By 2040	

Sources: BMUB (2016) and German Government (2021).

As can be seen from Table 1 above, the long-term strategy adopted by Germany as well as Germany's domestic policy targets do not exclude the use of ITMOs. It should be noted, however, that in theory and with LT-LEDs and NDCs being fully aligned, any use of ITMOs for the

³ The acronym BMUB stands for Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Buildings. It was used in the time period from 2013 to 2017 during which the building sectors was integrated into the Environment Agency. Before this period as well as from 2017 to 2021, the Ministry's acronym was BMU. Due to a restructuring of the federal ministries in 2021 and the inclusion of consumer protection into the ministry's areas of responsibility, name was changed to Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection, or BMUV in German.

achievement of LT-LEDs will also be linked to the use of ITMOs for NDC achievement. This puts Germany in a peculiar situation, since it has submitted its own LT-LEDs but has only committed to the EU NDC. This situation would be comparable to Sweden (see Box 3).

Box 3: Sweden: Using ITMOs for achieving net-zero emissions by 2045

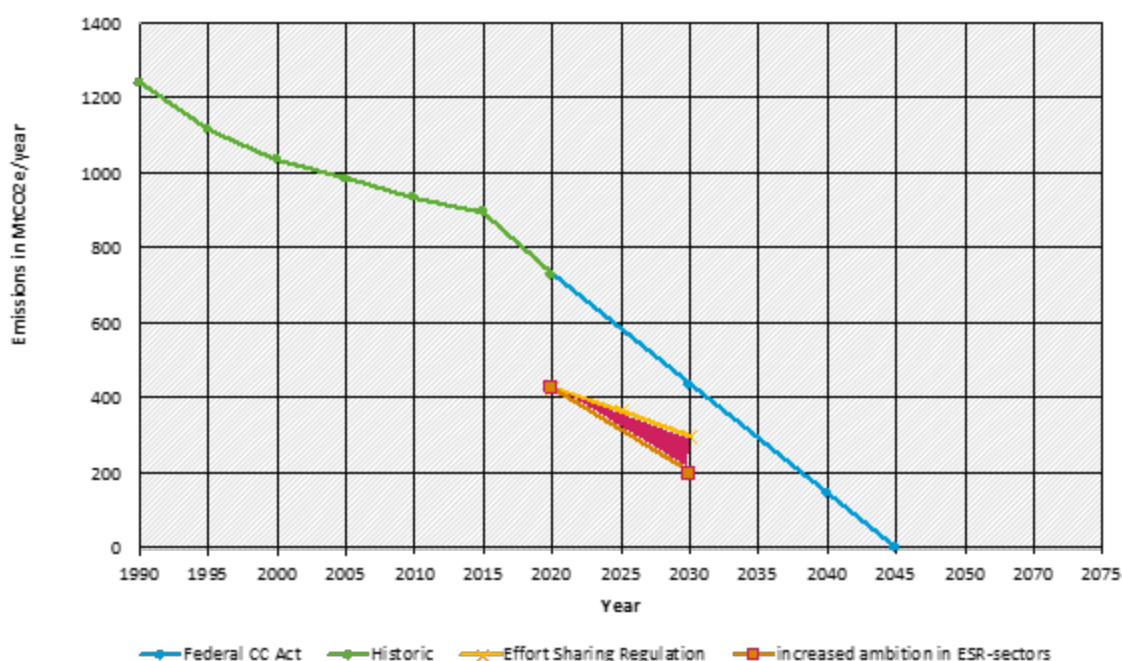
Sweden submitted its LT-LEDs in 2020 (Sweden, 2020). The strategy submitted to the UNFCCC is largely based on the national climate policy framework and Government Bill, which the Parliament of Sweden had adopted in 2017 (Climate Home, 2017). The framework establishes that Sweden is to become net-zero by 2045 at the latest and achieve negative emissions thereafter.

The climate goal is to be achieved by a combination of emission reductions and removals implemented domestically as well as abroad. In terms of domestic emission reductions, the framework envisages that GHG emissions from Sweden are to be reduced by at least 85 per cent compared to 1990 levels. To achieve net-zero emissions, supplementary measures may be taken in line with international rules:

- ▶ Increased net removal of carbon dioxide in forests and land;
- ▶ Verified emission reductions from investments in other countries; and negative emission technologies such as capture and storage of biogenic carbon dioxide.

As can be seen, the supplementary measures include emission reductions (and possibly removals) achieved outside the Swedish territory. The Swedish Parliament has also adopted 'milestone targets' for the emissions outside the EU ETS, which are covered by the Effort Sharing Regulation (ESR). For the year 2030, emissions are to be reduced by minus 63 per cent below 1990 levels, while a maximum of 8 percentage points of the emission reductions may be achieved through supplementary measures. At the EU level, Sweden had agreed on emission reductions of minus 40 per cent by 2030 in relation to 2005 levels (EU, 2018). When using ITMOs to achieve its net-zero target, Sweden will have to go beyond the reduction obligations adopted at EU level in order to ensure the domestic nature of the EU NDC to which these reductions contribute.

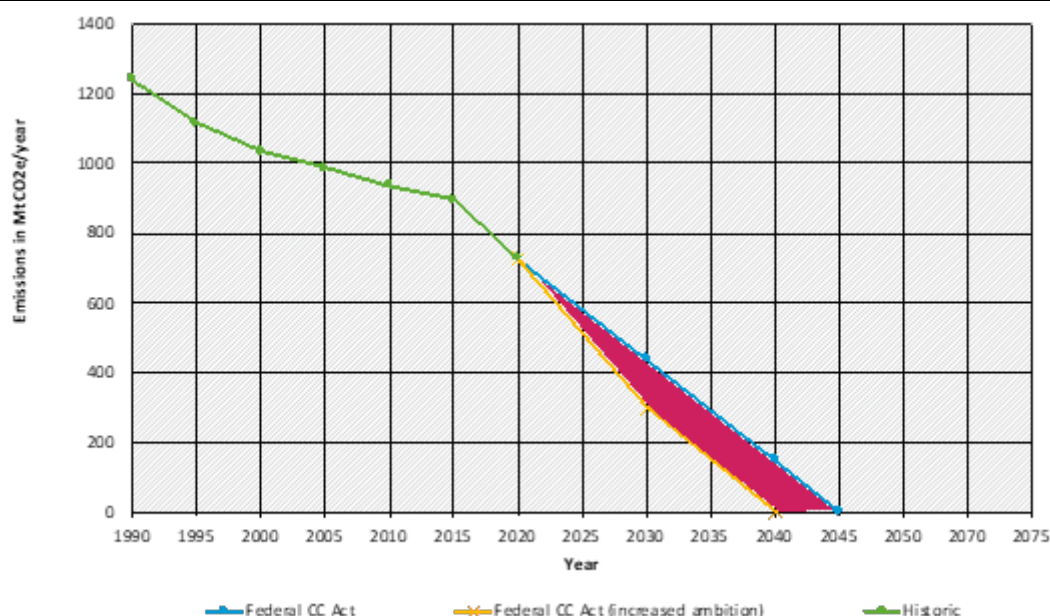
One key condition that needs to be ensured if Germany aims to use ITMOs for achievement of its long-term targets is that the ITMOs purchased do not (indirectly) contribute to the EU NDC. Therefore, any use of ITMOs in the sectors covered by the Effort Sharing Regulation (ESR) must go beyond the obligations these sectors already have under the ESR. Figure 2 below illustrates how such a use could look like. In the figurative example, the emissions for which ITMOs are used is highlighted in pink.

Figure 2: Using ITMOs in the ESR sectors while maintaining domestic nature of the EU NDC

Source: own illustration (Wuppertal Institute) based on data from Umweltbundesamt (2022), Deutsche Bundesregierung (2021) and EU (2018). Note: the figure illustrates how the ambition level in the sectors covered by the ESR could be raised from the current ambition level (yellow) to the increased ambition level (orange) by using offsetting the pink area of the emissions through the use of offsets. In doing so, the domestic nature of the EU NDC is maintained.

3.1.2 Ambition raising impact and environmental integrity considerations

As outlined in section 3.1 above, using ITMOs for achieving Germany's long-term target in its current form would be possible from a German legal perspective, as this has explicitly not been developed as a domestic target. However, Article 6.1 of the Paris Agreement requires ITMOs to contribute to ambition raising. Therefore, using ITMOs to achieve the Federal CC Act target while maintaining the current ambition level as depicted by the blue line in Figure 3 below is not possible. Germany could however use ITMOs if this use would allow for an increased ambition level of its target, for instance by advancing the date of achieving GHG neutrality from 2045 to 2040, as shown with the yellow line in Figure 3 below. Germany would use ITMOs only for those emissions highlighted in pink, allowing it to become GHG neutral earlier than envisaged by the current Federal CC Act. The German government would however have to ensure that ITMOs are only used for the emissions highlighted in pink in the figure below. It would hence have to make sure that its climate policies and the development of its domestic emissions are in line with the blue emissions pathway already enshrined by law.

Figure 3: Using ITMOs to raise the ambition of the Federal CC Act

Source: own illustration (Wuppertal Institute) based on Umweltbundesamt (2022) and Deutsche Bundesregierung (2021).
 Note: the figure illustrates how the ambition level of the Federal Climate Change Act could be raised from its current level (blue line) to an increased level (yellow line) by purchasing ITMOs to offset the emissions in the pink area.

But what impact could the introduction of the ITMO use option have on the politics of setting national mitigation targets even if it is complemented by an increase of the current ambition level as illustrated in Figure 3 above? On the one hand, the possibility to partially achieve the mitigation target through activities outside the country could lower the political opposition against setting more ambitious mitigation targets, as costs associated with increased ambition can be expected to be lower. On the other hand, it can be assumed that this could adversely impact the political debate about further increasing the ambition level in the future: The reasoning of stakeholders pushing for increased *domestic* climate action could be weakened, as opponents may refer to the purchase of ITMOs as being equivalent to the increase of climate action within the country. This is particularly problematic if there is no restriction on the use of ITMOs for achieving the amended mitigation target.

If ITMOs are to be introduced in the context of compliance mitigation targets, these two opposing effects must be balanced by restricting the use of ITMOs. The methods of balancing these effects will depend on how ITMOs are to be used and might include setting specific overall thresholds.

3.1.3 Reporting under the UNFCCC

In the Paris Agreement as well as in the Article 6.2 Guidance, cooperative approaches are considered a possibility to assist Parties in achieving their NDCs, while the use of ITMOs against LT-LEDs is not envisaged (see Art. 6.1 of the Paris Agreement, UNFCCC, 2016). This can be assumed to be due to the fact that NDCs and LT-LEDs are to be fully aligned and any ITMO used for the long-term strategy would automatically also contribute to some of the Party's NDCs and vice versa.

Therefore, it is not surprising to see that the Art. 6.2 Guidance does not provide for Parties to report use of ITMOs for LT-LEDs attainment. The special case of Germany having submitted a national LT-LEDs but no national NDC is not taken into consideration by the Art. 6 Rulebook. More generally, it should be highlighted that there are no reporting requirements for Parties in

the context of their LT-LEDS and measuring progress towards implementing and achieving of long-term strategies is neither requested by the Paris Agreement nor by any COP decision (Falduto & Rocha, 2020).

With regard to the climate targets adopted by Germany through the Federal Climate Change Act in August 2021, the situation is similar. The Article 6.2 Guidance does not contain any provisions for reporting on the use of ITMOs for targets that have not been communicated to the UNFCCC. There is, however, a possibility to include the respective amount of ITMOs cancelled in the annual information: para 20a of the Guidance requires Parties to report on an annual basis the annual information on the ITMOs cancelled. Notably, the Guidance differentiates between use, cancellation, voluntary cancellation and cancellation of ITMOs or MOs towards overall mitigation in global emissions (UNFCCC, 2021b, Annex, para 21-24). This could allow Germany to include the amount of ITMOs acquired and used for achievement of its national long-term target. Additional information on the use of ITMOs could be included in the Biennial Transparency Reports (BTRs) and the regular information to be submitted as an Annex to these BTRs.

3.2 Using ITMOs for compliance with obligations under Germany's nETS

Carbon pricing is being considered a key policy instrument to curb climate change and the number of emissions trading systems (ETS) and carbon taxes is continuously growing. By March 2022, the World Bank's Carbon Pricing Dashboard lists a total of 65 carbon pricing initiatives that are already being implemented globally (World Bank, 2022). More than 20 per cent of global GHG emissions were covered by a carbon price in 2021. At the same time, the majority of carbon pricing instruments are characterized by very low price levels. Less than four per cent of global emissions are covered by a price level of and above 40 to 80 USD / tonne, the price corridor recommended by the World Bank's High-Level Commission on Carbon Prices in 2017 (High-Level Commission on Carbon Prices, 2017). And even these price levels are well below of what is required if the environmental and social costs of carbon are taken into account, as for instance calculated by the Federal Environment Agency for Germany (Matthey & Bünger, 2019).

One expectation is that provisions that allow covered entities to meet part of their obligations abroad could ease the opposition against higher carbon prices. In such a scenario, credits generated abroad would be used as offsets, increasing flexibility and reducing the compliance costs for compliance entities. While offsetting has in the past predominantly been used in the context of ETS such as the EU ETS or California's cap-and-trade Programme, experiences with the inclusion of offsetting are also being made in carbon taxation schemes, such as Colombia and South Africa. This option builds on these experiences and explores the possibilities for using Article 6.2 for compliance with obligations under Germany's National Emissions Trading System (nETS). The German Government would have to be actively involved in this option. The units to be used would have to be authorized by the host Party and backed by adjustments. From the three purposes for which ITMOs can be authorized, the authorization for other purposes seems best suited.

3.2.1 German policy context and feasibility considerations

In January 2021, the nETS became operational. It complements the EU ETS by putting a price on emissions from the heating and transport sector (i.e. emissions not covered by the EU ETS). The nETS is an upstream system that requires distributors and suppliers of fossil fuels to purchase and surrender allowances for the emissions associated to the fossil fuels they sell.

The system is being implemented in phases. Initially, allowances are sold at a fixed price of 25 EUR in 2021 increasing up to 55 EUR in 2025. The auctioning phase starts in 2026 with allowances being auctioned within a predetermined price corridor of 55 to 56 EUR. During the fixed-price phase and as long as the price corridor will be applied, the cap of the nETS is flexible. If emissions exceed the predetermined amount, which is currently derived from Germany's obligations under the EU Climate Change Regulation, flexibility options of the EU Climate Change Regulation will be applied and additional allowances will be made available for compliance entities. After this initial phase, the price for the allowances will be determined by the market and the cap will be binding, unless the government decides otherwise and makes a proposal in 2025 based on the evaluation of the scheme (Bundesministerium der Justiz, 2021; ICAP, 2022).

In principle, this national carbon pricing instrument could be a possible new source of demand for ITMOs. In this context, it should be noted that ITMOs are not units that can be traded but amounts that Parties report on under Article 6.2 of the Paris Agreement. The accounting and reporting system introduced with the Article 6.2 Guidance does not envisage the direct participation of non-state actors (see section 0). Entities covered by the nETS can therefore not directly purchase, trade and surrender ITMOs. Instead, a unit type that is eligible for compliance with obligations under the nETS would have to be introduced that is 'backed' or 'mirrored' by ITMO at the international level. If such a unit is introduced, the German government may allow companies covered by the nETS to offset (part of) their nETS obligations by purchasing and surrendering such units. This offsetting option could be limited to a certain fraction of the entities' emissions. In addition, instead of allowing all nETS participants to use such units, their use could also be limited to individual companies that are unproportionally affected by the nETS or for sectors where there is a high carbon leakage risk.

However, use of these units in Germany's national trading scheme raises one fundamental question: Since the nETS is an instrument that contributes to the achievement of Germany's obligations under the ESR which is in turn a tool to achieve the EU NDC, wouldn't such a regulation undermine the domestic nature of the EU NDC (see also section 3.1 above)? To maintain the domestic nature of the EU NDC it will have to be ensured that the inflow of units does not contribute to the achievement of the (current) EU NDC but would exceed it. This could be achieved by either limiting the use of offset credits to emissions that are not covered by the existing cap of the nETS or by compensating the share of emissions that has been offset with credits from abroad with reductions achieved in other sectors. Similarly, units may only be used if they contribute to overachieving the targets envisaged by the Federal Climate Change Act (see section 3.1).

3.2.2 Ambition raising impact and environmental integrity considerations

Recent research on the impact of carbon credits in different compliance schemes indicates that the mere availability of offsets has in the past not automatically led to ambition raising, while political economy factors were key in determining the ambition levels of compliance schemes (Carvalho et al., 2022). Taking these experiences into account when considering offset credits to be accepted for compliance under the nETS means two things: First, the idea of introducing offsets as a mere cost-containment measure hoping that reduced compliance costs will automatically translate into a higher ambition level should be disregarded. Second, and closely linked to the first observation, the introduction of the offset provision should be complemented with changes in key design parameters of the instrument to ensure an ambition raising impact.

In this regard, the different phases of the nETS must be taken into account. During the **initial fixed-price period** of the scheme, allowances are sold at a fixed price and entities may purchase and surrender the number of allowances corresponding to the amount of emissions reported.

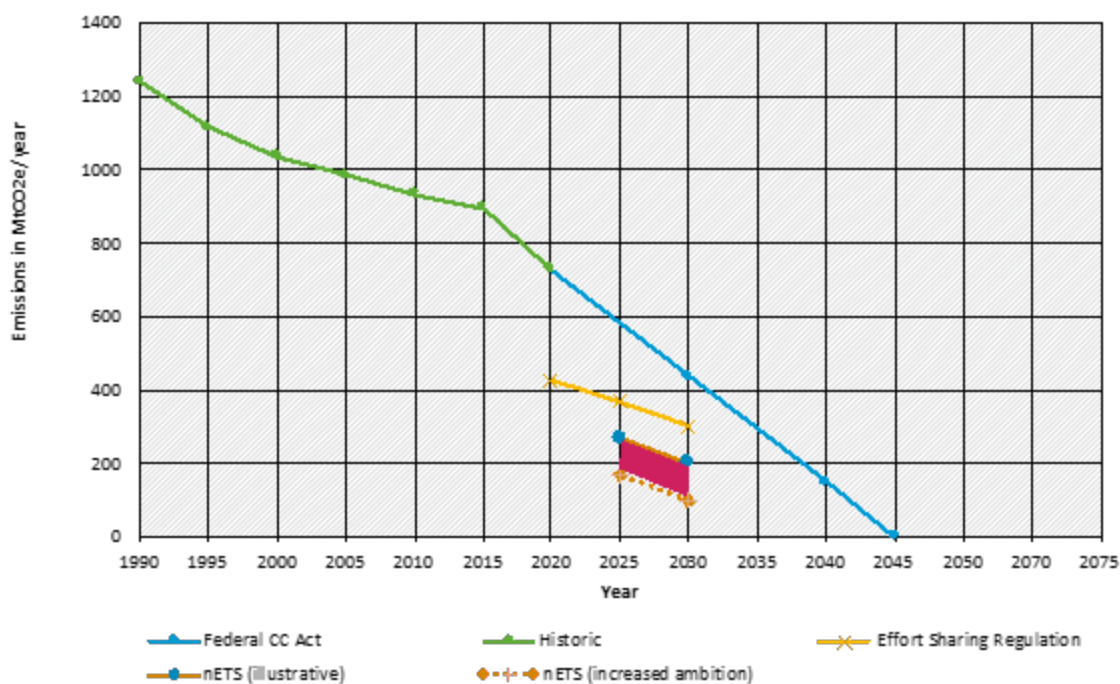
This makes the nETS comparable to a carbon taxation system, since there is no hard cap that limits the overall quantity of allowances on the market. Allowing credits to be used for compliance with the nETS obligation in this initial phase would hence be comparable to the use of offsets in carbon taxation systems, such as Colombia and South Africa, where each credit surrendered by the compliance entities reduces their tax liability by one tonne of CO₂e. Offsetting components are usually introduced with the objective of lowering costs for compliance entities. This automatically translates into a distortion of the carbon pricing instrument's price signal and its steering effect: The mitigation incentive for compliance entities and consumers to which (part of) the costs are passed on will be reduced. Therefore, the introduction of the offsetting option must be accompanied by an increase of the allowance price that takes into account the cost reductions achieved. If this is done, the price signal could be kept the same. Whether the introduction of the offsetting component also represents a window of opportunity to raise the prices of allowances beyond the potential savings accruing from the purchase of credits, is, however, questionable.

The potential ambition raising impact the offsetting component might have outside the carbon pricing instrument will largely depend on how revenues are used by the regulator compared to the mitigation impact achieved by the activities generating credits. The impact on the supply side could be the same, higher or lower. According to the International Carbon Action Partnership (ICAP), revenues generated by the nETS will already "partly be used to support measures under the climate protection program" (ICAP, 2022). An increase of the ambition raising impact outside the nETS through the introduction of the offsetting option during the initial fixed price period of the scheme therefore seems questionable.

With the beginning of the **auctioning phase** and the cap of the nETS no longer being flexible, the introduction of the offsetting option should be complemented with the tightening of the cap according to the inflow of carbon credits. When allowing units to be used for compliance with the nETS, their use must (at least) be limited to the fraction by which the ambition level of the scheme has been increased. This is the pink fraction in Figure 4 below. If, by contrast, the ambition level of the nETS is not increased, no use of ITMOs would be possible.

3.2.3 Reporting under the UNFCCC

Reporting on the use of ITMOs for compliance with obligations under the nETS is challenging, as any ITMO use must not contribute to the EU NDC, in order to maintain its domestic nature. The use of ITMO under the nETS would therefore not be part of the reporting obligations related to NDC implementation and progress. Germany could, however, provide information on this ITMO use at domestic level as part of the annual reporting and include the respective amount of ITMOs cancelled following the provisions in paragraph 20a of the Guidance. However, Germany will not be able to account for these ITMOs at UNFCCC level, as the nETS under which these ITMOs are used is not depicted as a separate component under the accounting system of the Paris Agreement. The (future) relationship between the nETS and overarching policy targets and instruments, such as the EU NDC and the LT-LEDS are unclear, adversely affecting transparency.

Figure 4: Using ITMOs to raise the ambition level of the nETS during the auctioning phase

Source: own illustration (Wuppertal Institute) based on Umweltbundesamt (2022), German Government (2021) and EU (2018). Note: the figure illustrates how the ambition level of the nETS could be raised from its current (illustrative) level (orange blue dotted line) to an increased level (dashed orange line). The use of ITMOs would have to be limited to the pink area to ensure the domestic nature of the EU NDC.

3.3 Supporting German airline operator's access to high quality units for CORSIA

The EU and its member states, including Germany, agreed to participate in the pilot phase of the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA), which started in 2021 and requires airline operators to partially offset their emissions. The International Civil Aviation Organization (ICAO) adopted eligibility criteria for units in 2019 (ICAO, 2019). These criteria are regularly applied to certification standards that apply for becoming eligible under CORSIA. Eligible units are published in the document "CORSIA eligible emissions units" (ICAO, 2021), which is regularly updated. Since ICAO's eligibility criterion 7 requires units to only be counted once towards a mitigation obligation (ICAO, 2019), eligible units will in the future have to be backed by adjustments to avoid double counting with the host Party's NDC. Para 1f of the Article 6.2 Guidance allows ITMOs to be used for such international mitigation purpose (UNFCCC, 2021b, Annex, para 1f). Against this backdrop, a rising demand for ITMOs from airline operators is to be expected. The German government could support airlines in accessing high quality ITMOs to comply with their CORSIA obligations. The units to be used would have to be authorized by the host Party for international mitigation purposes and backed by adjustments.

3.3.1 German policy context and feasibility considerations

Three possible avenues can be envisaged by which the German government could support airlines in accessing high quality CORSIA credits.

First, Germany could adopt the role of a major supplier or broker of credits. These could originate from a bilateral cooperation with German participation as well as from activities without direct involvement (e.g., funding) of the German government. The credits could then be sold (or auctioned) to German airlines who could use them for compliance with CORSIA.

As an alternative, an overarching cooperation framework through a bilateral agreement between the German government and its partner countries could be established. In this case, the German government would neither participate directly in the implementation of the mitigation activity nor would it purchase respective credits. The government would merely establish the overarching framework for the implementation of mitigation activities, whose credits could then be used by the airlines for compliance with CORSIA.

A third option would consist in the German government or one of its subordinate entities to assess and approve project proposals and their emission reductions. This approach could build on the experiences made with the offsetting of Upstream Emission Reductions (UER). Under the UER, the Federal Environment Agency is in charge of approving UER projects and operates the registry that allows compliant entities and project proponents to trade certificates (UBA, 2022).

3.3.2 Ambition raising impact and environmental integrity considerations

The offsetting obligations for airline operators under CORSIA have been established at the international level by the ICAO. The support provided by German entities in meeting these international requirements would therefore not alter the ambition level of the scheme. With regards to environmental integrity the situation is somewhat different. The eligibility of offset credits that can be used by airline operators to meet their offsetting obligations under CORSIA are defined by ICAO. The market for CORSIA-eligible credits can be expected to be largely price-driven, since airline operators use this market to meet their compliance obligations and not for marketing their products. Therefore, the environmental integrity of the credits can be expected to only meet a bare minimum. If the German government engages in supporting German airline operators in acquiring high quality units, the risk of units lacking environmental integrity could be minimized. It should be noted, however, that transfers from Parties that have adopted single-year target NDCs can undermine environmental integrity if accounted for through the averaging approach (for a discussion see: Siemons & Schneider, 2022; Hall et al., 2022). The Government should therefore address this risk by limiting the eligibility to Parties that have adopted multi-year targets or by requiring Parties to establish indicative multi-year emissions trajectories or a budget to robustly account for the transfer of units to be used under CORSIA.

3.3.3 Reporting under the UNFCCC

Using cooperative approaches to support German airline operators in accessing ITMOs to attain their CORSIA obligations seems challenging from a reporting point of view. The Guidance allows for such use under the term “international mitigation purposes”. However, according to the Guidance, the use of ITMOs or MOs for such international mitigation purposes is to be authorized by the host Party, who is also obliged to apply an adjustment for the “first transfer”⁴ of such units (UNFCCC, 2021b, Annex, para 16). Germany as the acquiring Party, by contrast, cannot authorize ITMOs for use towards international purposes and can therefore not report on this in its annual information.

⁴ Please note that units used for CORSIA will not necessarily be transferred internationally, which is why the term “first transfer” may be misleading. However, the Art. 6.2 Guidance uses this term also for ITMOs authorized for other international mitigation purposes and requires host Parties to define what they consider to be a “first transfer” (UNFCCC, 2021b, Annex, para 2a).

3.4 German contribution to OMGE

When Parties in 2015 adopted Article 6 as part of the Paris Agreement, to deliver an overall mitigation in global emissions (OMGE) has been introduced as one of the objectives of the Article 6.4 mechanism (UNFCCC, 2016, Art. 6.4 (d)). With the adoption of the Article 6.2 Guidance, the concept was expanded beyond Art. 6.4 and Parties participating and stakeholders of cooperative approaches were ‘encouraged’ to make such a contribution to OMGE by cancelling ITMOs that are not counted towards any NDC or for other international mitigation purposes (UNFCCC, 2021b, Annex, para 39). The German Government would have to be actively involved in this option. The units to be used would have to be authorized by the host Party and backed by adjustments. From the three purposes for which ITMOs can be authorized by host Parties, the authorization for other purposes seems best suited for this option.

3.4.1 German policy context and feasibility considerations

A contribution to OMGE could be an important driver for Germany to engage in cooperative approaches. After the transfer of the ITMOs to the German account, these would be cancelled, thereby making a contribution to OMGE. Such transfers would have to follow the entire requirements of the Article 6.2 Guidance, in particular the activity’s authorization by the host Party government and the implementation of adjustments for the amount of ITMOs transferred. From the German government perspective, such an approach is associated with several benefits:

- ▶ The accounting and reporting framework of Article 6.2 can be used to monitor the implementation of climate mitigation activities that are supported by Germany in a transparent and reproducible way.
- ▶ By contributing to OMGE, Germany would act in accordance with the principle of ‘common but differentiated responsibilities and respective capabilities’. The relevance of this engagement must be seen against the fact that the EU NDC is still rated as insufficient when measured against a fair-share allocation of global emissions (CAT, 2021).
- ▶ At the international level, the German government could take on a pioneering role and at the same time enter into partnerships with strategic countries.
- ▶ At the domestic level, the government could further send a political signal and respond to the Constitutional Court ruling from 2021 (Bundesverfassungsgericht, 2021), which called for increased climate action.

3.4.2 Ambition raising impact and environmental integrity considerations

Using cooperative approaches for OMGE would have an immediate global ambition raising effect, as the mitigation impact achieved would directly benefit the global climate. Depending on the design and transformative potential of the mitigation activity supported, this cooperative approach could further put the host Party in a position to enhance its NDC in the medium and long-term in line with the requirements of the Paris Agreement (UNFCCC, 2016, Art. 4.3).

Environmental integrity will presumably not be adversely impacted by the use of cooperative approaches for OMGE. In order to make a contribution to OMGE, ITMOs will have to be cancelled. This will effectively avoid ITMOs to be claimed for NDC attainment or other international mitigation purposes.

3.4.3 Reporting under the UNFCCC

The purchase of ITMOs and their subsequent cancellation in order to contribute to OMGE is explicitly foreseen as an option in the Art. 6.2 Guidance. Therefore, reporting on the contribution to OMGE is straight forward: Para 20a of the Art. 6.2 Guidance requires Parties to report on ITMOs voluntarily cancelled towards OMGE when submitting the annual information (UNFCCC, 2021b, Annex, para 20). This information is further recorded in the Article 6 database and Parties must track the ITMOs cancelled for OMGE in the registry they use (UNFCCC, 2021b, Annex, paras 32 and 29).

3.5 Using Article 6.2 for (private) climate finance

While total climate finance has steadily increased over the last decade, flows have slowed considerably in the last years and are nowhere near the needs estimated to meet the internationally agreed climate objectives (CPI, 2021). Despite the global consensus regarding the crucial role of climate finance to support developing countries, developed countries have failed to meet their self-set target of jointly mobilizing USD 100 billion per year by 2020. The Parties to the Paris Agreement noted this failure with “deep regret” in their Glasgow Climate Pact (UNFCCC, 2021a, para 44).

There is hence a large climate finance gap that raises the question of whether and how Article 6.2 could contribute in bridging it. While Article 6.2 was not conceived as a climate finance tool, cooperative approaches could in principle also be used as a framework to disburse climate finance. With this option, the mitigation outcomes generated by the cooperative approach would not be transferred to the acquiring Party but remain with the host Party in order to contribute to the achievement of the host Party’s NDC. Article 6.2 implicitly provides for this by including the authorization of mitigation outcomes as a separate step that is a prerequisite for the transfer of ITMOs. The use of Article 6.2 for results-based climate finance would build on this implicit differentiation between authorized and non-authorized units and only use part of the infrastructure established for cooperative approaches. While the German Government would play a supporting role, no ITMOs would be transferred.

3.5.1 German policy context and feasibility considerations

Using Article 6.2 for climate finance will only be relevant in practice if it provides benefits for the Parties involved, such as a decrease of the administrative burden or an increase in mutual trust and confidence. Using the Article 6.2 framework for climate finance could also increase overall transparency and pave the way for the cooperative approach to be used for ITMO transfers in the future, including for compliance purposes. Combining this climate finance use option with other uses within one cooperative approach could further allow to better take the priorities of the host Party into account.

This use option could further allow for a stronger involvement of VCM actors and an increase of private climate finance, as it is compatible with an approach that is currently gaining traction as a future model for the voluntary carbon market (VCM): the so-called ‘contribution claim’. Instead of using credits to offset their own emissions, private sector investors could buy ‘climate finance units’ thereby supporting the host Parties in achieving their NDCs. Since mitigation outcomes are not transferred, the approach can address the double claiming issue as well as other, more fundamental concerns related to offsetting of emissions (see: Fearnehough et al., 2020; Kreibich & Obergassel, 2019; for an early discussion see: Hermwille & Kreibich, 2016; Gold Standard, 2017).

Germany could use its engagement under Article 6.2 to allow mitigation outcomes generated by the cooperative approaches to be used for such a contribution claim. In principle, different roles for the German government are conceivable:

- ▶ First, Germany could adopt the role of a major supplier or broker of non-offset units, with units stemming from a bilateral cooperation with German participation or from activities without direct involvement of the German government.
- ▶ Second, Germany could establish an overarching cooperation framework with a partner Party to foster the development and implementation of mitigation activities by the private sector. The German government would neither participate in the mitigation activity nor purchase respective units.
- ▶ Third, the German government or one of its subordinate entities is tasked with the assessment and approval of mitigation activities. Only activities approved would be able to obtain non-offset units for the mitigation outcomes generated.

In doing so, Germany could promote a stronger engagement of the private sector in international climate change mitigation. In light of the acceptance for the climate contribution claim among investors still being limited (Kreibich & Obergassel, 2019), introducing a standardised product would be an important step to scale this type of private sector engagement. Establishing such a product on the emerging market of non-offsetting claims would not only allow investors to better gain recognition for the support provided but also ensure that mitigation activities and units meet minimum requirements and make particularly strong contributions to sustainable development and transformational change. The government could further regulate the use of these units, for instance by avoiding a situation in which this engagement is used for claiming climate neutrality.

3.5.2 Ambition raising impact and environmental integrity considerations

Using Article 6.2 for disbursing climate finance will not result in an increased ambition level of Germany's climate targets. Germany would, however, increase the funding made available to developing countries and assist the host Party in implementing its (conditional) NDC. If this use of Article 6 is to actually lead to an increase of climate finance, it must be ensured that the engagement does not crowd-out but go beyond existing climate finance commitments, which have recently been strengthened: In June 2021, at the occasion of the G7 summit, Germany announced an increase of its climate finance from 4 billion euros per year in 2020 to 6 billion per year by 2025 (BMZ, 2021). The financial support provided through Article 6.2 should hence not contribute to this target. Germany would therefore need to report its climate finance contributions under Article 6.2 separately from the broader climate finance contributions.

Since using cooperative approaches for results-based climate finance does not involve the transfer of mitigation outcomes, environmental integrity would not be adversely affected at the level of national climate targets. There is, however, a risk that private sector entities engaging in these cooperative approaches could misuse their engagement for making climate neutrality claims. These misleading claims could affect environmental integrity as consumer behaviour could be adversely impacted. By regulating the use of these non-offset units, the German government could mitigate this risk.

3.5.3 Reporting under the UNFCCC

Reporting on the use of cooperative approaches as a means to disburse (private) climate finance is not envisaged by the Article 6.2 Guidance. Transferring Parties are to authorize ITMOs for the

different mitigation purposes and implement adjustments, while non-authorized MOs are not explicitly mentioned. The Article 6.2 Guidance does therefore not provide a basis for reporting on such contributions.

However, Germany could report on the support provided in its Biennial Transparency Report to be submitted under the ETF. The reporting requirements under the ETF on support provided build on but go well beyond the existing requirements under the Convention. Reporting provisions became stricter, requiring Parties to provide details on the financing instruments used, the methodologies applied as well as further climate-related information (Jörß et al., 2020). Including the respective information from the cooperative approach should therefore be possible if the rigorous reporting requirements under Article 6.2 are met.

3.6 Supporting VCM actors' access to high quality offsetting credits

With the rising proliferation of net-zero targets in particular from corporates (for an overview see: Net Zero Tracker, 2022), the voluntary carbon market (VCM) is currently experiencing a new era of growth and topping all-time market values (Donofrio et al., 2021). Buyers include private companies as well as subnational entities from the public sector and non-governmental organizations. The prevailing rationale of the engagement on the VCM is based on the intention to offset unabated emissions in order to make climate neutrality claims or to offer climate-neutral products and services. This section explores the possibility for the German Government to play a supporting role in this context. The units to be used by VCM actors would have to be authorized by the host Party for other purposes and backed by adjustments.

3.6.1 German policy context and feasibility considerations

The voluntary carbon market in Germany is growing steadily and the number of credits used for voluntary compensation has increased from 6.6 to more than 20 million between 2016 and 2019, according to a survey commissioned by the Development and Climate Alliance (FutureCamp & Perspectives, 2020). While the main share of the demand for offsets comes from private-sector companies, a growing number of organisations, municipalities as well as the *Bundesländer*⁵ set themselves climate neutrality targets that could translate into a growing demand for credits from the VCM. At the national level, the Federal Climate Change Act includes the objective to make the federal administration climate neutral by 2030. For this purpose, the German government is to adopt respective measures by 2023 at the latest and every five years thereafter (Deutsche Bundesregierung, 2021, para 15).

The VCM is dominated by private governance while public regulation in Germany remains, until now, limited. This relates to both the generation of credits as well as their use, despite rising pressure resulting from a growing number of judicial cases concerned with climate-related claims in marketing (see: Smielick, 2021). This has not changed with the adoption of the Article 6 Rulebook by Parties in Glasgow, which primarily regulates the use of ITMOs (and A6.4ERs under the Art. 6.4 mechanism) by Parties in the context of NDC achievement. However, the Article 6.2 framework is open to these voluntary carbon market activities and allows ITMOs to also be used for purposes other than NDC attainment. The Guidance adopted in Glasgow allows host Parties to authorize ITMOs for such "other purposes" and to implement adjustments. However, obtaining credits backed by adjustments may be challenging for the private sector, since the implementation of adjustments may make it more difficult for the host Party to achieve its NDC, at least in the short term (Kreibich & Brandemann, 2021; Spalding-Fecher et al., 2020).

⁵ Germany is a federal state consisting of sixteen partly sovereign federated states, the *Bundesländer*.

Buyers of VCM credits could hence require support from the German government in accessing high quality credits.

As with the possible use of Article 6 for CORSIA described above (see section 3.3), three possible avenues for supporting VCM players in accessing high quality ITMOs could be envisaged: Germany could adopt the role of a major supplier or broker and sell (or auction) ITMOs to final users. Alternatively, an overarching cooperation framework could be established, with the German government neither participating directly in the implementation of the mitigation activity nor in the purchase of ITMOs. The German government could also assess and approve mitigation activities. If this use option is combined with the introduction of a label for claims, only credits from approved activities could be eligible for such a claim.

3.6.2 Ambition raising and environmental integrity considerations

Supporting non-state actors in accessing high quality VCM credits could lead to ambition raising while at the same time reducing the potential of environmental integrity being adversely affected. More generally, the engagement of the German government could give the VCM an additional boost, resulting in a growing demand for offset credits, an increase of VCM activities being implemented and respective funding being transferred to host Parties.

To avoid a situation in which offsets of low quality are being used for misleading claims, the German government should ensure that emission reductions are not claimed multiple times (see Box 4 on double claiming below). At first, this aspect seems unproblematic in the context of Article 6.2 since the Guidance requires all units transferred to be authorized by the transferring Party and be backed by adjustments. However, Article 6.2 may also be used as a vehicle for the disbursement of results-based climate finance without ITMOs being transferred, as described in section 3.5. This use option may also include private sector involvement (private climate finance). A clear separation of these uses and their respective units is therefore needed. This is particularly relevant when one activity generates both types of units. By allowing only credits that are backed by adjustments to be used for neutrality claims, Germany would contribute to reducing the risk of double claiming in the voluntary carbon market.

Box 4: Double claiming in the voluntary carbon market

Double claiming has been a point of contention in the voluntary carbon market for several years. The key question that has been dividing stakeholders since the emergence of the new structure established by the Paris Agreement is the following: Should corporates and other non-Party entities be allowed to use carbon credits for the achievement of their voluntary neutrality targets (such a carbon neutrality) if the mitigation impact of the underlying activities does at the same time contribute to the achievement of the host Party's NDC? Or should such double claiming be avoided under all circumstances, requiring corporates to only use mitigation outcomes that are backed by adjustments, therefore no longer contributing to the host Party's NDC? Building on previous research (Fearnough et al., 2019; Kreibich & Hermwille, 2021), we maintain that the climate change mitigation impact from one mitigation activity should only be claimed once. Using emission reductions or removals more than once would result in misleading claims and could undermine environmental integrity, even if the corporate neutrality target and the NDC are not part of the same accounting system.

The Glasgow outcome on Article 6 does provide the possibility for host Parties to authorize the use of ITMOs for "other mitigation purposes", allowing the voluntary carbon market to generate units backed by adjustments. At the same time, however, there is still a risk that units that are not

backed by adjustments are used by corporates for the achievement of their neutrality claims, even within the UN system: By limiting some of its provisions to authorized A6.4ERs, para 43 of the Rules, Modalities and Procedures implicitly allow for so-called 'unauthorized Art. 6.4 ERs' to be generated (UNFCCC, 2021c; see also: Schneider, 2021). The risk of these units being used for the achievement of corporate claims is not addressed, as the respective text does not contain guidance related to claims. As can be seen, there is an urgent need to establish conditions that ensure that only units backed by adjustments are used for the achievement of corporate claims for climate neutrality.

The ambition raising impact could be further maximized by using this option for regulating the voluntary carbon market. Since even high quality credits could be used for 'greenwashing' and ultimately undermine environmental integrity, the German government could introduce additional regulation of private companies. The access to and use of high quality credits would hence be tied to additional requirements. For private sector entities, the following requirements could be applied:

- ▶ **Disclosure of emissions:** Companies aiming to use credits for achieving their climate targets could be asked to disclose their emissions following international best practice and applying well established standards, such as the GHG Protocol (see: WRI & WBCSD, 2011).
- ▶ **Ambitious targets:** Access could be limited to companies that have adopted ambitious long-term climate targets and are on their way of meeting them. Germany would not need to assess the corporate climate targets on its own but could require all companies to comply with existing frameworks, such as the Science Based Targets Initiative and its Net Zero Standard (cp. SBTi, 2021).
- ▶ **Transparent communication and claims:** Companies supported by the German engagement under Article 6.2 could be further required to adhere to best practice communication standards. Common standards are not yet readily available but still under development. In order to avoid a duplication of efforts, Germany could build on existing initiatives that aim at developing best practice standards in terms of claims, such as the Voluntary Carbon Markets Initiative (VCMI, 2021). Germany could build on these initiatives and develop its own national standard, while ensuring alignment with the potential regulation of claims being developed at EU level.

This use option could be used as a basis for developing a national certification standard for carbon neutrality, further incentivizing private sector engagement. In doing so, Germany could follow the model of the Australian government's carbon neutral certification model (Climate Active, 2022), while applying its own certification criteria and requirements.

3.6.3 Reporting under the UNFCCC

When cooperative approaches are used to support non-state actors in accessing high quality credits, it is the transferring Party that authorizes ITMOs to be used for this specific purpose. Germany is not the final user and will therefore not be able to report on this use under the Article 6.2 Guidance. The situation is similar to the use of Art. 6.2 for CORSIA described above.

4 Conclusions

In light of the pressing need to ramp up ambition to bolster climate change mitigation, this paper has explored different options how Germany could make use of cooperative approaches under Article 6.2 of the Paris Agreement as an acquiring Party. We find that opportunities are manifold in principle and identified six options in total.

Their actual potential to contribute to ambition raising and to uphold environmental integrity varies and will depend on specific conditions to be met in Germany as the acquiring Party as well as on the possibilities to report on this engagement under the UNFCCC. The analysis shows that **the potential of compliance use options is limited**. The main limitation for the compliance use options is the fact that Germany did not submit its own NDC but has committed to the EU NDC, which is domestic in nature. This does not only exclude the use of ITMOs for NDC attainment for the time being but also challenges the use of cooperative approaches in the context of long-term targets and the use of ITMOs under the national emissions trading system. Finally, the use of cooperative approaches to support airlines in accessing high quality ITMOs for compliance with **CORSIA seems the most feasible compliance use options** for Germany, despite limited possibilities to report on this option under the UNFCCC.

Our analysis finds that the **voluntary use options identified do not only have a larger potential to contribute to ambition raising and uphold environmental integrity but are also easier to implement**. A German contribution to OMGE does only require a limited number of conditions to be met in Germany while the UNFCCC also provides for this option in its reporting framework. Using Article 6 for private climate finance is particularly interesting if combined with the 'contribution claim' approach, which is currently being discussed in the context of the voluntary carbon market. Using the Art. 6.2 framework for this approach would allow for a stronger and more visible private sector engagement in climate finance, while Germany could report on this engagement under the ETF. Finally, **using cooperative approaches to support VCM actors in accessing high quality ITMOs seems highly relevant**, despite the fact that reporting on this option under the UNFCCC is not provided for under the Article 6.2 Guidance. The main benefit of this option is its potential to influence and increase the quality of units used by German VCM players, while also allowing the German government to regulate this market: Access to ITMOs could be tied to specific requirements, such as disclosure of emissions data, ambitious climate targets and transparent communication. This approach could contribute to increased transparency in the use of units for voluntary purposes and respective claims, a lack of which has in the past already led to a number of legal cases in German courtrooms. Table 2 summarizes the key findings of the analysis.

The analysis has shown that the reporting and accounting provisions of the Paris Agreement are in its current form not able to fully depict the entire spectrum of potential Article 6.2 uses identified. This is not surprising given that many options go beyond the use for which cooperative approaches have originally been introduced. However, it is particularly problematic for the use of ITMOs for compliance purposes under the UNFCCC other than NDC attainment. The use of Article 6 for voluntary purposes, by contrast, offers multiple roles for the German government to get involved and provide diverse opportunities to incentivise the private sector to actively contribute to the climate change mitigation. The focus should therefore be put on non-compliance use options. Combining the most promising voluntary use options within one cooperative approach could yield particularly strong ambition raising effects.

Table 2: Assessment of different use options

Use Option	Feasibility	Ambition raising and environmental integrity	UNFCCC reporting
NDC	Requires major political change (-)	Not applicable	Not applicable
LT-LEDS	Possible from a domestic legal perspective (+) Problematic due to domestic nature of EU NDC (-)	Could allow Germany to achieve its GHG neutrality target earlier (+) Risk of ITMO purchase being used as argument against domestic reductions in the future (-)	Not provided for and problematic given the missing link between LT-LEDS and EU NDC (-)
nETS	Challenging due to domestic nature of EU ETS (-) Instrument design (fixed price period, price corridor, etc.) (-)	System was introduced without offsetting component and introduction could lower scheme's ambition level (-)	Not provided for and problematic in terms of transparency (-)
CORSIA	Allows for different implementation options for the government (+) Demand already existing (+)	Ambition level of CORSIA determined by ICAO cannot be adapted (-) Quality of units will go beyond existing requirements (+) If robust accounting is ensured env. integrity concerns are limited, as offsetting component with minimum criteria already in place (+)	Not provided for but not problematic in terms of transparency. Relevance for the government to report on this use option under the UNFCCC limited. (+/-)
OMGE	Allows for different implementation options for the government (+) Potential to also involve non-state actors (+) Actual demand from non-state actors uncertain (-)	Immediate ambition raising impact (+) No environmental integrity concerns (+)	Provided for under the Article 6.2 Guidance and highly relevant for the government (+)
Results-based climate finance	Allows for different implementation options for the government (+) Several benefits for government as well as non-state actors (+) Actual demand from non-state actors uncertain (-)	Contribution to climate finance available (+) Assistance in implementation of (conditional) host Party target (+) No adverse impact on environmental integrity if misuse of this option for neutrality target is controlled for (+)	Not provided for under the Article 6.2 Guidance but reporting possible under the ETF through the BTR (+)
VCM	Allows for different implementation options for the government (+) Growing demand for and difficult access to credits makes this an interesting option for VCM actors (+)	Potential to foster investments into high quality activities (+) Possibility to avoid use of low-quality credits (+) Possibility to regulate claims (+) Offsetting model already in place (+/-). Use option will not increase global emissions level (+)	Not provided for but not problematic in terms of transparency. Relevance for Government to report on this use option under the UNFCCC limited. (+/-)

List of References

- Arens, C., & Mersmann, F. (2018). *Positive Results, no Negative Consequences—No-harm options for Article 6* (JIKO Policy Paper No. 03/2018). https://www.carbon-mechanisms.de/fileadmin/media/dokumente/Publikationen/Policy_Paper/PP_2018_03_Do_no_harm_bf.pdf
- BMUB. (2016). *Climate Action Plan 2050—Principles and goals of the German government's climate policy*. 92. <https://www.bmuv.de/en/publication/climate-action-plan-2050-en>
- BMZ. (2021). *Bundes-minister Müller begrüßt Ankündi-gung zum Ausbau der inter-natio-nalen Klima-finanz-ierung*. Bundesministerium für wirtschaftliche Zusammenarbeit und Entwicklung. <https://www.bmz.de/de/aktuelles/archiv-aktuelle-meldungen/ausbau-der-internationalen-klimafinanzierung-83484>
- Bundesministerium der Justiz. (2021). *BEHG - Gesetz über einen nationalen Zertifikatehandel für Brennstoffemissionen*. <https://www.gesetze-im-internet.de/behg/BJNR272800019.html>
- Bundesverfassungsgericht. (2021). *Verfassungsbeschwerden gegen das Klimaschutzgesetz teilweise erfolgreich—Pressemitteilung Nr. 31/2021 vom 29. April 2021*. <https://www.bundesverfassungsgericht.de/SharedDocs/Pressemitteilungen/DE/2021/bvg21-031.html>
- Burian, M. (2006). *The Clean Development Mechanism, sustainable development and its assessment* [HWWA-Report No. 264].
- Carvalho, M., Meneses, M., Amellina, A., Alvarez Campo, C., & Kreibich, N. (2022). *Offset approaches in existing compliance mechanisms—Adding value and upholding environmental integrity? - Final Report* [Climate Change 58/2021]. German Environment Agency.
- CAT. (2021). *EU. Climate Action Tracker*. <https://climateactiontracker.org/countries/eu/>
- CAT. (2022). *Temperatures—Global. Climate Action Tracker*. <https://climateactiontracker.org/global/temperatures/>
- Climate Active. (2022). *Climate Active Homepage—Certification*. <https://www.climateactive.org.au/>
- Climate Home. (2017, June 15). *Sweden passes climate law to become carbon neutral by 2045*. Climate Home - Climate Change News. <http://www.climatechangenews.com/2017/06/15/sweden-passes-climate-law-become-carbon-neutral-2045/>
- CPI. (2021). *Global Landscape of Climate Finance 2021*. Climate Policy Initiative. <https://www.climatepolicyinitiative.org/wp-content/uploads/2021/10/Full-report-Global-Landscape-of-Climate-Finance-2021.pdf>
- Deutsche Bundesregierung. (2021). *Federal Climate Change Act of 12 December 2019 (Federal Law Gazette I, p. 2513), as last amended by Article 1 of the Act of 18 August 2021. Federal Law Gazette, I, 3905*. https://www.gesetze-im-internet.de/englisch_ksg/englisch_ksg.html#p0028
- Donofrio, S., Maguire, P., Myers, K., Daley, C., & Lin, K. (2021). *Markets in Motion: State of the Voluntary Carbon Markets 2021—Installment 1*.
- EU. (2018). *Regulation (EU) 2018/842 of the European Parliament and of the Council of 30 May 2018 on binding annual greenhouse gas emission reductions by Member States from 2021 to 2030 contributing to climate action to meet commitments under the Paris Agreement and amending Regulation (EU) No 525/2013*. <https://doi.org/10.5040/9781782258674>
- EU. (2020). *Submission by Croatia and the European Commission on behalf of the European Union and its Member States*. <https://unfccc.int/sites/default/files/resource/HR-03-06-2020%20EU%20Submission%20on%20Long%20term%20strategy.pdf>

Falduto, C., & Rocha, M. (2020). *Aligning short-term climate action with long-term climate goals: Opportunities and options for enhancing alignment between NDCs and long-term strategies* (OECD/IEA Climate Change Expert Group Papers No. 2020/02; OECD/IEA Climate Change Expert Group Papers, Vol. 2020/02). OECD (Organisation for Economic Co-operation and Development)/IEA (International Energy Agency).
<https://doi.org/10.1787/7c980fce-en>

Fearneough, H., Kachi, A., Mooldijk, S., Warnecke, C., & Schneider, L. (2020). *Future role for voluntary carbon markets in the Paris era—Final report* (Climate Change No. 44/2020; p. 94). https://www.carbon-mechanisms.de/fileadmin/media/dokumente/Publikationen/Bericht/2020_11_19_cc_44_2020_carbon_markets_paris_era.pdf

Fearneough, H., Warnecke, C., Kachi, A., & Schneider, L. (2019). *Future role for voluntary markets in the Paris era—Understanding challenges and assessing options*.

Fuessler, J., Broekhoff, D., Kohli, A., Kreibich, N., Lehmann, S., & Spalding-Fecher, R. (2019). Trading Up—Ensuring that Article 6 promotes ambition in the Paris Agreement. *Carbon Mechanisms Review*, 2019(03), 4–11.
https://www.carbon-mechanisms.de/fileadmin/media/dokumente/Publikationen/CMR/CMR_2019_03_Ambitious_Action_eng_bf.pdf

FutureCamp & Perspectives. (2020). *Aktueller Stand des freiwilligen Treibhausgas-Kompensationsmarktes in Deutschland*. FutureCamp Holding GmbH and Perspectives Climate Group GmbH. <https://allianz-entwicklung-klima.de/wp-content/uploads/2020/11/studie2020-treibhausgas-kompensationsmarkt-deutschland-kurzfassung.pdf>

Gillenwater, M. (2012). *What is Additionality? Part 1: A long standing problem* (Discussion Paper No. 1). Greenhouse Gas Management Institute. http://ghginstitute.org/wp-content/uploads/2015/04/AdditionalityPaper_Part-1ver3FINAL.pdf

Gold Standard. (2017). *A New Paradigm for Voluntary Climate Action: ‘Reduce Within, Finance Beyond’* [GOLD STANDARD POLICY BRIEF].
https://www.goldstandard.org/sites/default/files/documents/a_new_paradigm_for_voluntary_climate_action.pdf

Greiner, S., Krämer, N., de Lorenzo, F., Michaelowa, A., Hoch, S., & Kessler, J. (2020). *Article 6 piloting: State of play and stakeholder experiences*. <https://www.climatefinanceinnovators.com/publication/article-6-piloting-state-of-play-and-stakeholder-experiences/>

Hall, C., Kreibich, N., & van Asselt, H. (2022). *Article 6 and CORSIA after Glasgow: Ready for take-off?* NDCASPECTS. http://ndc-aspects.eu/sites/default/files/2022-09/ndc_aspects_policy_brief_2.pdf

Hermwille, L. (2020). *Reconciling Pretensions and Reality The Situation-Ambition Approach for Dynamic Baselines under Article 6.4* [JIKO Policy Paper 01/2020]. <https://www.carbon-mechanisms.de/en/publications/details/jiko-policy-paper-01-2020>

Hermwille, L., & Kreibich, N. (2016). *Identity Crisis? Voluntary Carbon Crediting and the Paris Agreement*. https://www.carbon-mechanisms.de/fileadmin/media/dokumente/Publikationen/Policy_Brief/PB_2016_02_Voluntary_Carbon_Markets_bf.pdf

High-Level Commission on Carbon Prices. (2017). *Report of the High-Level Commission on Carbon Prices*. https://static1.squarespace.com/static/54ff9c5ce4b0a53deccfb4c/t/59b7f2409f8dce5316811916/1505227332748/CarbonPricing_FullReport.pdf

ICAO. (2019). *CORSIA Emissions Unit Eligibility Criteria*. International Civil Aviation Organization. https://www.icao.int/environmental-protection/CORSIA/Documents/ICAO_Document_09.pdf

- ICAO. (2021). *CORSIA Eligible Emissions Units*. International Civil Aviation Organization. https://www.icao.int/environmental-protection/CORSIA/Documents/TAB/ICAO%20Document%2008%20_%20CORSIA%20Eligible%20Emissions%20Units_November%202021.pdf
- ICAP. (2022). *Emissions Trading Worldwide – Status Report 2022* (p. 228). International Carbon Action Partnership.
- IETA, University of Maryland, & CPLC. (2019). *The Economic Potential of Article 6 of the Paris Agreement and Implementation Challenges*. https://www.ieta.org/resources/International_WG/Article6/CLPC_A6%20report_no%20crops.pdf
- Jörß, W., Förster, H., Harthan, R. O., Moosmann, L., & Siemons, A. (2020). *Der Transparenzrahmen unter dem Übereinkommen von Paris—Konsequenzen für die nationale Berichterstattung zum Klimaschutz—Endbericht zum Vorhaben UFOPLAN 3717 18 104 0 „Konzeptionierung eines gemeinsamen Transparenz-systems unter dem Übereinkommen von Paris. Analyse des Verhandlungsprozesses und Projizierung der Auswirkungen auf die Informationsbereitstellung“* (p. 78) [Texte 77/2020]. Umweltbundesamt. https://www.umweltbundesamt.de/sites/default/files/medien/479/publikationen/texte_77-2020_transparenzsystem_endbericht_final_clean_20191120.pdf
- Kachi, A., Warnecke, C., Tewari, R., Röser, F., Kurdziel, M.-J., Graichen, J., Freja, J. T. B., & Horstink, M. (2019). *Setting Incentives for Emission Reductions in Developing Countries: The Case of Social Housing in Colombia*. 150. https://www.umweltbundesamt.de/sites/default/files/medien/5750/publikationen/2020_11_05_climate_change_40_2020_emissionsminderungsanreize_entwicklungslaender.pdf
- Kreibich, N., Arens, C., Carvalho, M., Campos, M. M., & Sherman, L. (2022). *Suitability and success factors of offsets post 2020—Final Report* (Climate Change 59/2021). German Environment Agency. <https://www.carbon-mechanisms.de/publikationen/details/suitability-and-success-factors-of-offsets-post-2020>
- Kreibich, N., & Brandemann, V. (2021). *Taking the Host Country Perspective—Aligning carbon market activities with climate finance and unilateral mitigation*. Wuppertal Institute for Climate, Environment and Energy. https://www.carbon-mechanisms.de/fileadmin/media/dokumente/Publikationen/Policy_Paper/Host_Country_Perspective_fin.pdf
- Kreibich, N., & Hermwille, L. (2021). Caught in between: Credibility and feasibility of the voluntary carbon market post-2020. *Climate Policy*, 0(0), 1–19. <https://doi.org/10.1080/14693062.2021.1948384>
- Kreibich, N., & Obergassel, W. (2019). *The Voluntary Carbon Market: What may be Its Future Role and Potential Contributions to Ambition Raising?* [UBA Discussion Paper]. German Emissions Trading Authority (DEHSt). https://epub.wupperinst.org/frontdoor/deliver/index/docId/7396/file/7396_Carbon_Market.pdf
- Matthey, A., & Bünger, B. (2019). *Methodological Convention 3.0 for the Assessment of Environmental Costs* (p. 45). Umweltbundesamt. https://www.umweltbundesamt.de/sites/default/files/medien/1410/publikationen/2019-02-11_methodenkonvention-3-0_en_kostensaetze_korr.pdf
- Mehling, M. A. (2021). *Advancing International Cooperation under the Paris Agreement: Issues and Options for Article 6* (p. 66) [Discussion Paper ES 21-10].
- Michaelowa, A., Ahonen, H.-M., & Espelage, A. (2021). *Setting crediting baselines under Article 6 of the Paris Agreement*. Perspectives Climate Research gGmbH. https://www.carbon-mechanisms.de/fileadmin/media/dokumente/Publikationen/Policy_Paper/Setting_crediting_baselines_under_Article6.pdf

- Michaelowa, A., Hermwille, L., Obergassel, W., & Butzengeiger, S. (2019). Additionality revisited: Guarding the integrity of market mechanisms under the Paris Agreement. *Climate Policy*, 1–14. <https://doi.org/10.1080/14693062.2019.1628695>
- Michaelowa, A., Shishlov, I., & Brescia, D. (2019). Evolution of international carbon markets: Lessons for the Paris Agreement. *Wiley Interdisciplinary Reviews: Climate Change*, 10(6). <https://doi.org/10.1002/wcc.613>
- Net Zero Tracker. (2022). *Net Zero Tracker—Companies*. <https://zerotracker.net/#companies-table>
- Obergassel, W., Arens, C., Hermwille, L., Kreibich, N., Mersmann, F., Ott, H. E., & Wang-Helmreich, H. (2016). Phoenix from the ashes: An analysis of the Paris Agreement to the United Nations Framework Convention on Climate Change ; part 2. *Environmental Law and Management*, 28(1), 3–12. <http://nbn-resolving.de/urn:nbn:de:bsz:wup4-opus-63745>
- Olsen, K., & Arens, C. (2021). *Promoting Sustainable Development in Article 6 pilot activities—Party and expert views on good practice SD assessment and reporting to implement the Glasgow COP26 decisions*. https://www.carbon-mechanisms.de/fileadmin/media/dokumente/Publikationen/Policy_Paper/SD_after_Glasgow_Policy_Brief.pdf
- Olsen, K., Arens, C., & Mersmann, F. (2018). Learning from CDM SD tool experience for Article 6.4 of the Paris Agreement. *Climate Policy*, 18(4), 383–395. <https://doi.org/10.1080/14693062.2016.1277686>
- Olsen, K. H. (2007). The clean development mechanism’s contribution to sustainable development: A review of the literature. *Climatic Change*, 84(1), 59–73. <http://dx.doi.org/10.1007/s10584-007-9267-y>
- SBTi. (2021). *SBTi Corporate Net-Zero Standard*. Science-based Targets Initiative. <https://sciencebasedtargets.org/resources/files/Net-Zero-Standard.pdf>
- Schneider, L. (2021). *Die Ergebnisse der COP26 und was sie für Unterstützer:innen der Stiftung Allianz für Entwicklung und Klima bedeuten* (p. 18) [Webinar der Stiftung Allianz für Entwicklung und Klima].
- Schneider, L., Füssler, J., Kohli, A., Graichen, J., Healy, S., Cames, M., Broekhoff, D., Lazarus, M., La Hoz Theuer, S., & Cook, V. (2017). *Discussion Paper: Robust Accounting of International Transfers under Article 6 of the Paris Agreement* (p. 69). https://www.dehst.de/SharedDocs/downloads/EN/project-mechanisms/discussion-papers/Differences_and_commonalities_paris_agreement2.pdf?__blob=publicationFile&v=4
- Schneider, L., Füssler, J., La Hoz Theuer, S., Kohli, A., Graichen, J., Healy, S., & Broekhoff, D. (2017). *Environmental Integrity under Article 6 of the Paris Agreement Discussion Paper*. German Emissions Trading Authority (DEHSt).
- Schneider, L., & La Hoz Theuer, S. (2018). Environmental integrity of international carbon market mechanisms under the Paris Agreement. *Climate Policy*, 1–15. <https://doi.org/10.1080/14693062.2018.1521332>
- SDI. (2020). *Good Practice Guidance for the Preliminary Assessment of Sustainable Development in Article 6 actions*. Sustainable Development Initiative (2020). https://www.goldstandard.org/sites/default/files/1.1_sdi_2020_good_practices_preliminary_assessment_guidance_v1.1.pdf
- Siemons, A., & Schneider, L. (2022). Averaging or multi-year accounting? Environmental integrity implications for using international carbon markets in the context of single-year targets. *Climate Policy*, 22(2), 208–221. <https://doi.org/10.1080/14693062.2021.2013154>
- Smielick, D. (2021). Beware of advertising with ‘climate-neutral’ and ‘CO2 reduced’. *Spotlight on Sustainability II - Consumer Products Newsletter*. <https://cms.law/en/int/publication/spotlight-on-sustainability-ii-december-2021-consumer-products-newsletter/beware-of-advertising-with-climate-neutral-and-co2-reduced>

- Spalding-Fecher, R., Kohli, A., Fuessler, J., Broekhoff, D., & Schneider, L. (2020). *Practical Strategies to Avoid Overselling* (p. 29). Swedish Energy Agency. <https://www.oeko.de/fileadmin/oekodoc/practical-strategies-to-avoid-overselling-final-report.pdf>
- Sweden. (2020). *Sweden's long-term strategy for reducing greenhouse gas emissions* (p. 87). Ministry of the Environment. https://unfccc.int/sites/default/files/resource/LTS1_Sweden.pdf
- UBA. (2022). *Projects in the fuel sector*. Umweltbundesamt. https://www.dehst.de/EN/climate-projects_maritime-transport/UERV/projects-fuel-sector_node.html
- Umweltbundesamt. (2022). *Nationaler Inventarbericht zum Deutschen Treibhausgasinventar 1990—2020—Gekürzte Version zur EU-Submission 15.01.2022* (p. 79). https://www.umweltbundesamt.de/sites/default/files/medien/361/dokumente/eu-nir_germany_2022.pdf
- UNFCCC. (2016). *Report of the Conference of the Parties on its twenty-first session, held in Paris from 30 November to 13 December 2015, Addendum, Part two: Action taken by the Conference of the Parties at its twenty-first session, FCCC/CP/2015/10/Add.1, 29 January 2016* (FCCC/CP/2015/10/Add.1). UNFCCC.
- UNFCCC. (2021a). *Decision -/CMA.3—Glasgow Climate Pact—Advance unedited version*. https://unfccc.int/sites/default/files/resource/cma3_auv_2_cover%20decision.pdf
- UNFCCC. (2021b). *Guidance on cooperative approaches referred to in Article 6, paragraph 2, of the Paris Agreement—Advance unedited version* (p. 14). United Nations Framework Convention on Climate Change.
- UNFCCC. (2021c). *Rules, modalities and procedures for the mechanism established by Article 6, paragraph 4, of the Paris Agreement—Advance unedited version* (p. 16). United Nations Framework Convention on Climate Change.
- UNFCCC Secretariat. (2021). *Nationally determined contributions under the Paris Agreement. Synthesis report by the secretariat* (p. 32). https://unfccc.int/sites/default/files/resource/cma2021_02E.pdf
- UNFCCC Website. (2022). *Submissions—Guidance on cooperative approaches referred to in Article 6, paragraph 2, of the Paris Agreement | UNFCCC*. <https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement/cooperative-implementation/submissions-guidance-on-cooperative-approaches-referred-to-in-article-6-paragraph-2-of-the-paris#eq-1>
- VCMI. (2021). *Aligning Voluntary Carbon Markets with the 1.5°C Paris Agreement Ambition*. Voluntary Carbon Markets Integrity Initiative. https://vcmintegrity.org/wp-content/uploads/2021/07/VCMI-Consultation-Report.pdf?__blob=publicationFile&v=2
- Wang-Helmreich, H., Obergassel, W., & Kreibich, N. (2019). *Achieving Overall Mitigation of Global Emissions under the Paris Article 6.4 Mechanism*. German Emissions Trading Authority (DEHSt). https://www.dehst.de/SharedDocs/downloads/EN/project-mechanisms/discussion-papers/klimakonferenz-bonn-2019_1.pdf?__blob=publicationFile&v=2
- Warnecke, C., Höhne, N., Tewari, R., Day, T., & Kachi, A. (2018). *Opportunities and safeguards for ambition raising through Article 6—The perspective of countries transferring mitigation outcomes*. <https://newclimate.org/2018/05/09/opportunities-and-safeguards-for-ambition-raising-through-article-6/>
- World Bank. (2022). *Carbon Pricing Dashboard | Up-to-date overview of carbon pricing initiatives*. <https://carbonpricingdashboard.worldbank.org/>
- WRI & WBCSD. (2011). *GHG Protocol: Corporate Value Chain (Scope 3) Accounting and Reporting Standard—Supplement to the GHG Protocol Corporate Accounting and Reporting Standard*. World Resources Institute and World Business Council for Sustainable Development. https://ghgprotocol.org/sites/default/files/standards/Corporate-Value-Chain-Accounting-Reporting-Standard_041613_2.pdf

