



Raising climate ambition with carbon credits

Exploring the roles and interplay of the voluntary carbon markets and Article 6 in contributing to the implementation of national climate targets and raising global ambition

Discussion Paper

Hanna-Mari Ahonen, Carolina Inclan, Juliana Kessler & Aayushi Singh

Freiburg, Germany, 21.06.2023



Abstract

This discussion paper explores the role and interplay of the voluntary carbon market (VCM) and market-based cooperation under Article 6 of the Paris Agreement, focusing on how carbon credits can support the implementation of national climate targets and raise ambition beyond these targets. The study concludes that carbon credits can be a valuable tool for mobilising public and private finance for additional emission reductions and removals (mitigation outcomes), if their integrity and robust accounting are ensured, and their use complements ambitious climate action.

The VCM connects carbon credits sellers with voluntary buyers while Article 6 provides an international mechanism for issuing carbon credits (Article 6.4 Emission Reductions, A6.4ERs) and guidance for cooperation involving nationally authorised mitigation outcomes (Internationally Transferred Mitigation Outcomes, ITMOs). ITMOs represent mitigation outcomes that are not counted towards the host country's national climate target while carbon credits without authorisations represent mitigation that can count towards the host country's target.

A key condition for credible and effective carbon credit markets is that all carbon credits meet the same minimum criteria for integrity, regardless of how they are generated and used. To be authorised as an ITMO and/or issued as an A6.4ER, a carbon credit must also meet Article 6-specific requirements.

The main option for using carbon credits to raise global ambition is the voluntary cancellation of ITMOs. This provides a robust basis for voluntary offsetting claims. ITMOs can also be used towards (non-host) countries' climate targets while carbon credits without authorisation can be used to contribute to the achievement and enhancement of the host country's target.

In the Paris era, the VCM is increasingly aligning with the Paris Agreement and overlapping with Article 6. In both the VCM and Article 6 space, efforts are ongoing to ensure the integrity of carbon credits and their use. The operationalisation of Article 6 requirements and VCM good practices are ongoing, parallel processes that should inform and interact with each other. Some carbon crediting programmes are striving to issue carbon credits that are eligible to be authorised as ITMOs under Article 6, in addition to carbon credits that are not intended to be authorised. These programmes are aligning their requirements with Article 6 and seeking interoperability between their carbon credits registries and national and international Article 6 registries. Good practice guidance and regulations on claims relating to the voluntary use of carbon credits are promoting the alignment between the VCM and Article 6, for example, by requiring claimants to align their internal emissions reductions with the Paris Agreement's long-term goals and to avoid double claiming with national climate targets.

Contents

ABSTRACT2

SUMMARY..... 6

1. INTRODUCTION 12

2. ENSURING THE INTEGRITY OF CARBON CREDITS19

3. AUTHORISING CARBON CREDITS AS ITMOS31

4. HIGH-INTEGRITY USE OF CARBON CREDITS, AND RELATED CLAIMS.....42

5. CONCLUSIONS60

REFERENCES61

Figures

Figure 1: Action and ambition gaps.....6

Figure 2: Action and ambition gaps..... 12

Figure 3: EU vs national target: Illustrative case of Sweden 13

Figure 4: Baseline-and-credit and cap-and-trade schemes (Source: Authors) 15

Figure 5: EU vs national mitigation target: When to authorise? 42

Figure 6: Carbon credit generation, authorisation and use 44

Figure 7: Good practice principles for the voluntary use of carbon credits 51

Figure 8: Differentiating claims based on contribution towards and beyond national targets..... 52

Figure 9: Net GHG impact of emission reductions and removals.....54

Figure 10: Options for contributing to the global 1.5°C goal..... 55

Figure 11: Contributing global mitigation by limiting own emissions and using carbon credits56

Tables

Table 1: Minimum criteria for carbon credits.....20

Table 2: Carbon credit criteria under different crediting programmes and guidance 22

Table 3: Overview of the requirements under the Article 6.4 Mechanism 27

Table 4. Different carbon credit types, use cases and gaps addressed43

Boxes

Box 1. Swedish case study - Mitigation targets in the EU context..... 13

Box 2. Cap-and-trade and baseline-and-credit schemes 15

Box 3. Swedish case study – Generating high-quality carbon credits in Sweden30

Box 4. Supporting host countries’ access to voluntary carbon markets.....34

Box 5. Applying CAs in the EU context.....39

Box 6. Swedish case study – Authorising carbon credits from Sweden.....41

Box 7. Using carbon credits based on emission reductions vs removals54

Box 8. Reporting and accounting emissions and carbon credit use at different levels57

Box 9. Swedish case study – High-integrity use of carbon credits and related claims..... 59

Abbreviations

A6.4ERs	Article 6.4 Emission Reductions
A6.4M	Article 6.4 Mechanism
ADEME	French Agency for Ecological Transition
AEA	Annual Emission Allocation
BAU	Business-as-usual
Bio-CCS	Biogenic carbon capture and storage
CA	Corresponding adjustments
CCP	Core Carbon Principles
CCQI	Carbon Credit Quality Initiative
CDM	Clean Development Mechanism
CORSIA	Carbon Offsetting and Reduction Scheme for International Aviation
DCA	Development and Climate Alliance
ERF	Australia's Emission Reduction Fund
EU	European Union
EU ETS	EU Emissions Trading System
ESR	Effort Sharing Regulations
GHG	Greenhouse Gas
GS4GG	Gold Standard for Global Goals
ICC	International Chamber of Commerce
ICROA	International Carbon Reduction and Offset Alliance
ICVCM	Integrity Council for the Voluntary Carbon Market
II-AMT	International Initiative for Development of Article 6 Methodology Tools
IPBES	Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services
IPCC	Intergovernmental Panel on Climate Change
ITMO	Internationally transferred mitigation outcomes
JCM	Joint Crediting Mechanism
JI	Joint Implementation
LULUCF	Land Use, Land Use Change
MS	Member State
NDC	Nationally determined contributions
NGO	Non-governmental organisation
OMGE	Overall mitigation in global emissions
SB	Supervisory Body
SBTi	Science Based Targets Initiative
SDG	Sustainable Development Goals
SJP	San José Principles for High Ambition and Integrity in International Carbon Markets
tCO ₂ e	Tonne carbon dioxide equivalent
T-VER	Thailand Voluntary Emission Reduction Program
UCPD	Unfair Commercial Practices Directive
UK-ERG	United Kingdom's Efficiency and Reform Group
VCM	Voluntary Carbon Market
VCMi	Voluntary Carbon Markets Integrity Initiative
VCS	Verified Carbon Standard
VCU	Verified Carbon Unit
VER	Verified Emission Reduction
WWF	World Wide Fund for Nature

Acknowledgements

This study was commissioned and funded by the Swedish Energy Agency.

The authors would like to thank Julia Wernersson, Erland Kjellén and Svante Söderholm from the Swedish Energy Agency for their valuable support and contributions throughout this study.

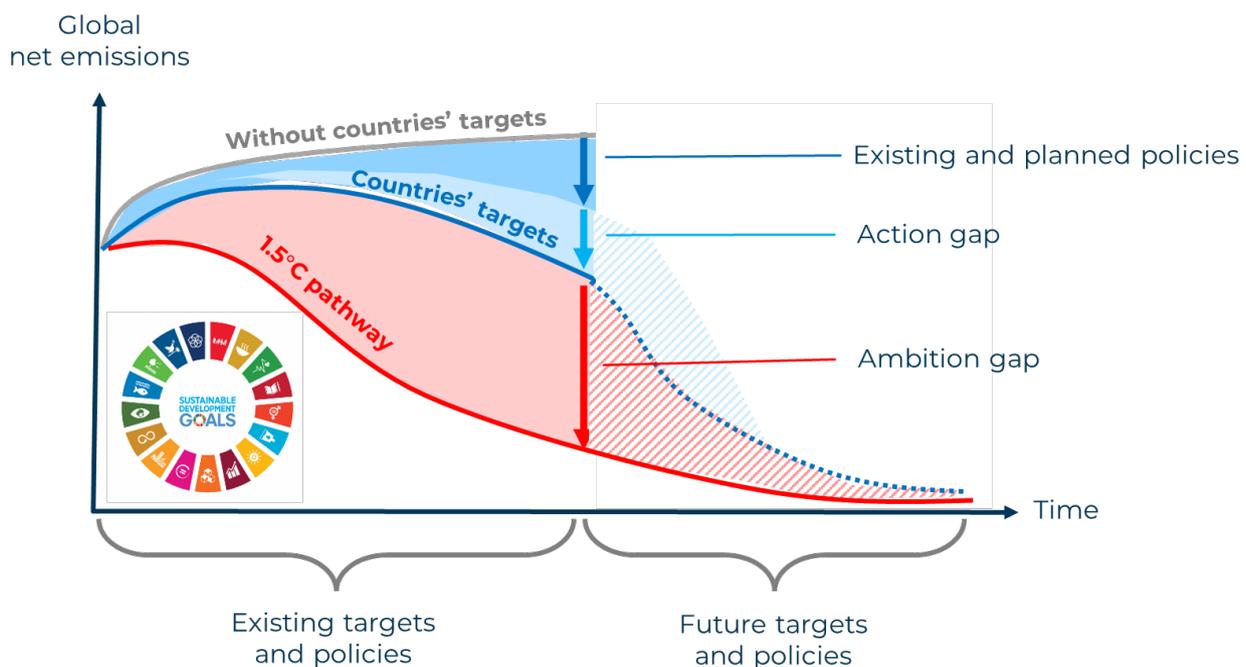
The study has benefitted greatly from the insights and contributions of the experts that participated in the consultation meetings organised as part of this study, including: Adeline Favrel, Arvid Rönnerberg, Bernt Nordman, Bruno Aldaz, Claire Wigg, El hadji Mbaye Diagne, Florian Eickhold, Gilles Dufresne, Giulio Volpi, Heather McEwan, Helena Terry, Hugh Salway, Gajanana Hegde, Imre Banyasz, Jacqueline Ruesga, Jannike Hising, Karen Olsen, Karin Bergbom, Karoliina Anttonen, Kenneth Möllersten, Klas Wetterberg, Laura Remmelgas, Lewis Rodger, Lindsay Otis, Lydia Sheldrake, Nicolas Kreibich, Olga Gassan-zade, Paweena Panichayapichet, Pedro Barata, Piotr Dombrowicki, Rogelio Humberto Campos García, Sigrid Persson, Simon Petley, Sophie Clossen, and Ursula Flossmann-Kraus.

The views presented in this discussion paper are of the authors' and do not necessarily reflect the views or positions of the Swedish Energy Agency or the experts that have participated in the consultation meetings.

Summary

Carbon credits facilitate cooperation for financing additional mitigation

There is an urgent need to enhance the ambition of climate targets and actions worldwide. Countries' current climate targets and policies fall critically short of achieving the collective global goals to limit temperature rise to 1.5 degrees. There is an “ambition gap” between what countries have pledged and what is needed to meet the 1.5-degree goal, and in many countries, there is also an “action gap” between policies that the country has implemented or planned, and what is needed to meet its targets (see Figure 1). Under the Paris Agreement, countries are expected to enhance the ambition of their targets (Nationally Determined Contributions, NDCs) over time and develop long-term strategies. Many developing countries' current NDCs indicate additional action that is conditional on international support. The EU and its Member States, including Sweden, have a joint NDC. Some countries, including Sweden, have already set national targets that are more ambitious than their NDC. Increasing numbers of non-state actors are also joining the global efforts to transition to net-zero emissions, and making voluntary commitments to reduce greenhouse gas (GHG) emissions and enhance removals (jointly referred to as mitigation) within their value chain, and support mitigation also beyond their value chains.



Adapted from: Laine et al. 2023

Figure 1: Action and ambition gaps

Carbon credits can mobilise finance, including from private sources, to additional mitigation through market-based cooperation around the world. By buying carbon credits, countries and non-state actors can support activities that have demonstrably generated additional mitigation outside the buyers' boundaries. This mitigation could contribute to addressing the action gap (i.e., implementing national targets) or the ambition gap (i.e., raising global ambition beyond targets), depending on how carbon credits are used and accounted for. Carbon credits can be used for various compliance or voluntary purposes, including to comply with international or national mitigation targets, fulfil voluntary climate commitments, voluntarily counterbalance (offset) carbon footprints or deliver results-based climate finance. The voluntary use of carbon credits is often motivated by the possibility to make climate-related claims (e.g., about the carbon neutrality of an organisation or product). To keep track of progress towards mitigation goals at various levels and ensure the integrity of carbon credit use and related claims, robust accounting should be applied. This includes reporting emissions and carbon credit use and not double counting the associated mitigation.

This Discussion Paper focuses on cooperation based on carbon credits, and explores the role and interplay of voluntary carbon markets and Article 6 of the Paris Agreement in supporting the implementation of national mitigation targets and raising global ambition beyond these targets. It covers ensuring the integrity of carbon credits, their potential authorisation under Article 6, and the high-integrity use of carbon credits and related accounting and claims, using Sweden as a case study to illustrate key issues. The government of Sweden is a buyer country as well as a potential seller country, and the Swedish private sector is active both as a seller and buyer in the voluntary carbon market.

Ensuring the environmental integrity of carbon credits is critical

All carbon credits must meet common criteria relating to environmental integrity and the do-no-harm principle. These are referred to as "minimum criteria" in this report. Throughout this report, carbon credits are assumed to meet these criteria, unless otherwise stated. These minimum criteria aim to ensure that each carbon credit represents a real, additional and verified metric tonne of carbon dioxide equivalent of emission reductions or removals (jointly referred to as mitigation outcomes). In addition, some carbon credits may fulfil other criteria relating to, e.g., verified sustainable development co-benefits or criteria specific to market-based cooperation under Article 6 of the Paris Agreement, and/or criteria for eligibility for particular uses, such as a host country authorisation under Article 6.

Carbon crediting programmes aim to ensure that carbon credits meet the minimum criteria, including through approved methodologies, third-party verification and registries. Programmes differ in terms of their scope, governance and methodological approaches, and issue carbon credits under different names. Carbon credits traded in the voluntary carbon market for voluntary use are typically issued by privately governed crediting programmes, against their own criteria, methodologies and procedures. Some nationally governed crediting programmes also exist, and an

EU-level framework for crediting removals is under development. The Paris Agreement established a new internationally governed mechanism, the Article 6.4 Mechanism (A6.4M), to issue carbon credits (Article 6.4 Emission Reductions, A64ERs) that meet international criteria. This mechanism is not yet operational. Under Article 6.2, countries can authorise carbon credits as internationally transferred mitigation outcomes (ITMOs) and are responsible for ensuring that ITMOs meet relevant international and national criteria. As of June 2023, only a handful of countries had national Article 6.2 arrangements in place, but many countries are in the process of building their national Article 6 readiness. Some private carbon crediting programmes are striving to issue carbon credits that are eligible to be authorised as ITMOs, in addition to carbon credits that are not intended to be authorised. These programmes are aligning their requirements with Article 6 and seeking interoperability between their carbon credits registries and national and international Article 6 registries.

Several initiatives aim to assess and promote the integrity of carbon credits. The International Civil Aviation Organization's Technical Advisory Body approves carbon crediting programmes that it deems to issue carbon credits that meet the eligibility criteria for use under the Carbon Offsetting and Reduction Scheme for International Aviation (CORSA). The Integrity Council for the Voluntary Carbon Market (ICVCM) and the Carbon Credit Quality Initiative (CCQI) assess carbon credits against their quality criteria at the level of crediting programmes and activity types, while several rating agencies specialise in assessing and rating the quality of carbon credits from specific activities.

Authorisation under Article 6 makes carbon credits eligible for various uses

Carbon credits are suitable for different uses depending on, inter alia, whether they are authorised by the host country. Authorised carbon credits represent mitigation outcomes that are not counted towards the achievement of the host country's NDC while carbon credits without authorisation represent mitigation outcomes that may be – but are not necessarily – counted towards the host country's NDC.

Authorisation is a key step for turning mitigation outcomes into internationally transferred mitigation outcomes (ITMOs) and ensuring their environmental integrity and robust accounting in line with Article 6.2 guidance. Article 6.2 provides for cooperation involving the transfer and use of ITMOs. ITMOs are defined as additional and verified emission reductions or removals that are authorised by a participating country for use (a) towards (other countries') NDCs, (b) for international mitigation purposes (e.g., under CORSA); and/or (c) for other purposes (e.g., voluntary ambition-raising as a basis for offsetting). Authorisation commits the authorising country to ensuring environmental integrity and transparency, applying robust accounting and promoting sustainable development. Host countries must apply corresponding adjustments (CAs) to their national emissions balance for authorised and first-transferred ITMOs, so that they are not counted towards its NDC.

To participate in ITMO cooperation, countries must have in place national arrangements for authorisation as well as recording, tracking and reporting ITMO-related information. Host

countries need to set up national criteria and procedures consistent with their NDCs and sustainable development objectives. To safeguard the achievement and enhancement of their NDC, host countries should only authorise mitigation outcomes that are additional to what is needed to achieve their NDC and enhance it over time, and only to the extent that they are reflected in the national GHG inventory and included in the scope of the NDC. Buyer countries may also have national criteria for the ITMOs they intend to purchase and use. Activity developers and carbon crediting programmes need to align their operations with relevant Article 6 and national criteria in order to generate carbon credits that may be authorised as ITMOs.

The current EU legislation does not include arrangements for authorisation or CAs. Since the EU and its Member States (MSs) have a joint NDC, CAs would be applied to the EU-level emissions balance. It is currently unclear how such CAs would be reflected in the EU-level accounting for MS-specific targets. EU legislation would need to be revised to include provisions for authorisations and CAs. To the authors' knowledge, such revisions are not yet underway, and their timeline is unclear.

Carbon credits can contribute to national targets or global ambition-raising

Not all carbon credits are eligible for all use cases. Eligibility may depend on carbon credit attributes (e.g., host country, activity type, vintage, authorisation under Article 6). Under the Paris Agreement, carbon credits authorised by the host country as ITMOs can be used by other countries towards their national targets. A6.4ERs without authorisation can be used, inter alia, for results-based climate finance, domestic mitigation pricing schemes, or domestic price-based measures, for the purpose of contributing to the reduction of emission levels in the host country. Under CORSIA, airlines may use eligible carbon credits that avoid double claiming with national targets and are issued by CORSIA-approved programmes to offset any growth in their emissions under the CORSIA. In the future, airlines will need to use ITMOs for CORSIA compliance.

There are no universal rules for the voluntary use of carbon credits and related claims, but various stakeholders provide good practice guidance. Traditionally, voluntary carbon markets focused on carbon credits from countries without targets, and the main voluntary use of carbon credits was to counterbalance ("offset") the buyer's carbon footprint, often associated with carbon neutrality claims. Under the Paris Agreement, however, all countries have targets, and thus, many carbon credits may represent mitigation that is counted by the host country towards its national target. There is broad agreement that carbon credits that represent additional mitigation beyond national targets (e.g., ITMOs) provide a credible basis for voluntary offsetting and related claims. The cancellation of such carbon credits is the main option for supporting ambition-raising beyond national targets and for avoiding double claiming between national targets and voluntary offsetting claims. There is a lack of agreement on whether credible voluntary offsetting could also be based on carbon credits that represent mitigation that contributes to national targets. A new contribution claim is gaining traction as an option for avoiding double claiming between national targets and the voluntary use of carbon credits.

There are increasing efforts to regulate claims relating to the voluntary use of carbon credits and prevent greenwashing. Consumer protection regulation applies to marketing claims relating to the voluntary use of carbon credits. Specific guidance is being developed by, inter alia, the EU, ISO and the Voluntary Carbon Market Integrity Initiative (VCMI).

Going forward: Focus on transparency, integrity, robust accounting and ambition

In the Paris era, carbon credits can play valuable roles in channelling public and private finance for addressing both the action and ambition gaps, if their integrity and robust accounting are ensured, and their use is transparently communicated, including how it complements ambitious climate targets and action by countries and non-state actors. Article 6 provides international frameworks and benchmarks also for the VCM. Carbon credits that are not authorised as ITMOs contribute to the implementation and enhancement of host country's national targets, while ITMOs can be used to contribute to other countries' targets or, through voluntary cancellation, to global ambition-raising. Claims associated with the voluntary use of carbon credits should transparently distinguish between contributions towards and beyond national targets. Safeguarding the integrity of carbon credits and their use requires continuous improvements, and continued interplay between VCM good practices, regulation and the operationalisation of Article 6 cooperation.

Swedish case study - Summary

Sweden's national target requires overachieving its EU target

Sweden has committed to a national mitigation target that covers a longer period and is more ambitious than its current share of the joint EU 2030 NDC and the 2030 targets under the Land Use, Land Use Change (LULUCF) and the Effort Sharing Regulations (ESR) ("Sweden's EU targets"). The Swedish national target is economy-wide and aims to reach net zero emissions by 2045 at the latest by reducing emissions by at least 85% from 1990 levels and balancing any remaining emissions with supplementary measures, such as enhanced carbon removals in forests and land, biogenic carbon capture and storage (bio-CCS) and mitigation achieved outside of Sweden in line with Article 6 of the Paris Agreement. Sweden also has national interim targets for 2030 and 2040 for ESR emissions.

Mitigation activities implemented in Sweden could contribute to the achievement of Sweden's EU targets, the achievement of the Swedish national target (requiring overachievement of Sweden's EU target) or overachievement of both targets. The contribution depends on the extent to which the mitigation outcomes in question are reflected in the national GHG inventory and accounted towards a particular target. Mitigation that is not reflected in the inventory (e.g., due to inventory methodologies that are not based on activity-level data) and/or not accounted towards any target (e.g., due to the application of CAs or similar accounting arrangements) represent ambition-raising beyond national targets. In some cases (e.g., activities that enhance forest and land sinks), the contribution may be challenging to determine, while in other cases (e.g., bio-CCS), determining the contribution may be straightforward.

Carbon credits generated in Sweden

To generate carbon credits, Swedish activities must result in mitigation outcomes that meet the minimum criteria for carbon credits and are successfully issued as carbon credits under a carbon crediting programme. They must, inter alia, take national policies (e.g., mandatory requirements

and subsidies), into account when demonstrating additionality and setting a crediting baseline, and address any risks of reversals.

To the extent that the carbon credits associated with Swedish activities contribute to Sweden's EU or national targets, their voluntary use (by Swedish and/or international buyers) for contribution claims would be a robust approach to avoid double claiming, as recommended by the Swedish Energy Agency for carbon credits generated by bio-CCS activities that receive state aid. Their use for voluntary offsetting and related (e.g., carbon neutrality) claims is associated with significant reputational risks, since this would lead to double claiming the same mitigation outcome for both voluntary offsetting and national targets. This risk of double claiming applies to domestic and international buyers alike. Double claiming between national targets and voluntary offsetting could undermine the acceptance of bio-CCS and give a misleading view of progress in climate action. Carbon credits authorised by Sweden as ITMOs would not lead to double claiming, as authorisation commits Sweden to applying CAs and/or similar adjustments that exclude them from being counted towards Sweden's targets. Their voluntary cancellation would address the ambition gap and provide a credible basis for voluntary offsetting.

However, the current EU legislation does not enable Sweden to apply CAs and/or similar EU-level adjustments to its emissions balance for mitigation outcomes achieved in Sweden. If and when this were possible, to safeguard the achievement of national targets, Sweden should only apply such adjustments to mitigation outcomes that are not needed for meeting its EU or national target, i.e., that represent overachievement of Sweden's targets. Thus, before committing to CAs, Sweden should have a clear view of how it will achieve its targets.

Sweden already has experience of achieving and accounting for national targets that are more ambitious than its EU targets. In 2013-2020, Sweden overachieved its ESR target and deleted its excess EU units which represented its overachievement. This prevented the use of Sweden's overachievement to compensate for any underachievement by other Member States. Sweden is likely to apply a similar approach also to achieve its national target. In case Swedish activities lead to an overachievement beyond the national target, e.g., due to an active domestic voluntary carbon market, Sweden could delete the associated excess EU units as the EU-level equivalent of CAs.

Carbon credits generated outside of Sweden

Sweden has also a national programme for purchasing carbon credits generated in and authorised as ITMOs by other countries. ITMOs cannot be used to meet the current EU NDC but Sweden may use them as a supplementary measure to achieve Sweden's national target. Sweden may also choose to cancel them to contribute to global ambition-raising.

Sweden already has experience of using carbon credits to voluntarily raise global ambition beyond national targets. The Swedish Energy Agency has been purchasing international carbon credits on behalf of Sweden since 2002. Of the 32.6 million Kyoto credits delivered to Sweden by June 2023, slightly over 640 000 credits will be used towards meeting Sweden's Kyoto target.¹ The rest have been or will be voluntarily cancelled, thus contributing to global ambition-raising.

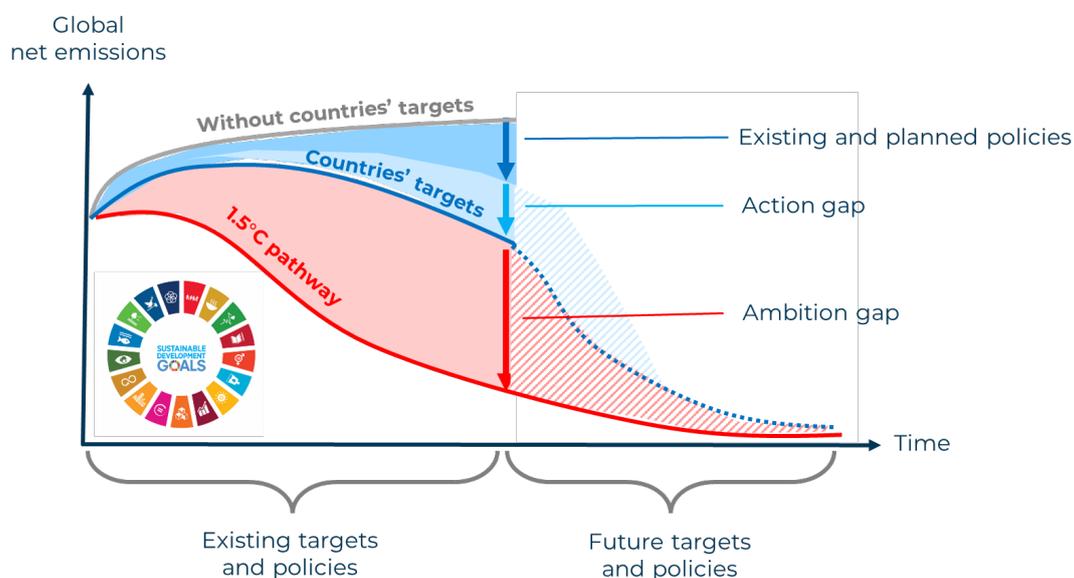
Swedish non-state actors have also been active buyers of international carbon credits from the voluntary carbon market. In the Paris era, Swedish non-state actors can voluntarily support ambition-raising and make credible voluntary offsetting claims by buying and cancelling ITMOs and they can voluntarily support the host country's national climate target and make voluntary contribution claims based on carbon credits that do not have ITMO authorisation.

¹ Personal communication with Erland Kjellén, Swedish Energy Agency, 15 June 2023.

1. Introduction

Urgent need to accelerate mitigation action

Climate change is an existential threat to human welfare and sustainable development. It can be mitigated by reducing greenhouse gas (GHG) emissions and enhancing the removal of carbon dioxide from the atmosphere. Under the Paris Agreement, the global community has set a long-term goal of limiting average global temperature rise to well below 2°C above pre-industrial level and pursuing efforts to limit the increase to 1.5°C by balancing emissions with removals globally in the second half of this century. The Paris Agreement's long-term goals also include increasing the ability to adapt to the adverse impacts of climate change, and making finance flows consistent with a pathway towards low emissions and climate-resilient development.



Adapted from: Laine et al. 2023

Figure 2: Action and ambition gaps

Countries' climate targets (Nationally Determined Contributions, NDCs) under the Paris Agreement do not deliver the needed ambition. Some NDCs include additional action that is conditional to international support. Some countries have also set national targets that go beyond their NDCs with regard to ambition and/or timeframe (see Box 1 for a Swedish case study on mitigation targets in the European Union (EU) context). However, countries' current targets fall critically short of the collective efforts needed to meet the Paris Agreement's goals (UNEP 2022). The gap between mitigation represented by current targets and mitigation needed to meet long-term goals is hereafter referred to as the

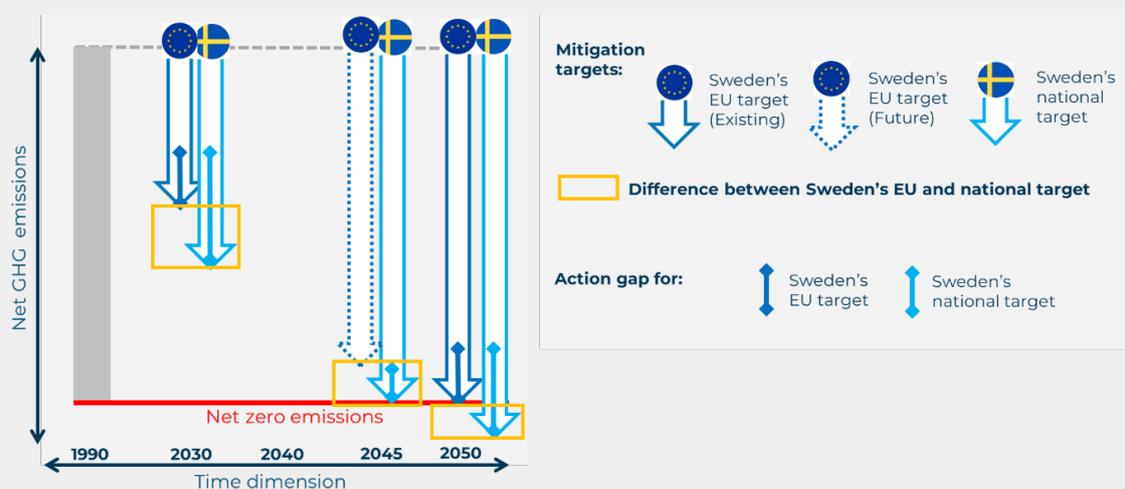
“ambition gap” (see Figure 2). Furthermore, many countries’ existing and planned policies fall short of their current targets. The gap between mitigation action based on existing and planned policies and action needed to meet current targets is referred to as the “action gap” (see Figure 2).

Box 1. Swedish case study - Mitigation targets in the EU context

The European Union (EU) and its Member States (MSs) have a joint NDC for 2030, as well as legally binding EU-level mitigation targets that are partly collective, partly allocated across MSs. Many MSs have enacted national climate laws that include legally binding national mitigation targets. Some of these targets, including Sweden’s national mitigation targets (see Figure 3), cover a longer period and/or are more ambitious than their current share of the EU NDC.

The Swedish national target aims to reduce emissions by at least 85% by 2045 at the latest compared to 1990 and reach net zero emissions by 2045 through supplementary measures (Swedish Environmental Protection Agency 2017), such as increased carbon sequestration in forest and land, biogenic carbon capture and storage (bio-CCS) and mitigation achieved outside of Sweden in line with Article 6 of the Paris Agreement. After 2045, Sweden should reach net negative emissions, meaning that emissions are lower than supplementary measures. Sweden also has interim targets to reduce its Effort Sharing Regulations (ESR) emissions by at least 63% by 2030 and 75% by 2040, with up to 8% and 2%, respectively, achieved with supplementary measures.

Figure 3 illustrates the conceptual action gaps for Sweden’s EU and national targets. To the extent that Sweden’s national targets are more ambitious than the estimated Swedish EU targets, the same mitigation could increase ambition relative to Sweden’s EU targets while addressing the action gap relative to Sweden’s national target. This would be the case for mitigation that goes beyond Sweden’s EU targets but is counted towards Sweden’s national targets (orange boxes in Figure 3). In practice, however, it may be challenging in some cases to determine the extent to which certain mitigation counts towards or beyond a MS’s EU or national targets.



Source: Authors

Figure 3: EU vs national target: Illustrative case of Sweden

Besides the Paris Agreement, countries have also agreed on frameworks such as the global Sustainable Development Goals (SDGs) under the 2030 Agenda and goals for biodiversity under the Kunming-Montreal Global Biodiversity Framework. The Intergovernmental Panel on Climate Change (IPCC) and Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) stress that climate action is critical for achieving other SDGs and protecting biodiversity, and vice versa (IPCC 2015, IPBES 2019). There are both synergies and potential trade-offs in meeting individual goals and they cannot be achieved in siloes. Their achievement is critical for human welfare and also offers significant financial returns. Nonetheless, there are still major gaps in financing the activities needed to deliver these goals.

There is an urgent need to accelerate and scale up action and finance for a transition towards development that is consistent with our collective climate, biodiversity and other sustainable development goals. Climate action needs to be accelerated in all sectors by all actors. Cooperation across country and sector boundaries, as well as between public and private entities is crucial for accelerating climate action and delivering SDGs. Countries must tighten their targets to close the ambition gap and enhance their policies and measures to close the action gap. National policies and measures drive non-state actors to take climate action and may also enable market-based cooperation. In addition to market- and policy-driven mitigation action within their value chains, non-state actors can also make further voluntary contributions to global mitigation efforts by reducing their own value chain emissions in line with ambitious pathways and targets and/or funding mitigation beyond their value chains.

Carbon markets as a tool for accelerating mitigation action

Carbon markets provide financial incentives for mitigation through GHG units that can be traded between countries and/or private entities. Carbon markets consist of the trading in GHG units that represent one metric tonne of carbon dioxide equivalent (tCO₂e) and have a unit price that is (typically) determined by supply and demand. There are two main types of carbon market schemes and GHG units (see Box 2): (1) cap-and-trade schemes² generate units referred to as emissions allowances, and (2) baseline-and-credit schemes (hereafter referred to as carbon crediting programmes) generate GHG units referred to as carbon credits. Typically, cap-and-trade schemes are governed by public authorities and emissions allowances (and sometimes also certain carbon credits) are used to comply with mandatory obligations. By contrast, carbon crediting programmes are governed by international or national public, private or non-profit entities, or bi- or multilateral frameworks,

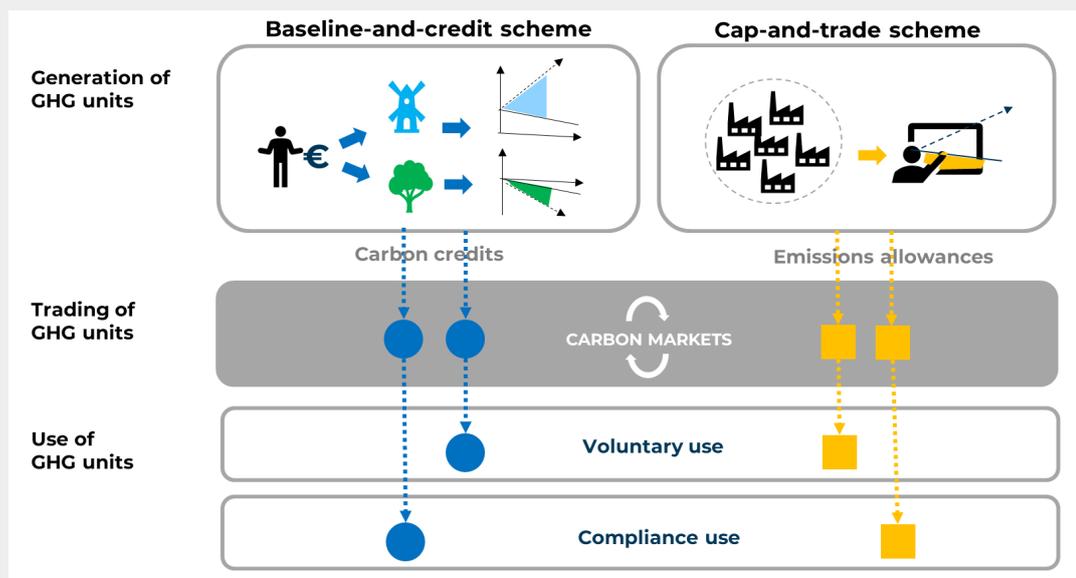
² Cap-and-trade schemes are also referred to as emissions trading systems.

and carbon credits are used both for voluntary purposes and, subject to meeting relevant eligibility criteria, for compliance (e.g., towards national targets or under cap-and-trade schemes). This Discussion Paper focuses on the generation and use of carbon credits and does not consider cap-and-trade schemes.

Box 2. Cap-and-trade and baseline-and-credit schemes

Under cap-and-trade schemes, the administrator issues emissions allowances against an emissions cap that often covers several sectors. Covered entities are typically required to surrender emissions allowances equivalent to their verified emissions during a certain period. An emission allowance thus represents a permit to emit one tCO₂e. Each emissions allowance embodies the mitigation ambition of the collective emissions cap. Entities may receive some emissions allowances for free, buy them from auctions and trade them with other entities. The scope of cap-and-trade schemes varies across systems. Typically, emissions from small sources and emissions that are difficult to verify are outside the scope of the scheme. Emission allowances are typically used for complying with mandatory targets and policies. Sometimes they are also withdrawn from circulation for voluntary purposes.

Baseline-and-credit schemes focus on mitigation potential that is outside the scope of other mitigation policies, including cap-and-trade schemes. Baseline-and-credit schemes issue GHG units, hereafter referred to as carbon credits, against a baseline for emission reductions or removals that are deemed to meet core criteria (see Section 2), such as additionality, meaning that they would not happen without the sale of carbon credits. Carbon credits can be used for both voluntary purposes and – subject to meeting relevant eligibility criteria – national or international compliance.



Source: Authors

Figure 4: Baseline-and-credit and cap-and-trade schemes (Source: Authors)

Carbon market instruments are a multi-purpose tool in the climate action toolbox. Depending on how they are used and accounted for, they can have a role in implementing existing and planned policies, complementing these policies to address the action gap or supporting mitigation beyond national targets to address the ambition gap (see Figure 2). In fact, cap-and-trade schemes constitute a national or regional³ climate policy. Carbon credits may sometimes be eligible for use to comply with existing or planned policies, or they may contribute to national targets beyond these policies, thus addressing the action gap. Such contributions can promote ambition-raising indirectly by paving way for the enhancement of national policies and targets. Carbon credits that are not accounted towards any national targets can contribute directly to global ambition-raising, thus addressing the global ambition gap, provided that they do not undermine the achievement of the host country's target. The role of carbon credit-generating activities can also evolve over time.

Market-based cooperation can enhance the cost-effectiveness of climate action, so that more mitigation can be achieved with the same resources, and even more mitigation could be achieved if the cost savings were invested in further mitigation (IETA et al. 2019). This said, cooperation is not only about cost-effectiveness, it can also promote mitigation through harnessing private sector innovation and resources to identify untapped mitigation potential and policy gaps, discovering pricing, testing new solutions, developing quantification methodologies, transferring technology and knowledge, and building capacity through learning-by-doing. These, in turn, can enable buyers to commit to higher ambition and pave the way for enhanced targets and policies in host countries. Mitigation activities may have positive and/or negative environmental and social impacts, and synergies and/or trade-offs with other sustainable development objectives.

Carbon credits can mobilise results-based finance between countries and non-state actors for mitigation outcomes (reductions of GHG emissions and enhancements of removals) that are additional to what would occur without incentives from carbon credits. Markets for carbon credits match buyers, who wish to support additional mitigation by buying carbon credits, with sellers, who can deliver additional mitigation with support from revenue from the sale of carbon credits. A carbon credit serves as a tradable "receipt" for a verified tonne of additional emission reductions or removals, providing access to a financial reward (the carbon credit unit price) to the seller and proof of the outcome to the buyer. To channel finance to real and additional mitigation, carbon credits need to meet common minimum criteria, aimed at ensuring the additional mitigation impact and

³ Some cap-and-trade schemes cover multiple countries (e.g., EU ETS), and some are linked with other cap-and-trade schemes (e.g., EU and Switzerland, and California and Quebec).

avoiding negative social and environmental impacts. Carbon credits also have other attributes, for example relating to their location, activity type and year of generation as well as verified sustainable development co-benefits and support to adaptation. Depending on their attributes, carbon credits may attract different unit prices and buyers and they may be eligible for different uses.

Public and private entities can support additional mitigation by buying carbon credits from the voluntary carbon markets and/or under Article 6 of the Paris Agreement, and using them for various purposes. Voluntary carbon markets refer to the trading of carbon credits that are purchased and used on a voluntary basis. Some of the carbon credits traded in the voluntary carbon markets are also eligible for certain compliance uses (Aho-nen et al. 2021a). Article 6 of the Paris Agreement established an international carbon cred-iting programme (Article 6.4 Mechanism, A6.4M) for issuing carbon credits, and empowers host countries to authorise mitigation outcomes (including but not limited to carbon cred-its) for use of various purposes. Carbon credits issued under the A6.4M and/or authorised by host countries can be purchased and used by public and private entities on a voluntary basis or towards compliance. Countries typically purchase carbon credits that are eligible for compliance use towards their NDCs while non-state actors may wish to purchase car-bon credits for compliance use or for voluntary purposes, e.g., to achieve their voluntary climate targets and/or make voluntary climate-related claims.

The need for robust carbon market rules and governance

Cooperation based on carbon credits may promote or undermine climate ambition and sustainable development, depending on the quality of carbon credits as well as how they are used and accounted for. The purchase and use of carbon credits can sup-port the Paris Agreement goals and SDGs if and only if it channels funding to activities that generate real and additional mitigation outcomes and promote sustainable development, or at least do not cause environmental and social harm. It is also important that the out-comes are appropriately tracked and accounted for, so as to understand their contribution to global goals and avoid counting the same mitigation outcome more than once. The purchase of low-quality carbon credits and/or any form of double counting⁴ (even of high-quality carbon credits) would divert finance from real and effective mitigation and would not contribute to reducing global net emissions. The use of such carbon credits for com-pliance could increase the level of global net emissions, while their use for voluntary

⁴ Double counting includes double issuance and double use of a carbon credit and double claiming of the miti-gation outcome associated with the carbon credit, for example between two companies or one company and the host country's national mitigation target (GHG Protocol 2022).

purposes could lead to false claims about a reduction in global net emissions. Furthermore, the use of carbon credits should always complement, never substitute, ambitious mitigation targets and actions. The G7 highlight that high-integrity carbon credits markets “need to be consistent with a pathway toward overall net-zero emissions; in particular, both creation and use of credits need to be supplementary to immediate efforts to reduce emissions in line with science-aligned pathways, and should avoid lock-in of high emissions pathways and contribute to the implementation of host country targets such as by sharing mitigation benefits” (G7 2023b, p. 1).

Transparent and robust rules and governance are crucial for ensuring the integrity of carbon markets and realising their full potential. These rules and procedures need to be regularly reviewed and revised to reflect evolving circumstances and lessons learned. Carbon market instruments are currently widely used for various purposes, and their use is expected to grow in the future. However, only if they are trusted, carbon markets can grow to deliver their full potential and provide meaningful contributions to our global climate and sustainability goals. Thus, all stakeholders interested in safeguarding and enhancing mitigation ambition and sustainable development should take an interest and engage in efforts to ensure the integrity of carbon markets.

Efforts to ensure the integrity of carbon markets have been ongoing since the inception of the carbon markets over 20 years ago. As a result, the good practice principles for carbon markets relating to environmental integrity and transparency, including in governance, and robust accounting are already well-established, widely accepted and adopted by all carbon crediting programmes, including carbon market cooperation under Article 6 (Laine et al. 2023). However, applying these principles in practice to a wide range of different contexts requires ongoing efforts, taking into account the evolution of political, economic and technological circumstances and the latest science, and incorporating experiences and lessons learned.

About this Discussion Paper

This Discussion Paper focuses on cooperation based on carbon credits, and explores options for the role and interplay of the voluntary carbon market and carbon market cooperation under Article 6 of the Paris Agreement in supporting the implementation of national mitigation targets and raising global ambition beyond these targets. It covers ensuring the integrity of carbon credits (Chapter 2), the authorisation of carbon credits under Article 6 of the Paris Agreement (Chapter 3), and the high-integrity use of carbon credits and related accounting and claims (Chapter 4). These topics are considered from the perspective of public and private actors, and illustrated by using Sweden as a case study. Chapter 5 concludes. This paper draws on the valuable insights and feedback

received at three expert consultation meetings which were organised as part of this study between March and May 2023.

2. Ensuring the integrity of carbon credits

Minimum criteria for carbon credits are well established

Markets for carbon credits can contribute to accelerating climate change mitigation if and only if the environmental integrity of carbon credits is ensured. Ensuring environmental integrity means ensuring that the generation and use of carbon credits contribute to, and at least do not undermine, global mitigation efforts. Meeting these criteria would mean that the revenue from the sale of carbon credits is channelled to mitigation that is real and additional to what would happen without carbon market incentives. Buying carbon credits that do not meet environmental integrity criteria (e.g., that represent mitigation that would happen anyway) would divert scarce financial flows from truly additional mitigation at a time when additional mitigation is urgently needed. If such carbon credits are used towards compliance or to substitute or delay internal mitigation efforts, this could result in an increase in global net emissions.

The minimum criteria for the environmental integrity of carbon credits are well established (Laine et al. 2023). They are based on over two decades of development and experience, especially in the context of the Kyoto Protocol's Clean Development Mechanism (CDM) (Schneider and La Hoz Theuer 2019). All carbon credits should represent real and additional GHG emission reductions or enhancements of removals (jointly referred to as mitigation outcomes) that are monitored and reported against a valid and conservative baseline using robust methodologies, independently verified, transparently tracked, and recorded, and not double counted. The risk of leakage and non-permanence must be addressed. Furthermore, the activities that generate carbon credits should not cause environmental and social harm and should promote sustainable development. Table 1 provides an overview of the minimum criteria for carbon credits. In addition to the outlined minimum criteria, Article 6 includes further criteria for carbon credits (see Table 3). Furthermore, carbon credits may need to fulfil further criteria to be eligible for authorisation by host countries and for use for specific purposes, such as towards compliance under the scheme for international aviation or national carbon pricing schemes (e.g., cap-and-trade schemes or carbon tax obligations).

Table 1: Minimum criteria for carbon credits

Criteria	Description
Demonstration of additionality	Additionality means that, at the time of the decision to implement of the activity, the mitigation outcomes of a mitigation activity would not have occurred in the absence of the incentives created by the carbon credit revenues, taking into account all financial sources (including any subsidies), as well as all relevant laws, regulations and policies. Since policies, market conditions and technologies evolve over time, additionality is a moving target with a limited period of validity.
Robust baseline setting	A baseline is a hypothetical scenario for emissions and/or removals that could plausibly occur in the absence of the incentives created by the carbon credit revenues, taking into account relevant national laws, regulation and policies. Carbon credits are quantified relative to baseline scenario. Baselines must be set in accordance with the approved applicable baseline methodologies in a conservative manner, so as not to overestimate the mitigation outcomes attributed to the activity. Since policies, market conditions and technologies evolve over time, baselines are moving target with limited periods of validity.
Robust monitoring and reporting of emissions, emission reductions and removals	GHG emission reductions or removals from mitigation activities must be robustly quantified in accordance with approved and applicable monitoring methodologies, based on conservative approaches that do not overestimate the additional mitigation outcomes attributed to the activity. Monitoring methodologies contain requirements for data sources and collection, formulas for calculations, and guidance for system boundary setting as well as reporting.
Third-party validation and verification	Validation refers to the ex-ante assessment of a mitigation activity by a competent third-party entity against relevant criteria, such as the appropriate application of applicable methodologies. Verification is the periodic independent review and ex-post determination by a competent third-party entity of the request to issue carbon credits against monitored mitigation outcomes generated by a mitigation activity during a specific monitoring period in line with relevant criteria.
Addressing of non-permanence	Permanence refers to a situation where the mitigation outcomes generated by a mitigation activity are not reversed at a later point in time. Where activities are prone to a risk of reversibility, non-permanence of mitigation outcomes must be addressed in a robust manner through the implementation of safeguards (e.g., insurance, buffer pools, liability rules).
Addressing of leakage	Unintended increases in emissions attributable to the mitigation activity outside of its boundaries are referred to as leakage. The risk of leakage must be assessed, and any identified leakage must be appropriately addressed to prevent overestimation of an activity's mitigation outcome.
Avoiding of double counting	The underlying mitigation outcomes should not be counted more than once towards achieving mitigation targets or goals. Double counting can occur through double issuance, double use, or double claiming. Some forms of double counting can be avoided through uniquely identifying carbon credits that represent underlying mitigation outcomes in registries, while others can be avoided through accounting.
Do-no-harm	Activities that generate carbon credits should not cause environmental or social harm.

Source: Ahonen et al. (2021b) and ICVCM (2023a)

Various carbon crediting programmes issue carbon credits

Over the past twenty years, many carbon crediting programmes have been developed to assess activities and mitigation outcomes against common, internationally established minimum criteria for carbon credits, and issue carbon credits against mitigation outcomes that are deemed to meet these criteria. So, although carbon credits issued under different programmes have different names (see below), all of them should represent a real, additional and verified metric tonne of carbon dioxide equivalent. There are also many sources of international guidance on these criteria, including good practices to assess the fulfilment of these criteria, which aim to promote consistent integrity of carbon credits across different programmes. Table 2 provides an overview of the minimum criteria for carbon credits applied under selected carbon crediting programmes and guidance.

Most carbon crediting programmes apply similar assessment cycles, strongly based on CDM, typically including independent ex-ante validation and registration of activities, monitoring, reporting and independent ex-post verification of mitigation outcomes, and issuance of carbon credits. Upon issuance, carbon credits are recorded into a carbon credit registry, typically maintained by the administrator of the carbon crediting programme that issues the carbon credits.

Carbon crediting programmes differ in terms of the activity types and geographies they cover, their approach to operationalising the carbon credit minimum criteria, and their governance and oversight. Carbon crediting programmes can be categorised based on whether they are governed by (1) international treaties (hereafter referred to as “international crediting programmes”, such as CDM and A6.4M); (2) bi- or multilateral agreements between two or more countries (“bilateral crediting programmes” under Article 6.2, such as the Joint Crediting Mechanism, JCM); (3) private or non-profit entities (“private crediting programmes”, such as the Verified Carbon Standard (VCS) governed by Verra and the Gold Standard for Global Goals (GS4GG) administered by The Gold Standard Foundation); and (4) national authorities (“national crediting programmes”, such as Australia’s Emission Reduction Fund, ERF). Under Article 6.2, host countries can also authorise carbon credits as internationally transferred mitigation outcomes (ITMOs) unilaterally, for use by non-state buyers such as international airlines or private companies.

Carbon credits issued by different programmes have different names. For example, VCS issues Verified Carbon Units (VCUs) and GS4GG issues Gold Standard Verified Emission Reductions (VERs), while carbon credits issued under the A6.4M are called Article 6.4 Emission Reductions (A6.4ERs), carbon credits authorised under Article 6.2 are referred to as ITMOs.

Table 2: Carbon credit criteria under different crediting programmes and guidance

Criteria	Carbon crediting programmes					Carbon credit criteria and guidance						
	CDM	VCS	GS	JCM	A6.4M	CORSIA	ICROA	ICVCM	UK-ERG	DCA	SJP	CCQI
Additionality	●	●	●	●	●	●	●	●	●	●	●	●
Robust baseline	●	●	●	●	●	●	●	●	●	●	●	●
Monitoring & reporting	●	●	●	●	●	●	●	●	●	●	●	●
Ex-ante validation	●	●	●	●	●			●	●	●	●	●
Ex-post verification	●	●	●	●	●	●	●	●	●	●	●	●
Permanence	●	●	●		●	●	●	●	●	●	●	●
Addressing leakage	●	●	●	●	●	●	●	●	●	●	●	●
No double counting	●	●	●	●	●	●	●	●		●	●	●
Stakeholder consultation	●	●	●	●	●			●				●
Do-no-harm		●	●		●	●	●	●		●	●	●
SD impacts	●	●	●	●	●		●	●		●		●
SD monitoring & verification		●	●	●	?	●	●	●	●	●	●	●
SoP for adaptation	●				●			●				

Legend: ● Explicitly included ● Implicitly/partially included

Abbreviations: SD – Sustainable Development; CDM – Clean Development Mechanism; VCS – Verified Carbon Standard; GS4GG – Gold Standard for the Global Goals; JCM – Joint Crediting Mechanism; A6.4M – Article 6.4 Mechanism; CORSIA – Carbon Offsetting and Reduction Scheme for International Aviation; ICROA - International Carbon Reduction and Offset Alliance; ICVCM – Integrity Council for the Voluntary Carbon Market; UK-ERG - UK Environmental Reporting Guidelines; DCA - German Development and Climate Alliance; SJP - San Jose Principles for High Ambition and Integrity in International Carbon Markets; CCQI - Carbon Credit Quality Initiative

Source: Ahonen et al. (2021b); JCM (2016, 2019); ICVCM (2023a,b)

Carbon crediting programmes also differ in their approaches to environmental and social safeguards and sustainable development impacts. Some crediting programmes (e.g., GS4GG, Plan Vivo) include extensive requirements for environmental and social safeguards and the monitoring and reporting, and in some cases also verification, of sustainable development impacts. Other crediting programmes have minimal requirements, but some offer the opportunity to apply an add-on standard that focuses on environmental and social aspects and sustainable development (e.g., combining the Verified Carbon Standard with the Sustainable Development Verified Impact Standard or The Climate, Community and Biodiversity Standards).

Carbon crediting programmes have been developed in parallel (Ahonen et al. 2021a). The first international mechanisms for generating carbon credits were established by the Kyoto Protocol in 1997. These mechanisms - CDM and Joint Implementation (JI) – included key criteria to ensure the environmental integrity and robust accounting of carbon credits. They have served as a blueprint for carbon crediting programmes around the world, including compliance and voluntary carbon markets. CDM was governed by an international executive board while JI had two governance tracks: Track 1 was regulated by host country authorities while Track 2 was overseen by an international supervisory committee. Both mechanisms followed rules and guidance adopted by the Kyoto Protocol's decision-making body. In parallel, numerous private and national carbon crediting programmes have been developed for generating carbon credits for voluntary and domestic carbon markets. In the voluntary carbon markets, the issuance of carbon credits is self-regulated by the private programmes while the issuance of carbon credits for domestic markets is regulated by national authorities.

In the Paris Agreement context, carbon credits may be generated under Article 6.2 or the A6.4M, hereafter jointly referred to as Article 6 carbon credits (see Table 4 and Figure 6). Carbon credits issued under A6.4M are called A6.4ERs and they must meet the criteria established by the international A6.4 Supervisory Body (SB) (UNFCCC 2022b). The authors expect A6.4M to be fully operational earliest from 2025 onwards. Carbon credits authorised under Article 6.2 are called ITMOs. Participating countries are responsible for ensuring environmental integrity and transparency, promote sustainable development, and apply robust accounting, including to avoid double counting, in line with the so-called Article 6.2 rules (UNFCCC 2022a). Participants are also required to minimise, and if possible, avoid, negative environmental and social impacts of market-based cooperation (UNFCCC 2022a, b).

In the EU context, there is currently no EU legislation on issuing carbon credits but an EU-wide carbon removal certification framework is under development. The Commission's proposal, which was published in November 2022, proposes a framework that would

enable the issuance of carbon removal units for eligible removals that apply methodologies developed by the European Commission and are certified under EU-approved carbon crediting schemes (European Commission 2022a). As for applying and reporting on environmental and social safeguards associated with carbon credits used by EU companies, the proposed EU Directive on corporate responsibility due diligence may introduce requirements that are stricter than the current requirements under carbon crediting programmes (European Union 2022).

Efforts to promote carbon credit quality are ongoing

In practice, it is not possible to ensure with full certainty that each and every carbon credit meets all minimum criteria. This is due, inter alia, to the counterfactual and context-specific nature of some aspects of minimum criteria (e.g., additionality and baselines), as well as limitations to the accurate quantification of mitigation outcomes and long-term monitoring of potential reversals. The degree of uncertainty varies across different criteria as well as across carbon credits, depending on their type and context. For some carbon credits, the likelihood that certain minimum criteria are met may be low, while for other carbon credits, it may be possible to demonstrate fulfilment of some or all of the minimum criteria with high confidence.

Carbon market stakeholders have scrutinised and raised concerns about various aspects of environmental and social integrity relating to carbon credits from specific activity types and carbon crediting programmes, as well as the use of carbon credits in general. There is currently a general lack of trust in the environmental and social integrity of carbon credits available in the carbon markets, and consequently the carbon markets' contribution to mitigation and sustainable development. This applies across different carbon credit types and carbon market segments, including market-based cooperation under the Kyoto Protocol and Paris Agreement, voluntary carbon markets and domestic carbon markets.

Throughout the existence of carbon markets, efforts have been ongoing to promote carbon credit quality within and across crediting programmes. Under the CDM, rules and methodologies were regularly revised, and an independent high-level stocktake of the CDM (the CDM Policy Dialogue) was carried out in 2012 (CDM 2012). Under the Paris Agreement, the A6.4M SB has been tasked to develop carbon credit quality criteria and methodologies, drawing on the lessons from CDM and other crediting programmes (UNFCCC 2022b, para. 5). Under the San José Principles for High Ambition and Integrity in International Carbon Markets (SJP), numerous governments have committed to high-level principles, including on carbon credit quality, in cooperation under Article 6 (Cambio Climático 2021). The International Initiative for Development of Article 6 Methodology Tools (II-AMT)

focuses on enabling the alignment of approved CDM baseline and monitoring methodologies with rules and principles for collaboration under Article 6 (II-AMT 2023).

Several governments (e.g., UK and Australia) have commissioned independent reviews of the integrity of carbon credits. Furthermore, a Nordic initiative (Ahonen et al. 2022) and a Finnish guide (Laine et al. 2023) have synthesised good practice relating to carbon credit quality, and the UK's Efficiency and Reform Group (UK-ERG), the German Development and Climate Alliance (DCA) also provide guidance on carbon credit quality.

There are several initiatives that carry out top-down assessments of carbon credits from different activity types and crediting programmes, some of which apply additional quality criteria. The Technical Advisory Body of the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) assesses carbon crediting programmes against CORSIA Emissions Unit Criteria for eligibility to supply carbon credits for the scheme (ICAO 2019). The Integrity Council for the Voluntary Carbon Market (ICVCM) and the Carbon Credit Quality Initiative (CCQI) have developed criteria and frameworks for assessing carbon credit quality at the level of crediting programmes and activity types. The ICVCM aims to promote carbon credit quality top-down by issuing labels to carbon credits that meet its Core Carbon Principles (CCPs) (ICVCM 2023a). Beyond the minimum carbon credit criteria, ICVCM requires carbon credits to contribute to net zero transition. This implies avoiding locking-in levels of emissions, technologies or carbon-intensive practices that are incompatible with the net zero by 2050 pathway (ICVCM 2023b). CCQI aims to promote carbon credit quality bottom-up by providing an online scoring tool for assessing carbon credit quality (CCQI 2023). Like ICVCM, the CCQI quality criteria requires carbon credits to facilitate transition towards net zero emissions by avoiding lock-in of carbon-intensive technologies or practices. Furthermore, CCQI introduces another quality criteria of 'host country ambition' to avoid perverse incentives arising from carbon market engagement that could undermine achievement of host country's NDC (CCQI 2022). The International Carbon Reduction and Offset Alliance (ICROA) endorses carbon crediting programmes under its Standards Endorsement Procedure, based on the ICROA Code of Best Practice. Several rating agencies specialise in assessing and rating the quality of carbon credits from specific activities.

The G7 has adopted principles of high-integrity carbon credit markets (G7 2023b). Regarding supply-side integrity, these principles go beyond minimum criteria and, inter alia, require crediting levels "to align with emissions pathways consistent with the Paris Agreement temperature goal and achievement of global net-zero emissions by 2050" and credits to be issued for mitigation outcomes "that clearly contribute to host country mitigation, and avoid lock-in of high emissions pathways, and where climate change mitigation strategies are in place that prioritize direct mitigation action" (G7 2023b, p.1). They also require

“alignment with relevant requirements for ensuring environment integrity under Article 6 rulebook and the CORSIA emissions units criteria and guidelines, including in reporting requirements under [Article 6.2], and elements reflecting emerging best practices under the [A6.4M], in particular for ambitious baseline-setting, additionality assessment, avoidance of emissions lock in, emissions leakage accounting, permanence, and the avoidance of all forms of double-counting” (G7 2023b, p. 2-3). Furthermore, human rights, gender equality and the rights of Indigenous Peoples must be respected, and environmental and social impacts must be identified, publicly disclosed, and addressed through safeguards, including monitoring.

Article 6-specific criteria for carbon credits

Article 6 of the Paris Agreement includes criteria for carbon credits that covers all minimum criteria as well as some further Article 6-specific criteria. For example, baselines must be set below business-as-usual (BAU), and carbon credit generation must be consistent with the long-term goal of the Paris Agreement to limit global warming. Article 6 criteria also require negative environmental and social impacts to be minimised and avoided where possible, as well as consistency with national sustainable development objectives. Furthermore, Article 6 recalls that countries should “promote and consider their respective obligations on human rights, the right to health, the rights of indigenous peoples, local communities, migrants, children, persons with disabilities and people in vulnerable situations and the right to development, as well as gender equality, empowerment of women and intergenerational equity” (UNFCCC 2022a,b).

Article 6.2 includes high-level criteria whereas the Article 6.4 Mechanism specifies more detailed criteria. Under Article 6.2, participating Parties are responsible for operationalising the high-level criteria of ensuring environmental integrity and transparency, applying robust accounting, and promoting sustainable development (UNFCCC 2022a). Mitigation outcomes that are deemed by the host country to meet relevant criteria can be authorised as ITMOs for use towards NDCs, international mitigation purposes (e.g., CORSIA) and/or other purposes (e.g., voluntary use for ambition-raising) (UNFCCC 2022a, annex, para 1). Under A6.4M, there are more detailed criteria for carbon credits (A6.4ERs) issued under the mechanism, e.g., encouraging ambition over time. The international SB is in the process of developing recommendations for operationalising the criteria, including for approving mechanism methodologies, and issuing A6.4ERs. Participating countries can apply additional national criteria, e.g., on eligible activity types, stringent baselines, and contribution to national sustainable development objectives. Table 3 provides an overview of the requirements for activities, the activity cycle and methodology development and approval under the A6.4M (UNFCCC 2022b).

Table 3: Overview of the requirements under the Article 6.4 Mechanism

Purpose	Description (Source: UNFCCC 2022a, annex)
Ensuring environmental integrity	<p>Activities shall be designed to achieve mitigation of GHG emissions that is additional, including reducing emissions, increasing removals and mitigation co-benefits of adaptation actions and/or economic diversification plans (collectively referred to as emission reductions), and not lead to an increase in global emissions; minimize the risk of non-permanence of emission reductions and, where reversals occur, ensure that these are addressed in full; minimize the risk of leakage and adjust for any remaining leakage in the calculation of emission reductions or removals (para 31).</p> <p>Methodologies shall specify the approach for setting the baseline and demonstrating additionality, ensuring accurate monitoring of emission reductions and calculating the emission reductions achieved by the activity; be real, transparent, conservative, credible and below BAU; avoid and address leakage, where applicable; recognize suppressed demand; contribute to reducing emission levels in the host Party, align with its NDC, if applicable, its long-term low GHG emission development strategy, if it has submitted one; include relevant assumptions, parameters, data sources and key factors and take into account uncertainty, leakage, policies and measures, and relevant circumstances, including national, regional or local, social, economic, environmental and technological circumstances (para 32-33).</p>
Promoting ambition	<p>Methodologies shall encourage ambition over time and align with the long-term temperature goal of the Paris Agreement (para 33).</p> <p>Higher ambition can be promoted by: countries ensuring their participation contributes to the long-term goals of the Paris Agreement (para 26); countries specifying own stringent baseline setting approaches, limiting crediting periods, setting criteria for crediting period renewal and any other methodological requirements, provided they adhere to the Article 6.4 requirements (para 27); and the application of a mandatory cancellation of 2% of A6.4ERs for overall mitigation of global emissions (OMGE) (para 67, 69)</p>
Safeguarding and promoting sustainable development	<p>Activities shall minimize and, where possible, avoid negative environmental and social impacts, and undergo local and, where appropriate, subnational stakeholder consultation consistent with applicable domestic arrangements in relation to public participation and local communities and indigenous peoples (para 31)</p> <p>Methodologies shall encourage broad participation and contribute to the equitable sharing of mitigation benefits between the participating Parties (para 33)</p> <p>The SB shall provide guidance relating to how Parties should respect, promote and consider their respective obligations on human rights, the right to health, the rights of indigenous peoples, local communities, migrants, children, persons with disabilities and people in vulnerable situations and the right to development, as well as gender equality, empowerment of women and intergenerational equity (para 24(ix))</p> <p>Host Parties are required to indicate how its participation in A6.4M contributes to sustainable development (para 26). During activity approval, information must be provided to the SB on how the activity fosters sustainable development (para 40).</p> <p>To assist developing country Parties that are particularly vulnerable to the adverse effects of climate change to meet the costs of adaptation, a mandatory levy of 5% of A6.4ERs will be applied at issuance, as well as a monetary contribution related to the scale of the activity or the number of A6.4Rs issued (para 67)</p>

While these Article 6-specific criteria apply only to carbon credits authorised under Article 6.2 and/or issued under A6.4M, they can serve as a global benchmark for carbon credits generated also outside the Paris framework. In particular, private crediting programmes seeking to issue carbon credits that can be authorised under Article 6.2 as ITMOs would need to align their criteria with Article 6, including any relevant national criteria. It would be the responsibility of participating countries to ensure that all carbon credits that they authorise are fully aligned with relevant criteria.

Aligning carbon credits with Article 6 requirements can, but does not automatically, help to ensure the integrity of carbon credits. Ultimately, this depends on the interest and capacity of participating countries to ensure carbon credit quality under Article 6.2 and the success of the SB in ensuring carbon credit quality under A6.4M. Ensuring the integrity of carbon credits requires continuous improvements and it can benefit from incorporating lessons and best practices developed in the Article 6 and/or VCM space.

Carbon credits can contribute towards and beyond national targets

Activities that generate carbon credits can contribute towards the implementation and enhancement of NDCs and other national targets in several ways. Regarding carbon credits authorised as ITMOs, host countries can apply stringent crediting baselines to retain mitigation up to the baseline level towards their national targets. They can also limit the crediting period and count any mitigation that occurs after the crediting period towards their targets. Another option is to charge a carbon credit issuance fee and use it to fund national mitigation action that contributes to national targets. Non-authorised carbon credits contribute to the host country's (unconditional) NDC to the extent that they are detected in the national GHG inventory and are within the scope of the NDC. Otherwise they, too, can contribute to mitigation beyond the host country's (unconditional) NDC and help the host country in overachieving and/or enhancing its NDC.

“Paris alignment” can manifest itself in several ways in the context of generating carbon credits. Firstly, private carbon crediting programmes can align their criteria with Article 6 to enable issuance of carbon credits that host countries could deem eligible to be authorised as ITMOs under Article 6. This can promote the consistent quality of carbon credits traded in the VCM and Article 6 markets. Secondly, VCM participants can buy and use ITMOs for voluntary offsetting and non-authorised (mitigation contribution) A6.4ERs to voluntarily support national targets. The use of ITMOs for voluntary offsetting avoids the risk of double claiming. This, in turn, can – but does not automatically – promote trust in the carbon markets' contribution to global mitigation. Furthermore, voluntary carbon credit buyers could choose to contribute to adaptation and/or overall mitigation in global

emissions. Such contributions are mandatory under the A6.4M and optional under Article 6.2.

Registries can promote transparency on the quality and use of carbon credits

Carbon registries have an important role in promoting transparency on the quality and use of carbon credits. They provide publicly available information about uniquely identified carbon credits and underlying mitigation activities, and transparently track holdings, transfers and use of issued carbon credits. Carbon credits can also be tagged for additionality attributes, such as authorisation as ITMOs for particular uses under Article 6. This is important for reducing the risks of double counting, although some risks remain due to the lack of a central accounting system for all carbon credits traded in the carbon markets.

Most carbon crediting programmes operate their own registry where they record and track carbon credit issued under the programme. The ICVCM has specified criteria for independent registries to promote transparency and raise their credibility. These include implementing approaches to uniquely identify, record and track carbon credits as well as presenting information about the underlying mitigation activity (ICVCM 2023b). The registry system should implement mechanisms to prevent double issuance and double use/retirement of credits (ICVCM 2023b).

Market-based cooperation under Article 6 can utilise three types of registries. Under Article 6.2, participating Parties must have or have access to a registry that tracks and records authorisation, first transfer, transfer, acquisition, use towards NDCs, authorisation for use towards other international mitigation purposes, and voluntary cancellation of ITMOs (UNFCCC 2022a, annex, para. 29). If Parties do not want or cannot have their own registry, they can utilise the international registry being developed by the UNFCCC for the purpose of tracking and recording ITMOs (UNFCCC 2022a, annex, para. 30-31). To track A6.4ERs issued to activities under the A6.4M, a mechanism registry connected to the international registry will be established containing at least a pending account, holding account, share of proceeds for adaptation account, accounts for mandatory and voluntary cancellation for overall mitigation in global emissions, retirement account, account for cancellation for other international mitigation purposes, account for voluntary cancellation for other purposes and account for administrative cancellations (UNFCCC 2022b, annex). A6.4ERs authorised for use towards NDC and/or other international mitigation purposes will be labelled as such in the mechanism registry.

The role of private registries in the context of Article 6 is currently under discussion. Three possible scenarios for the role of private registries in implementing the functions for tracking and recording ITMO authorisation, transfer and use are being discussed by Parties

to the Paris Agreement (Michaelowa et al. (forthcoming)). In the first scenario, Parties solely rely on their own national registries or the international registry and there is no role foreseen for private registries for ITMOs. Parties' national Article 6 registries record and track ITMOs as units. In the second scenario, along with their own national registries, Parties allow carbon credits issued under private programmes in private registries to request authorisation as ITMOs. When such credits residing in private registries are authorised as ITMOs, the registry administrator labels them as ITMOs and tracks their transfer and use. Additionally, Parties maintain their own national Article 6 registries to record and track ITMO authorisations, transfers, and usage, including recording and tracking information on carbon credits tagged as ITMOs held in private registries. In the third scenario, Parties rely solely on private registries for registry functions, with no own quality control or registries. However, it is unclear whether one or more private registries can serve as the national Article 6 registry.

Private registries striving to cater for cooperation under Article 6.2 would need to accommodate Article 6 criteria for carbon credits and ensure timely and reliable information flows with the host country. Even if a host country pre-approves carbon credits issued under certain crediting programmes as eligible for seeking authorisation as ITMOs, the host country remains responsible for ensuring environmental integrity and transparency, including in governance, applying robust accounting and promoting sustainable development (see below for more details on the responsibilities triggered by authorisation).

Box 3. Swedish case study – Generating high-quality carbon credits in Sweden

To generate carbon credits in line with international good practice, Swedish carbon credit-generating activities would need to demonstrate that their mitigation outcomes are real and additional, quantify and independently verify the mitigation outcomes using robust baseline and monitoring methodologies and competent auditors, ideally approved by an internationally recognized carbon crediting programme, and avoid double issuance and double use of carbon credits. To be aligned with Article 6, additionality and baseline considerations should include the activities' compatibility with national targets and the PA's long-term temperature goal.

For example, the Swedish government plans to meet part of its national target with bio-CCS, and is already providing support for bio-CCS (Swedish Energy Agency 2023a). To demonstrate additionality of a mitigation outcome generated by a Swedish bio-CCS activity and seeking to be issued as a carbon credit, all relevant costs and revenues, including subsidies must be considered, and it must be shown that the activity would not be financially attractive without carbon credit revenue. In case Sweden provides sufficient subsidies to make an activity financially attractive even without carbon credit revenue, the activity is deemed non-additional. In case the subsidy is not sufficient for reaching financial attractiveness, the activity could be deemed additional and thus eligible to generate carbon credits. In this case of blending subsidies with carbon finance, the mitigation outcomes could be attributed to the subsidy and carbon finance providers e.g., on a pro rata basis. This could be implemented e.g., by applying stringent, dynamic national crediting baselines or discounting the amount

of carbon credits issued (and/or authorised, see Section 3) for verified mitigation outcomes, whereby the additional mitigation would be partly issued as carbon credits and partly retained by Sweden towards its national target. The share could also change over time, e.g., carbon credits could be issued for mitigation until a certain year, after which Sweden would retain all, or an increasing share of the mitigation towards its national target. The share could also reflect Sweden's progress towards its national (interim and 2045) targets – in case other mitigation policies perform poorly, Sweden may need to compensate with a higher share of mitigation from bio-CCS, and vice versa. Sweden could also opt to retain a part of mitigation outcomes from bio-CCS activities that it does not support through subsidies.

Additional bio-CCS activities can drive mitigation ambition in Sweden in at least two ways: in the short run, it can address policy gaps by mobilizing carbon finance to additional mitigation, thus accelerating mitigation compared to what would be achieved with existing policies, and in the longer run, pave way for policy enhancement.

As for biochar activities implemented in Sweden, to the authors' knowledge they are not currently reflected in the national GHG inventory. Thus, such activities could earn carbon credits for mitigation outcomes that meet the minimum criteria, and they could be used for voluntary purposes without the risk of double claiming with the national target. However, for biochar activities to contribute to the national target as supplementary measures, they would need to be included in the inventory in the future.

Mitigation outcomes from activities in the LULUCF sector are reflected in the national inventory and, as a general rule, contribute to Sweden's EU target for LULUCF. Any overachievement would, as a general rule, contribute to Sweden's national target as a supplementary measure.

3. Authorising carbon credits as ITMOs

Authorisation creates ITMOs for compliance and voluntary uses

In the Paris era, some carbon credits are authorised under Article 6 as ITMOs while some are not. In general, non-authorised mitigation outcomes contribute to the host country's NDC while authorised mitigation outcomes do not. This has implications for the use of carbon credits and related claims (see Section 4).

Participation in market-based cooperation under Article 6.2 includes authorisation of cooperative approaches, entities and mitigation outcomes by participating countries.

This paper focuses on the authorisation of mitigation outcomes by host countries, which, inter alia, commits the host country to not count the authorised mitigation outcomes towards its NDC.

Authorised mitigation outcomes are referred to as ITMOs. ITMOs are defined as real, verified, and additional mitigation outcomes authorised by the host Party for use (1) towards (other countries') NDCs, (2) for international mitigation purposes (e.g., compliance

under the CORSIA); and/or (3) for other purposes (e.g., voluntary offsetting), as determined by the host country (UNFCCC 2022a, annex, para 1). Mitigation outcomes that could be authorised include mitigation outcomes generated under bi- or multilateral Article 6.2 frameworks, A6.4ERs issued under A6.4M, carbon credits issued under other carbon crediting programmes, and emissions allowances issued under emissions trading systems. Authorisation is always the prerogative of the authorising country.

Authorisation triggers responsibilities to participating countries

Authorising mitigation outcomes as ITMOs commits the country to complying with Article 6.2 rules. According to these rules, participating countries shall ensure environmental integrity and transparency, including in governance, promote sustainable development, and apply robust accounting, including to avoid double counting. Participating countries must have national arrangements in place that ensure compliance with these requirements. They must also track ITMO authorisations, transfers and use through a registry, and regularly report to the Paris Agreement. Upon authorisation of ITMOs from the cooperative approach or in conjunction with the next biennial transparency report, countries must submit an initial report that explains, inter alia, how the country meets the relevant criteria. The options for the timing of authorisation are still under negotiation. As of June 2023, only a handful of countries had national Article 6.2 arrangements in place, but many countries are in the process of building their national Article 6 readiness (Hynes et al. 2023).

Authorisation commits the host country to applying corresponding adjustments (CAs) to its emissions balance for authorised and first-transferred⁵ mitigation outcomes, meaning that the host country does not count such mitigation outcomes towards its national mitigation targets. Authorised mitigation outcomes are thus available for use uniquely by the buyer. This avoids claiming the same mitigation outcome more than once (“double claiming”). CAs are reported as part of the regular information (annual information) to the Paris Agreement on a biennial basis, starting in December 2024.

Authorisation can impact the achievement and enhancement of the host country NDC

As a general rule, mitigation that is detected in a national GHG inventory and is within the scope of the NDC is reflected in the national emissions balance. National GHG

⁵ In case of ITMOs authorised for use towards NDCs, first transfer is the first international transfer. In case of ITMOs authorised for international mitigation or other purposes, first transfer may be specified by the host Party as the authorisation, issuance or use or cancellation of the authorised mitigation outcome.

inventories are economy-wide in scope while the scope of NDCs varies across countries and over time. The emissions balance is used as a basis for tracking progress towards and achievement of (quantified GHG mitigation targets included in) the NDC. It tracks national emissions and removals, based on the national GHG inventory, to the extent that they are within the scope of the NDC. Thus, mitigation that occurs outside the scope of the NDC is not included in the emissions balance or counted towards the achievement of the NDC. It is also worth noting that national GHG inventories are based on estimations and do not necessarily detect all mitigation achieved on the ground. Mitigation that is not detected in the national GHG inventory is not reflected in the national emissions balance and is thus not counted towards current national (quantified) mitigation targets.

Host countries should carefully consider the implications of authorisations to the achievement and enhancement of their national mitigation targets. To safeguard the achievement of its national (unconditional⁶) targets, a host country should only authorise mitigation outcomes to the extent that they are (1) additional (in terms of financial and regulatory additionality, as well as relative to the national targets, i.e., not needed to meet national targets), (2) detected by the national GHG inventory; and (3) within the scope of the (unconditional⁷ or conditional⁸) targets. Otherwise, authorisation and the subsequent application of CAs may make the achievement and enhancement of the national targets more difficult for the host country. Host countries may consider providing a preliminary authorisation, e.g., a Letter of Intent, at the initial stage of activity development and confirming the authorisation once the activity has advanced (e.g., to verification of mitigation outcomes) and can be more specifically assessed against national criteria. Authorisations could be made conditional to, e.g., milestones in NDC achievement or demonstrating the delivery of sustainable development co-benefits.

Host country criteria can help to safeguard and enhance national targets

National criteria and procedures can help host countries to safeguard the achievement of national targets and promote their enhancement over time. These criteria and procedures should aim to ensure that authorisation is granted only to mitigation outcomes that are additional, generated by activities that are consistent with national

⁶ Unconditional targets are those that the country aims to achieve without any external support whereas conditional ones rely on such support, e.g., financial support

⁷ Additional mitigation could be within the scope of the unconditional NDC, e.g., if it covers the energy sector, as long as the mitigation outcomes themselves are additional to the level required to achieve the unconditional NDC.

⁸ Conditional targets refer to mitigation potential beyond the unconditional NDC which the host country could achieve with international support.

sustainable development objectives and meet also other Article 6.2 requirements. Article 6.2 requirements include setting crediting baselines below BAU, addressing risks of non-permanence and leakage, and minimising negative environmental and social impacts. Based on an analysis of action needed to achieve the NDC, host countries can develop e.g., positive (“white”) or negative (“black”) lists of activity types that are eligible and ineligible, respectively, for authorisation.

Host countries can also develop national parameters and methodological approaches for quantifying mitigation outcomes and/or approve certain crediting programmes as a means to demonstrate compliance with (some) authorisation criteria. In practice, the development and application of national criteria to individual activities and any crediting programmes that they apply can be challenging and requires strong capacity and detailed information about the NDC implementation plan as well as the national GHG inventory.

ITMO-generating activities can also contribute to the achievement of the host country’s national targets, to the extent that they generate additional mitigation that is not authorised as ITMOs and that is reflected in the inventory and within the scope of targets. The host country’s national authorisation criteria and procedures can include approaches to secure a contribution towards the national target. Options include the application of stringent baselines, discounting and/or limited crediting periods to retain part of the mitigation towards the host country, or authorisation fees that provide additional financial resources for NDC implementation.

Host countries can facilitate private sector engagement by clearly communicating national Article 6 criteria and procedures. Before making final investments decisions, activity developers need to know, e.g., whether and when the host country will set a legal framework for authorisation, what are the processes and timelines for authorisation, whether their planned activities are eligible and if yes, under which conditions (Marr et al. 2023).

Box 4. Supporting host countries’ access to voluntary carbon markets

The VCMI released their Voluntary Carbon Market (VCM) Access Strategy Toolkit, which provides considerations and recommendations for host countries when engaging in high-integrity VCM (VCMI 2023b). The Toolkit was developed to fill the needs of policy-makers to understand how best to engage with the VCM by providing a stepwise decision blueprint to inform and guide decision-making. The guidance presented by the Toolkit includes (1) considerations for host countries to decide on how to engage with the VCM; (2) how host countries can plan to finance their NDC; (3) the role the VCM plays in achieving their NDC; (4) what legal and institutional frameworks are needed to support the VCM; and (5) what safeguards a country must institute to ensure high-integrity engagement with the VCM.

Step 1 – Decide if and when to engage with VCM. In deciding whether and when to engage with the VCM, host countries should first assess the benefits and risks of engaging with the VCM and map existing VCM activities and relevant actors. Next, the government of host countries should develop a carbon market strategy to identify opportunities for accessing direct investment into prioritised mitigation actions and ways to attract carbon finance to support climate policy. Host country governments can act as regulators, implementers, and facilitators.

Step 2 – NDC Financing and VCM. As a second step, host country governments must determine financial needs and policy instruments for implementing their NDC and develop an NDC financing strategy which can include VCM. Host countries should identify clearly defined mitigation projects that meet sound criteria (e.g., relying on tested technologies, being run by credible local developers, involving local expertise, engaging with local communities, implementing safeguards, and mitigating risks for investors). These actions can facilitate finance by removing risks. Host countries can create an enabling investment environment by enhancing transparency around investments, engaging in international fora, adopting rules for defining and approving Art. 6 activities, and lowering investment barriers by co-investing and subsidising mitigation projects.

Step 3 – Determining the role of carbon markets in NDC achievement. A host country may decide in their NDC financing strategy that carbon market transactions (voluntary or regulated) should contribute to its NDC. In that case, the host country should decide on approved mitigation activities and the authorised process for ITMOs. Countries should clarify when emission reductions count towards their NDC achievement and consider the accounting implications of ITMO trading. Countries are the sole deciders of whether they offer CAs, which can have both positive and negative impacts on a country's ability to achieve its NDCs. When applying CAs, host countries should consider whether the activity is covered in their NDCs, if such mitigation could be achieved more cost-effectively and whether the activity generates significant technology transfer and sustainable development benefits. Offering CAs can align host countries in participation in Art. 6 and attract buyers looking to mitigate market risks of double claiming. Nevertheless, creating institutional and technical capacity to account for applying CAs would also come with a cost. To mitigate the associated costs, a host country's government could attach a fee to the emissions reductions or removals, which would then be converted into an ITMO with a CA. The fee would reflect administrative and opportunity costs and help support governments to replace the exported mitigation outcomes. Additionally, a country should have strategies to avoid overselling mitigation outcomes (e.g., offering CA on a percentage of GHG removals or reduction generated by a project). When engaging in VCM, governments should enact regulations that mitigate associated risks and liabilities of projects or programmes. Project risks may include a lack of proper benefit-sharing provisions, misalignment with host country policies, and unintended harm to local communities and biodiversity. Regulations could include requirements related to the registry and management of land, safeguards, and reporting prerequisites to ensure transparency, or guidance for setting conservative baselines to ensure real GHG emission reduction or removals.

Step 4 – Legal and institutional issues need to be considered for engagement with VCM. Once a country has developed its NDC financing strategy and decided to leverage carbon markets and Article 6 transactions among its funding instruments, it must consider and address regulatory implications as part of its carbon market strategy. The success of the carbon strategy requires institutional coordination to ensure full understanding across entities and integration into national legal frameworks. The carbon market strategy also necessitates a set of agreed-upon rules governments should adopt for approvals and authorisations, applying CA, reporting requirements and safeguards. To ensure the integrity of VCM-approved activities for NDCs, host countries could require developers for ex-ante

reporting and monitoring and adopt additional safeguards requirements for approvals and authorisations. When designing a carbon markets strategy, host countries must also consider the concept of carbon rights. Carbon rights refer to the right to participate in and benefit from carbon transactions by various parties involved. These rights are often clarified through contractual arrangements. Countries can ensure equitable carbon rights by defining the allocation of land tenure rights and establishing rules for benefit-sharing agreements where Indigenous Peoples and local communities are recognised.

Step 5 – Host countries must ensure high-integrity carbon market activities. Informed by their carbon markets strategy, a host country must align VCM activities with national policies, implement carbon accounting rules, and ensure high-quality supply and high-integrity use of carbon credits. Host countries can create an enabling environment to guide investments towards priority sectors, regulate carbon markets and direct investments, and permit limited use of credits in national carbon pricing schemes aligned with national policies. Additionally, host countries should implement transparent carbon accounting systems that are integrated, consistent, and harmonised, as well as secure robust MRV national capacities. Carbon credits generated by activities should adhere to high-quality criteria (e.g., the ICVCM Core Carbon Principles) and, when used by non-state buyers, should be used as part of a science-aligned mitigation strategy, transparently reported and credibly claimed (e.g., following the VCMI's provisional Claims Code of Practices). Host countries can facilitate the high-integrity use of carbon credits by non-state actors by creating supportive legal and policy frameworks.

Buyer countries can have their own authorisation criteria

ITMOs can be used by other countries towards their NDCs if they are authorised for such use. The acquiring country counts the ITMO towards its NDC by applying a CA to its emissions balance. An acquiring country that wishes to count an ITMO towards a national target that goes beyond its NDC would likely need to use ITMOs authorised for other purposes.

All countries that participate in and authorise cooperation involving the use of ITMOs are responsible for ensuring that this cooperation meets the minimum requirements and need to have national authorisation arrangements in place. From the acquiring country's perspective, a key concern is how to ensure that the ITMOs that they acquire represent real and additional mitigation outcomes, and not "hot air"⁹. The national criteria for the ITMOs that they wish to acquire can go beyond minimum requirements and reflect national priorities relating to e.g., host countries (including the ambition of their NDCs),

⁹ GHG units that do not represent real mitigation relative to BAU are sometimes referred to as hot air. Hot air can occur if an emission cap or baseline is set above BAU, intentionally or unintentionally (e.g., if the actual BAU turns out to be lower than what was expected at the time of setting the cap or baseline, e.g., due to an economic recession).

activity types, stringency of baselines, applied methodologies and crediting programmes, and sustainable development co-benefits.

Authorisation and CAs do not guarantee the high quality of carbon credits

Authorisation does not guarantee the high quality of carbon credits. Host country authorisation represents its view that the authorised mitigation outcomes meet relevant (Article 6 and national) criteria, and commits the country to reporting to the Paris Agreement about its approach and applying CAs to its emissions balance. This reporting is subjected to a technical expert review under the Paris Agreement. The ability of a host country to ensure the environmental integrity of ITMOs depends on its national capacity, the quality and granularity of relevant information, and the host country's incentives to ensure e.g., additionality. The more stringent the national target, the more critical it is for the host country to ensure that it authorises only mitigation outcomes that are truly additional, as well as consistent with the national target and GHG inventory.

A CA is a necessary but insufficient condition for compliance buyers who wish to ensure high integrity and voluntary buyers who wish to support global ambition-raising.

CAs guarantee that an equivalent amount of mitigation outcomes is not counted towards the host country NDC. In cases where CAs are applied to non-additional mitigation outcomes, these ITMOs are backed up by an equivalent additional effort by the host country. However, in cases where the host country target allows (intentionally or unintentionally) for emissions above BAU, the application of CAs to non-additional mitigation outcomes may not require any additional effort by the host country.

Private crediting programmes can cater for national authorisation

Private crediting programmes can serve as a means to demonstrate fulfilment of some national authorisation criteria, such as additionality demonstration, robust baseline setting, monitoring, reporting and verification, addressing of the risks of non-permanence and leakage, environmental and social safeguards, and alignment of co-benefits with national SDG priorities. The host country authorities can take into consideration the methodologies developed and project documentation prepared under these programmes, including third-party audit reports, in their authorisation decision-making.

However, private crediting programmes differ in the extent to which they are aligned with the Article 6.2 minimum requirements, such as setting baselines below BAU, and considering any additional national criteria, e.g., stringent national baselines or national sustainable development objectives. Furthermore, host countries should be aware of and consider the concerns raised by carbon markets stakeholders over the environmental

integrity of some – in some cases a significant share of – carbon credits issued by crediting programmes.

The host country is ultimately responsible for ensuring that ITMOs meet all relevant Article 6.2 and national requirements, even in cases where the host country deems carbon credits issued under approved private crediting programmes or methodologies as eligible for requesting authorisation. Thus, host countries could make use of private crediting programmes as complementary frameworks to inform national decision-making but should not rely excessively on private programmes in their national frameworks and decision-making.

Key issues relating to authorisation are still open

Some key issues relating to authorisation are still open. Some of them may be addressed at the national level while other may be addressed at the international level. Key open issues include the timing of authorisation, and possible changes to ITMO authorisation (on e.g., use cases or volume) (Lo Re et al. 2022). These issues are interlinked, since the earlier the timing, the more uncertain the actual performance of the activity and the host country's NDC implementation. This, in turn, may increase the likelihood of the need for changes to authorisations, for example if it later became apparent that applying CAs to authorised ITMOs would jeopardise the host country's NDC achievement and enhancement. On the other hand, later authorisations and ex-post changes increase the uncertainty for activity developers and can deter investment decisions, thus preventing additional mitigation from occurring in the first place.

The host countries' interest to safeguard NDC achievement and enhancement needs to be balanced with the activity developers' need for investment certainty. To some extent, this could potentially be addressed by providing conditional (ex-ante) authorisations for activities that have not yet generated mitigation outcomes, with limited time frames and volumes, and require a final (ex-post) confirmation after the generation of mitigation outcomes, before their first transfer.

There are some further challenges that relate to the accounting for mitigation outcomes. For example, since further guidance on CA methods is to be adopted at the earliest in November 2024 but the submission of an initial report requires the description of the CA method, how do Article 6.2 pioneers address this issue?

Current EU legislation does not provide for authorisation under Article 6

The current EU legislation does not include arrangements for authorisation or CAs (see Box 5 for further details). Since the EU and its MSs have a joint NDC, CAs would be applied

to the EU-level emissions balance. It is currently unclear how individual MSs could authorise ITMOs and apply CAs in a way that is also reflected in the EU-level accounting for MS-specific targets. Enabling authorisation, CAs and equivalent adjustments at the EU and MS level would require the revision of EU legislation to align with the relevant provisions of the Paris Agreement.

The EU legislation is currently being revised to align with the requirements of the Paris Agreement. The EU will need to put in place arrangements for applying CAs for any net transfers of ITMOs resulting from the linking of the EU Emissions Trading System (EU ETS) with other emissions trading systems (currently a link with Switzerland). In addition, if EU MSs wish to authorise mitigation outcomes occurring within their national boundaries as ITMOs, for example for use under CORSIA or for voluntary offsetting, they would need to apply arrangements equivalent to CAs to their share of the EU or national target, such as overachieving their share of the EU targets by a corresponding amount and, e.g., cancelling an equivalent amount of EU units, such as Annual Emission Allocations (AEAs¹⁰) for the ESR.

Even if CAs were technically feasible at the EU level, their application may undermine the achievement of the collective EU NDC. The need for the MSs' national emissions balances to add up to the EU's collective emissions balance may restrict individual MSs' ability to adjust their national emissions balances for any overachievement within their borders until there is clarity about EU-wide compliance. This does not, however, prevent MSs from accounting for any overachievement within its boundaries towards and beyond its national targets in the context of national accounting and reporting.

Box 5. Applying CAs in the EU context

Since the EU and its MSs have a joint NDC, CAs would be reflected in the EU-level emissions balance. It is currently unclear how such CAs would be applied in the EU-level accounting for MS-specific targets. The EU will need to put in place arrangements for applying CAs for any net transfers of ITMOs to third countries (i.e., not within MSs) resulting, inter alia, from the linking of the EU ETS with other emissions trading systems (currently link with Switzerland). In addition, if EU MSs wish to authorise mitigation outcomes occurring within their national boundaries as ITMOs, for example for use under CORSIA or for voluntary offsetting, they would need to apply arrangements equivalent to CAs to their share of the EU or national target, such as overachieving their share of the EU targets by a corresponding amount and, e.g., cancelling an equivalent amount of EU units, such as AEAs¹¹ for the ESR. Furthermore, the current EU legislation does not enable EU MSs to implement certain provisions required in the Initial Report, such as the selection of the method to apply CAs, which must be submitted upon the first ITMO authorisation. This may currently prevent MSs from authorising ITMOs. Enabling authorisation, CAs and equivalent adjustments at the EU and MS level

¹⁰ AEAs represent the MSs' ESR targets.

¹¹ AEAs represent the Member States' ESR targets.

would require the revision of EU legislation, e.g., relating to reporting, accounting, and the Union Registry, to align with the relevant provisions of the Paris Agreement.

Sweden is an interesting example of an EU MS overachieving its EU targets. During 2013-2020, Sweden overachieved its ESR target and deleted the excess AEAs, thereby raising ambition by an equivalent amount (Ministry of Climate and Enterprise 2023, p.157). This enabled Sweden to meet its national target, which was more ambitious than its obligations under the EU. A similar arrangement of overachieving the MS's share of the EU target and cancelling the excess EU units could serve as the EU-level equivalent for applying CAs to carbon credits authorised by MSs. This would avoid double claiming of the authorised carbon credits by preventing an equivalent amount of mitigation from being counted towards the EU NDC.

The EU legislation will be revised to align with the requirements of the Paris Agreement, including provisions relevant to defining the relationship between EU-level targets and the EU NDC, allocating the EU NDC to MSs and aligning reporting requirements as well as procedures and Union Registry functions with the Paris Agreement. In June 2022, the European Parliament proposed to include the following reference to authorisation in the revised LULUCF regulation: "Where a Member State decides to authorise the use of carbon credits from the LULUCF sector for offsetting by public or private entities, including through Articles 6.2 or 6.4 of the Paris Agreement, the amount of removals transferred or used shall not be taken into account for the objective of meeting the annual targets of that Member State" (European Parliament 2023a). However, the final revised LULUCF regulation, that was provisionally agreed in November 2022, did not include this proposal. Instead, it includes a more general requirement for the Commission to report to the European Parliament and Council about "progress made at international level on the rules governing Articles 6.2 and 6.4 of the Paris Agreement and, where relevant, proposals to amend [the LULUCF] Regulation, in particular to avoid double counting and apply corresponding adjustments" (European Parliament 2023b).

Besides technical challenges, the EU legislation presents strategic challenges for applying CAs. Even if CAs were technically feasible at the EU and MS level, their application may undermine the achievement of the MS's EU targets. If there is a possibility that EU may use any overachievement by a MS to compensate for any collective underperformance in the EU NDC, it may be strategically unwise to authorise ITMOs based on that overachievement (since it may undermine the MS's ability to achieve its EU targets). Furthermore, it is currently not clear whether the scope of the EU NDC fully coincides with the EU-level mitigation targets, including related reporting and accounting, or whether they diverge (Laininen et al. 2022). In other words, there are differences in scope and/or inventory and accounting approaches between the EU NDC and the sum of the EU ETS, ESR and LULUCF targets. Also, at MS level, there is currently no unambiguous national (share of the EU) NDC or the EU-level targets. It may thus be challenging to determine whether certain mitigation represents overachievement of the EU or national targets, and whether and to what extent this overachievement can be counted by the MS towards or beyond its (more ambitious) national targets. This may depend on whether the mitigation occurs within the scope of the LULUCF Directive, the EU ETS or the ESR, and any safeguards that are applied in these sectors in case of EU-level underachievement. While EU legislation encourages MS to exceed the EU's ambition level, safeguards against EU-level NDC underachievement may require using the overachievement by some MSs to compensate for the underachievement by other MSs. This means that, in the context of the Paris Agreement where EU has a collective emissions balance, individual MSs may not be able to fully account their own overachievement towards its emissions balance. This does not, however, prevent MSs from accounting for any overachievement within its boundaries towards and beyond its national targets in the context of national accounting and reporting.

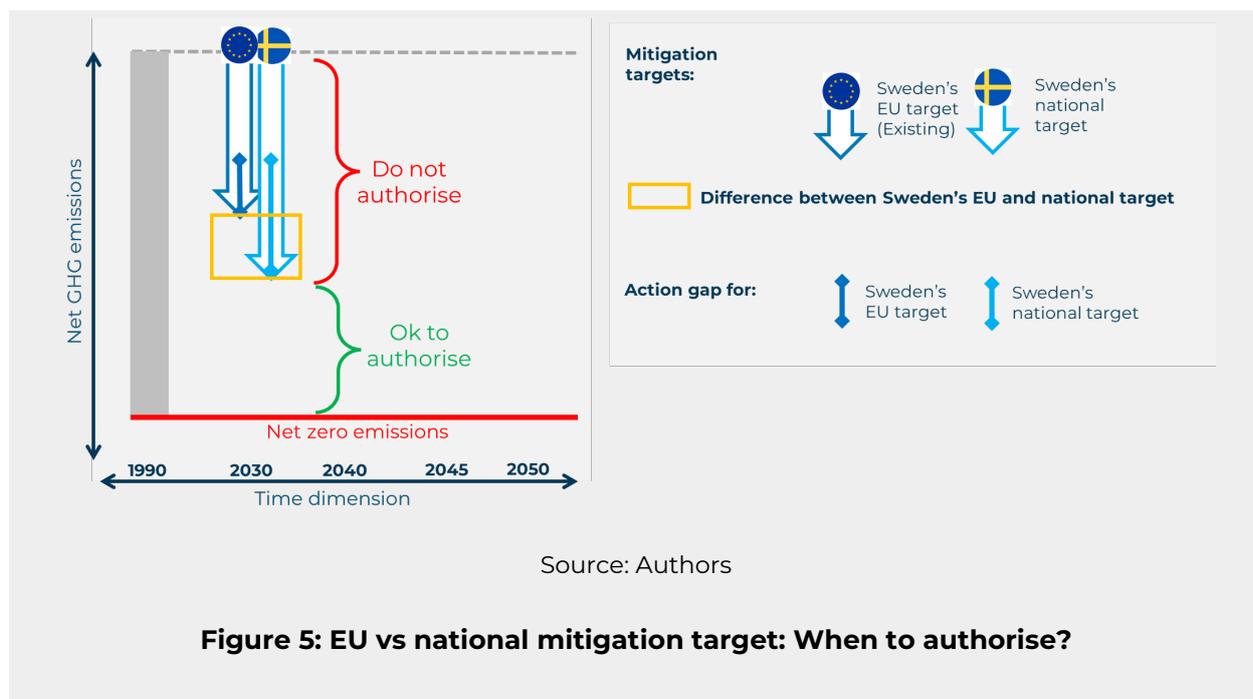
Box 6. Swedish case study – Authorising carbon credits from Sweden

In principle, Sweden should only authorise mitigation outcomes that are additional, reflected in the national inventory and within the scope of Swedish national targets, and not needed to achieve national targets. Sweden should not authorise any mitigation outcomes that it wishes to count towards Swedish EU targets or other national targets, since authorisation would commit Sweden to making CAs to its national emissions balance that prevent Sweden from counting these mitigation outcomes towards its national targets.

Removals from bio-CCS activities (i.e., capture and storage of carbon based on sustainable biomass) are currently outside the scope of the EU NDC but within the scope of the Swedish national mitigation target. Since there are currently no bio-CCS activities, associated removals are not yet shown in the Swedish GHG inventory. Existing IPCC GHG inventory guidelines enable the inclusion of removals from bio-CCS in national GHG inventories. To date, this possibility has not yet been used by any country but Sweden could use this for bio-CCS removals that it wishes to count towards its national targets. It is currently unclear if, how and when Sweden could count bio-CCS removals towards the Swedish EU targets. This depends on the development on EU legislation relating to the reporting and accounting of removals towards EU targets. By contrast, bio-CCS based on the capture and storage of biomass that is not (demonstrated to be) sustainable is treated as fossil-based CCS, not as removals but as emission reductions. Emissions and emission reductions relating to unsustainable biomass show up in the EU GHG inventories and are already included in the scope of the EU targets.

In general, it is in Sweden's national interest to count the mitigation outcomes associated with bio-CCS activities that are subsidised with public funds towards its national targets. In case of blending of subsidies with carbon finance, Sweden could agree to authorise part of the mitigation outcomes (e.g., the pro rata share of carbon finance) and count the rest towards the Swedish national targets, in order to leverage additional carbon finance for bio-CCS. This would allow the activity developer to generate and sell ITMOs for use for CORSIA compliance or credible voluntary offsetting. Note that the activity could also generate non-authorised carbon credits (see below).

However, in practice, as an EU MS, Sweden cannot currently authorise ITMOs or apply CAs or similar adjustments (e.g., cancellation of excess AEAs) to its EU targets (see Box 5). In the absence of the possibility of EU-level adjustments, overachievement of the national target by an amount equivalent to the CA and earmarking it to specific mitigation outcomes could serve as a form of avoiding double claiming. However, at the EU level, some of this overachievement could be used to compensate for possible underperformance by other EU MSs. The need for the MSs' national emissions balances to add up to the EU's collective emissions balance may restrict individual MSs' ability to adjust their national emissions balances to exclude additional mitigation achieved within their borders from being accounted towards EU targets. This would not necessarily be known until the end of the compliance period. Furthermore, Sweden cannot currently implement certain provisions required in the Initial Report, which must be submitted upon the first ITMO authorisation.



4. High-integrity use of carbon credits, and related claims

Carbon credits can be used for compliance or voluntary purposes

Carbon markets are often divided into compliance carbon markets and voluntary carbon markets, depending on whether GHG units are used for compliance or voluntary purposes. Compliance markets typically refer to markets for emissions allowances while voluntary carbon markets refer to markets for carbon credits. Article 6 carbon markets typically refer to trading of Article 6 units between countries for use towards their NDCs.

In reality, however, the distinction is less clear, since some carbon credits may be used for voluntary or compliance purposes.¹² Figure 6 summarises different options for carbon credit generation and use, and illustrates the role and interplay between voluntary carbon markets and Article 6 of the Paris Agreement. Carbon credits can be authorised under Article 6.2 for compliance use (towards NDCs or international targets such as CORSIA). They can also be authorised for other uses, such as voluntary ambition-raising. Authorised carbon credits, i.e., ITMOs, could also be used for delivering an OMGE, which is mandatory

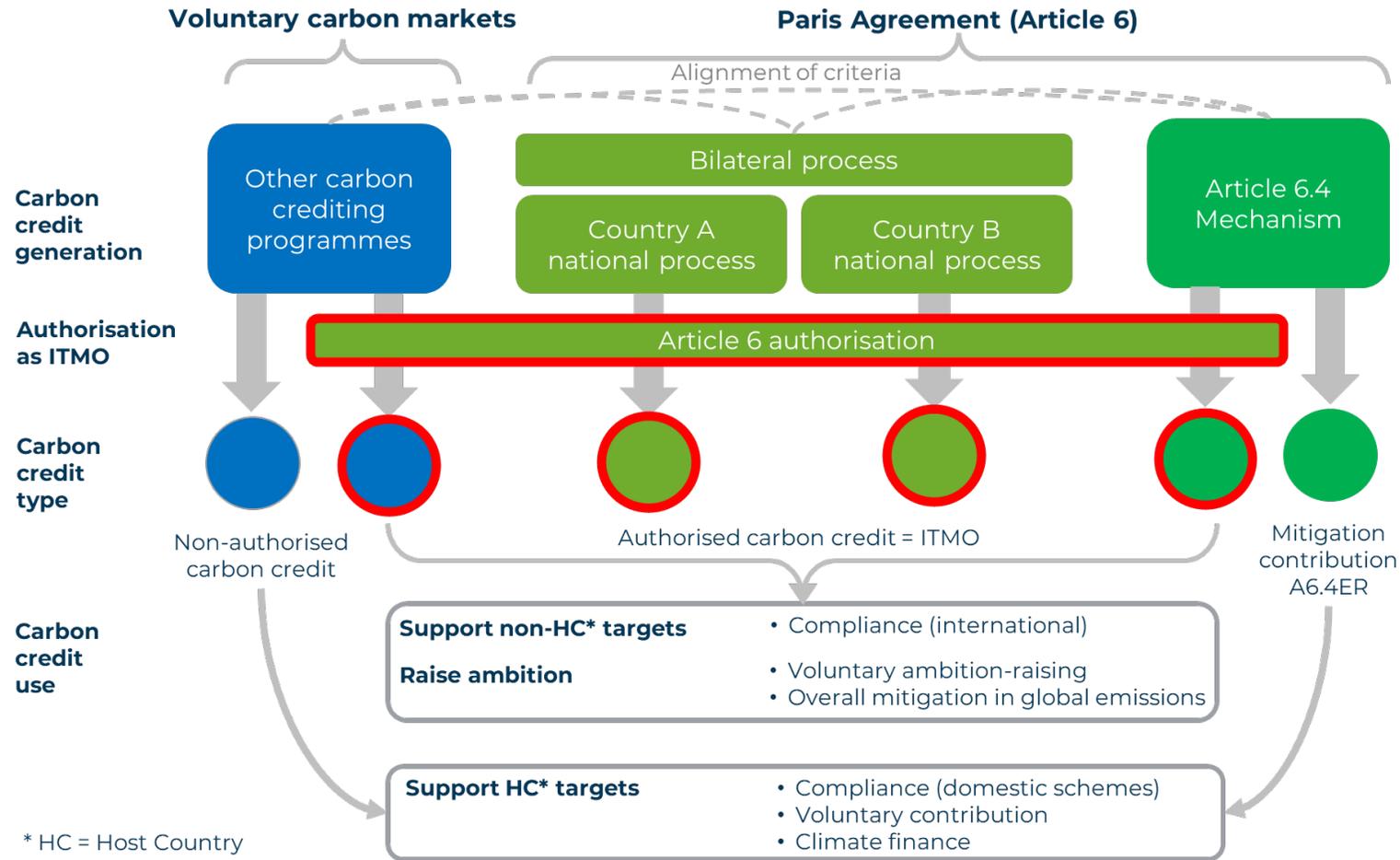
¹² Emissions allowances are sometimes also used for voluntary purposes.

under A6.4M and optional for Article 6.2 and the voluntary use of carbon credits. Some non-authorized carbon credits, issued under or outside A6.4M, may be eligible for domestic compliance within the host country (e.g., under a carbon tax or ETS), to support the achievement of the national target. Carbon credits may also be used for receiving international climate finance or national subsidies. At the time of trading, it may not yet be known whether a carbon credit will ultimately be used for compliance or a voluntary purpose, or for some other purpose.

Table 4. Different carbon credit types, use cases and gaps addressed

	Article 6 carbon credits		Non-Article 6 carbon credits
	Art 6.2	A6.4M	
Not authorised	n/a	<p>Name: Mitigation contribution A6.4ERs</p> <p>Use cases:</p> <ul style="list-style-type: none"> • Compliance: Domestic (e.g., carbon tax, cap-and-trade) • Voluntary: Mitigation contribution • Climate finance <p>Gap addressed: Action gap</p>	<p>Name: Various</p> <p>Use cases:</p> <ul style="list-style-type: none"> • Compliance: Domestic (e.g. carbon tax, cap-and-trade) • Voluntary: Mitigation contribution • Climate finance <p>Gap addressed: Action gap</p>
Authorised	<p>Name: ITMO (including authorised A6.4ERs)</p> <p>Use cases:</p> <ul style="list-style-type: none"> • Compliance: International (NDCs, CORSIA) • Voluntary: Offsetting <p>Gaps addressed:</p> <ul style="list-style-type: none"> • Implementation gap (NDC compliance) • Ambition gap (CORSIA compliance, voluntary offsetting) 		n/a

Source: Authors



Source: Authors

Figure 6: Carbon credit generation, authorisation and use

Many climate-related claims are based on the voluntary use of carbon credits

The demand for the voluntary use of carbon credits is driven by non-state actors' desire to support voluntary climate action and make related claims. An increasing number of non-state actors are making commitments to take climate action, such as by supporting mitigation beyond their boundaries and value chains. Many of them rely partly on the voluntary use of carbon credits to meet their commitments.

Many organisations also use carbon credits to make claims about the organisation, product or service. These claims are typically directed at consumers as part of marketing, and increasingly also at a wider set of stakeholders, such as shareholders, investors and employees as part of their sustainability reporting.

Typical claims relating to the voluntary use of carbon credits include 'offsetting', 'carbon neutrality/climate neutrality', 'net zero' and 'mitigation contribution/impact'. At the sub-global level¹³, there are currently no universally accepted definitions for these claims, and they are understood and used in different ways.

- Claims about **offsetting** are based on the voluntary cancellation of carbon credits for the purpose of counterbalancing an equivalent amount of emissions (for example, associated with an organisation, product or service), such that the combined contribution of these carbon credits and emissions to global GHG emissions is zero (Ahonen et al. 2022). The IPCC defines offsetting as “the reduction, avoidance or removal of a unit of GHG emissions by an entity that is purchased by another entity to counterbalance their own unit of GHG emissions” (IPCC n.d.). The offsetting entity’s contribution to global emissions is reduced by the amount represented by the carbon credits. According to the UNFCCC Race to Zero (2021), offsetting claims are only valid under strict conditions, including that the associated mitigation outcomes involved are additional, accurately quantified, and exclusively claimed.
- Claims about **carbon neutrality/climate neutrality**, at the sub-global level, refer to offsetting the full carbon¹⁴ footprint (for example, of an organisation, product or service) over a specific time span.
- Claims about **net zero**, at the sub-global level, refer to a situation where an entity has successfully reduced its own value chain emissions in line with a 1.5°C-aligned pathway and counterbalanced any residual emissions with mitigation outcomes in the target year to reach net-zero emissions. The main net-zero guidelines for non-state actors requires

¹³ At the global level, IPCC (n.d.) defines carbon/climate neutrality and net zero as synonyms, i.e., as a balance between global carbon dioxide/greenhouse gas emissions and removals.

¹⁴ The term “carbon” is commonly used to refer also to other greenhouse gases besides carbon dioxide.

that residual emissions are counterbalanced specifically with removals (i.e. not with emission reductions, see Box 7), mirroring IPCC's definition for global net-zero and carbon/climate neutrality (ISO 2022 SBTi 2023a, UN Expert Group 2022). Note that, unlike offsetting and carbon neutrality, net-zero claims include only a very limited role for carbon credits for covering residual emissions to achieve net zero in the target year (and beyond). Some net zero guidelines include explicit requirements to avoid double counting while others, such as the SBTi (see below) do not.

- Claims about **mitigation contribution/impact** are based on the voluntary cancellation of carbon credits to support the achievement of national mitigation targets, NDCs under the Paris Agreement and any national mitigation targets beyond the NDC (Laine et. al. 2023). The entity making a contribution claim does not make any claim about counterbalancing (i.e., offsetting) its own emissions.

Moving from a focus on traditional offsetting to a broader range of carbon credit uses

In the Kyoto era, the voluntary use of carbon credits focused on offsetting and carbon neutrality claims. Between 2008 and 2021, only 10-20% of global emissions were covered by national mitigation targets under the Kyoto Protocol. The voluntary carbon markets focused on generating carbon credits in countries without targets, and they were mainly used for offsetting and making carbon neutrality claims. These carbon credits represented mitigation beyond national targets and addressed the (extremely large) Kyoto-era ambition gap. An interesting case was the government of Sweden, who voluntarily cancelled the carbon credits that it had purchased and received by 2019 (Ministry of Climate and Enterprise 2023, p. 106). Of the 32.6 million Kyoto credits delivered to Sweden by June 2023, slightly over 640 000 credits will be used towards meeting Sweden's Kyoto target.¹⁵ The rest have been or will be voluntarily cancelled as a contribution to global ambition-raising. The finance from the purchase of voluntarily cancelled carbon credits has been reported as international climate finance.

In the Paris era, the voluntary use of carbon credits is diversifying beyond traditional offsetting. From 2021, national targets are being implemented worldwide under the Paris Agreement. The expansion of national targets reduced but has not yet fully closed the global ambition gap. Thus, there is still a role for the voluntary carbon market to cater for "traditional" offsetting, that is, supporting mitigation beyond national targets to address the global ambition gap. In addition, countries need support in closing action gaps and enhancing their national targets over time. This opens up a new role for the voluntary carbon markets, and a new voluntary use case for carbon credits of contributing to the achievement of national targets and making related contribution claims. The current demand for contribution claims is still limited. Non-state actors are accustomed to offsetting and

¹⁵ Personal communication with Erland Kjellén, Swedish Energy Agency, 15 June 2023.

carbon neutrality claims, and many of them have climate targets or commitments that rely on traditional offsetting. Interest in contribution claims may increase over time, if non-state actors see value in such claims and adjust their targets and commitments accordingly (Kreibich & Schöneberg 2023).

Some stakeholders have questioned the meaningfulness and value of corporate carbon neutrality claims. For example, a study commissioned by the Swedish Consumer Agency found that claims like 'climate neutral', 'climate compensated' and 'net-zero' are unclear or imprecise, consequently affecting the average consumer's decision-making based on these claims (Swedish Consumer Agency 2021). Lack of clarity on the claims makes it difficult to judge the credibility of underlying mitigation activity and carbon credits and identify if the product will still have an adverse environmental impact due to remaining emissions it produces. The French Agency for Ecological Transition (ADEME) also cautions against using carbon neutrality claims, since they may create a misperception that a carbon neutral operator, product or service has no negative impact on the climate when this is not the case. As an alternative, ADEME recommends that organisations communicate their own emissions and emission reductions, as well as any additional support for and how they have supported mitigation activities as a contribution to collective carbon neutrality (ADEME 2022). WWF (2020) and Carbon Market Watch (2021, 2022) have presented similar views.

Consumer protection regulation provides the basis for governing claims

Claims targeted at consumers are governed by national consumer protection regulations. Such regulation directly impacts the types of claims that can be made and how they must be substantiated to avoid false, deceptive, or misleading environmental claims ("greenwashing") and empower consumers to make informed decisions. Claims are required to be truthful, not misleading, transparent, robust and substantiated (ICC 2021).

Climate-related claims have been found to be particularly prone to being unclear, ambiguous and misleading (European Commission 2023). Several international and national actors have provided specific guidance on climate-related claims and further guidance is expected.

At the international level, the International Chamber of Commerce (ICC)'s (2021) framework for responsible environmental marketing communications includes guidance for applying ICC principles to, inter alia, climate-related claims. It notes that qualifiers may be needed to provide sufficient transparency and clarity of the claim and avoid misperceptions about the claimed benefit to climate goals or having no negative environmental impact where that is not the case. Reductions in own emissions should be clearly distinguished from offsetting. Marketers should rely on "generally accepted definitions" and provide information to clarify the meaning to consumers. The framework calls for careful consideration when using climate-related terms since they may be defined in different ways and/or require different substantiating information. Providing access to the actual substantiating information may increase confidence in the validity of such claims.

At the regional level, the EU is in the process of strengthening its consumer protection regulation to address greenwashing, including through proposed changes to the Unfair Commercial Practices Directive (UCPD) and a complementary proposal for a Directive on Green Claims (European Commission 2023). The UCPD proposal includes banning generic environmental claims (including climate-related claims such as carbon neutral) without recognised excellent environmental performance relevant to the claim and banning sustainability labels which are not based on a certification scheme or not established by public authorities (European Commission 2022b, p. 2). It also proposes prohibiting climate-related claims, “following a case-by-case assessment, when they are not supported by clear, objective and verifiable commitments and targets given by the trader” (id., p. 18). The European Council (2023) has proposed to also require that such claims are verified by an independent third-party expert. The European Parliament’s Committee on the Internal Market and Consumer Protection (2023c) considers carbon neutrality claims “highly misleading to consumers” and has suggested banning carbon neutral claims and labels, when they are solely based on carbon offsetting or are not supported by “quantified, science-based” targets by the trader. The committee has also proposed that “specific provisions on claims related to offsetting should be set out in and aligned to a future Union legislative act on green claims” (id. amendment 12). The proposal for a Green Claims Directive (European Commission 2023) complements the UCPD with more specific rules that aim to promote the trustworthiness, comparability and verifiability of green claims made in the EU. Regarding climate-related claims, such as carbon neutral and net zero, the proposal recommends prioritising reductions in own value chain emissions. Offsetting is also deemed appropriate, subject to transparent reporting. Emissions must be reported separately from the use of carbon credits for offsetting, and information should be provided on whether the carbon credits are based on emission reductions or removals and ensure their integrity and correct accounting to “coherently and transparently reflect the claimed impact on climate”. The proposal recommends that the European Commission should have the power to adopt further complementary requirements on substantiation of certain types of claims.

At the national level, consumer authorities have developed guidance addressing climate-related claims, for example in Denmark and Norway (Kreibich et al. 2022). Iceland has developed a national standard for offsetting (Islandic Standards 2022). New Zealand (Ministry for the Environment 2022) and Finland (Laine et al. 2023) have published guides for voluntary mitigation action, including guidance on claims. In the Kyoto era, New Zealand provided comprehensive national guidance and procedures for avoiding double claiming between the national target and voluntary offsetting claims based on domestic mitigation (New Zealand Government 2021). New Zealand cancelled national Kyoto units against eligible voluntary mitigation outcomes (New Zealand Government 2021), which is equivalent to applying CAs to a national emissions balance. New Zealand is investigating potential options for enabling credible voluntary offsetting based on domestic mitigation outcomes also under the Paris Agreement (*id.*, 2020). This could involve the application of CAs under Article 6.2. The Finnish guide provides extensive guidance on avoiding double claiming, which is consistent with the recommendations of the Nordic Code (see below). France has a national

label (Label Bas Carbone) for national projects that contribute to the national mitigation target. The French climate legislation includes reporting and other requirements for companies that make carbon neutrality claims (Kreibich et al. 2022).

Several countries have set up national schemes to encourage non-state actors to voluntarily support domestic mitigation. The Peruvian Huella de Carbono, the Thailand Voluntary Emission Reduction Program (T-VER) and the Australian Climate Active are examples of national schemes that provide labels recognising non-state actors' contributions towards the collective national (carbon neutrality) targets (Laine et al. 2023). These schemes focus on encouraging non-state actors to voluntarily support mitigation that contributes towards national targets. They do thus not have any link to Article 6. Although these schemes are based on mitigation that contributes towards national targets, they do not distinguish between entity-level and collective carbon neutrality and typically allow carbon credit buyers to make carbon neutrality claims. By contrast, a New Zealand think-tank has proposed two distinct types of carbon neutrality claims: Carbon Neutrality Horizon based on carbon credits that contribute to New Zealand's NDC and Carbon Neutrality Frontier based on carbon credits that contribute to ambition-raising beyond national targets (Leining & White 2021). The latter would require the application of CAs under Article 6.2. Such dual claims could allow non-state actors to make carbon neutrality claims based on mitigation that counts towards national targets while still differentiating them from support for global ambition-raising. These additional qualifiers could enhance the clarity of and trust in carbon neutrality claims. In Finland, stakeholders have proposed a "Carbon Neutral Finland" label for domestic carbon credits that contribute to Finland's national carbon neutrality target (Laine et al. 2023).

The need to avoid double claiming for voluntary claims remains under debate

The main point of contention is whether and why double claiming should be avoided when making claims relating to the voluntary use of carbon credits.

There is consensus that double claiming should be avoided when using carbon credits towards national targets, i.e., that the same mitigation outcome should only be counted towards one national target. Under the Paris Agreement, double claiming is avoided by requiring the host country to apply a CA to its emissions balance for all mitigation outcomes that it authorises and first transfers in line with Article 6.2 of the Paris Agreement. Authorised mitigation outcomes are referred to as ITMOs and they represent mitigation that does not count towards the host country's NDC. ITMOs are thus available to be exclusively claimed by the acquiring entity, for example by another country towards its NDC or an airline towards compliance under CORSIA. ITMOs can also be voluntarily cancelled, thereby raising ambition beyond national targets. Double claiming can also be avoided by claiming mitigation that is beyond the scope of the host country NDC and/or not detected in its national GHG inventory. In such cases, the mitigation does not count towards the host country's NDC and claiming it for other purposes would not lead to double claiming with the host country NDC.

There is broad agreement that the voluntary cancellation of ITMOs (and carbon credits representing mitigation that is not covered by the host country's NDC and/or not detected in the national inventory) provides a credible basis for counterbalancing emissions, and hence for voluntary offsetting claims. In the context of voluntary climate-related claims, the need to avoid double claiming with national targets stems from the requirement for claims to be truthful, justified and not misleading. The underlying rationale is that only mitigation beyond existing national targets provides a true counterbalancing effect. Double claiming between two national targets leads to an increase in global emissions, while double claiming between a host country target and a voluntary offsetting claim would not lead to an increase in global net emissions. However, it would not lead to the decrease in global net emissions implied by the claim, and thus it would be considered false and misleading. Proponents also point out that, until 2021, voluntary offsetting claims were largely based on carbon credits that represented mitigation beyond national targets and, thus, a net decrease in global emissions relative to these targets.

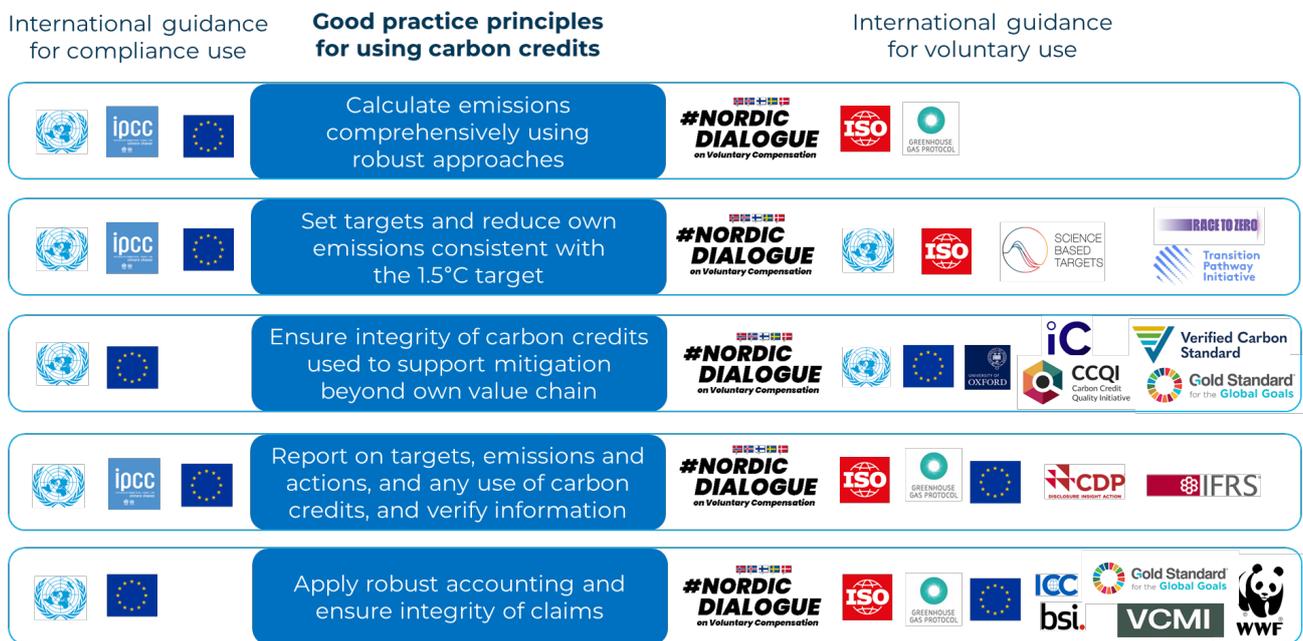
There is also broad agreement that climate-related claims should be accompanied by qualifying information, including on whether the carbon credit is associated with a CA. Qualifiers and labelling may help to address many of the current concerns relating to claims.

However, there are diverging views on whether carbon credits that represent mitigation towards national targets could provide a credible basis for voluntary offsetting claims. Proponents of allowing double claiming between voluntary offsetting and national targets point out that an increasing number of companies have committed to carbon neutrality targets and their demand for carbon credits is driven by the need to make offsetting and carbon neutrality claims. ITMO supply is currently virtually zero and is not expected to meet corporate demand for carbon credit at least in the near term. Proponents stress the importance of urgently mobilising private finance for additional mitigation action, whether in support of national targets or ambition-raising. In their view, allowing companies to make carbon neutrality claims for their support to additional mitigation beyond their value chain is pivotal for unlocking the private finance associated with corporate targets. Opponents of allowing double claiming between voluntary offsetting and national targets consider that using carbon credits for offsetting requires a unique claim to the underlying mitigation outcomes (Ahonen et al. 2022, GHG Protocol 2022). They stress the importance of public trust in climate-related claims as the basis of their value, and by extension, the value of the carbon credit markets as a whole. They do not, however, oppose corporate use of carbon credits that contribute to national targets. On the contrary, many non-governmental organisations (NGOs) strongly recommend using carbon credits to support national mitigation targets and recognise this as a valuable contribution to global mitigation efforts (e.g., Carbon Market Watch 2022, Compensate 2023, NCI 2022, WWF 2021). What they do oppose, however, is making offsetting and carbon neutrality claims based on such carbon credits, considering it misleading towards consumers and other stakeholders. Instead, they call for claims to communicate the type of contribution: offsetting claims communicate support for ambition-raising and contribution claims communicate support for national targets.

Using carbon credits to contribute to national targets is also recognised under Article 6 of the Paris Agreement. While ITMOs under Article 6.2 do not contribute to the host country target by design, A6.4ERs issued under the Article 6.4 Mechanism may contribute towards host country NDCs unless they are authorised as ITMOs. A6.4ERs that are not authorised are referred to as “mitigation contribution A6.4ERs” (UNFCCC 2023, Annex I, para. 29). Note that, in case the A6.4ER represents mitigation that is not covered by the host country NDC and/or not detected by the national GHG inventory, it does not contribute towards the host country NDC. Instead, it represents ambition-raising beyond NDCs.

International guidance on climate claims is evolving

International guidance on climate claims involving the voluntary use of carbon credits continues to evolve (Figure 7), with the aim to enhance clarity, trustworthiness, and comparability of such claims. The G7 (2021) stressed that carbon credits used for voluntary purposes should be based on accounting that ensures avoidance of all forms of double counting.

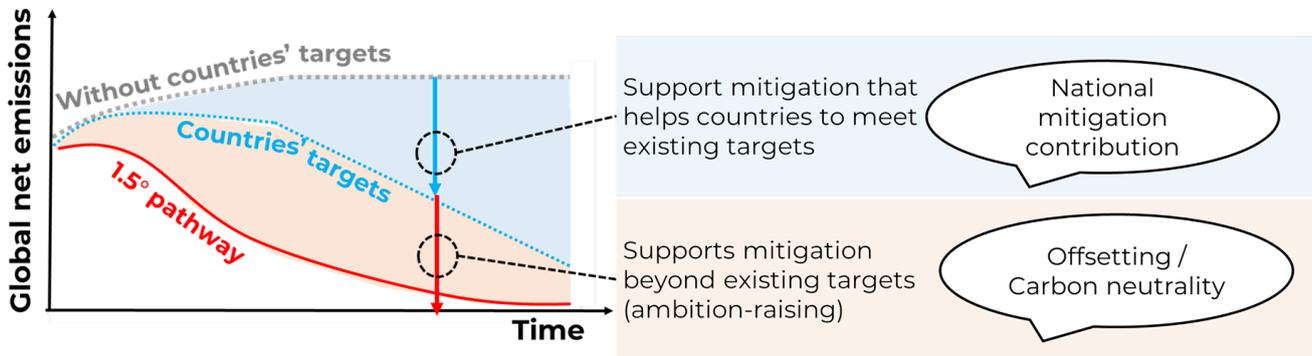


Adapted from: Ahonen et al. (2022) and Laine et al. (2023)

Figure 7: Good practice principles for the voluntary use of carbon credits

The **Nordic Code of Best Practice for the Voluntary Use of Carbon Credits** (hereafter referred to as the ‘Nordic Code’) (Ahonen et al. 2022) has many commonalities with the VCM Code, including an emphasis on 1.5°C-aligned target pathways for internal emission reductions and the use of high-quality carbon credits to complement rather than substitute internal mitigation efforts. Regarding claims, the Nordic Code recommends differentiation based on whether the mitigation associated with the carbon credits counts towards existing national target (“national mitigation contribution”). While the Nordic Code does not explicitly refer to CAs, the use of carbon credits associated with a

CA would meet the Nordic Code’s requirements for credible offsetting claims, as would using carbon credits based on mitigation not covered by the host country’s NDC and/or not detected in the national GHG inventory. The Nordic Code specifies that carbon neutrality claims should only be made by entities that have a 1.5°C-aligned target and are on track to achieving them.



Adapted from: Ahonen et al. (2022)

Figure 8: Differentiating claims based on contribution towards and beyond national targets

The **Voluntary Carbon Markets Integrity Initiative (VCMI)** (2022) has developed a provisional Claims Code of Practice (hereafter referred to as the “VCMI Code”) for claims related to the voluntary use of carbon credits on a pathway towards net-zero targets. To make VCMI claims, companies are required to set and demonstrate progress towards science-based long-term net-zero targets, and use high-integrity carbon credits to cover some or all of their remaining emissions, consistent with limiting global temperature increases to 1.5°C above pre-industrial levels. The VCMI Code includes enterprise-wide claims as well as brand-, product-, and service-level claims. The enterprise-wide claims represent “contributions to the collective global effort to transition to net zero emissions” (VCMI 2022, p. 28) and do not explicitly refer to offsetting. The VCMI Code requires information on whether the carbon credits used for VCMI claims are associated with a CA. The VCMI Code is being developed further, and the next iteration will be launched on 28 June 2023 (VCMI 2023a).

The **GHG Protocol’s Land Sector and Removals Guidance** (GHG Protocol 2022) provides guidance for reporting emissions and removals from land-based activities and technological carbon dioxide removal activities in corporate GHG inventories and accounting for progress towards corporate GHG targets. It includes detailed guidance on avoiding double counting, including requirements and guidance to avoid double claiming of mitigation outcomes that have been credited as carbon credits and sold and used for offsetting purposes. The requirements and guidance for offsetting applies also to avoiding double counting between Scope 3 emissions and insetting¹⁶. According to the

¹⁶ Insetting refers to the use of ‘inset’ credits stemming from activities that reduce emissions or increase removals within the reporting company’s value chain, while applying the same quantification methods as offset credits. Inset credits can be used

protocol, “double claiming can be avoided by through contracts between buyers and sellers that transfer ownership of credits and calculating emissions and removals values adjusted for sold credits” (id., p. 235).

The **ISO 14068 standard for carbon neutrality** is currently under development and aims to establish principles and guidelines for demonstrating and claiming carbon neutrality. It is expected to be finalised by the end of 2023 (Bsi n.d.).

The **Oxford Principles for Net Zero Aligned Carbon Offsetting** (Allen et al. 2020) are currently under revision¹⁷. The original principles highlight the importance of prioritising own emission reductions and ensuring environmental integrity and transparency. They recommend increasing the share of carbon credits based on removals over time, reaching 100% by mid-century.

The **Gold Standard Foundation** and **Verra** focus on administering programmes for issuing carbon credits but have also provided guidance on making claims based on their carbon credits. In the context of the Paris Agreement, the Gold Standard claims guidance recommends claimants to use carbon credits associated with a CAs to make offset-based claims to avoid the risk of double claiming (Gold Standard 2022). Verra, on the other hand, allows the use of mitigation outcomes without CAs for making offset-based claims, provided claimants transparently communicate that the mitigation outcomes accrue to the host country (Verra 2021).

The **World Wide Fund for Nature (WWF)** promotes the view that CA-backed carbon credits should be used to make ‘compensatory’ claims that the emission reductions achieved go beyond the national mitigation targets. Non-CA-backed carbon credits should be used to make contribution and/or financing claims. (WWF 2019).

Regarding corporate net-zero claims, key providers of guidelines and standards are the **Science Based Targets initiative’s (SBTi) Corporate Net Zero Standard** (SBTi 2023a, b), **UN’s Race to Zero campaign** (UNFCCC 2022c), **ISO Net Zero Guidelines** (ISO 2022) and the **UN High-Level Expert Group on the Net Zero Emissions Commitments of Non-State Entities** (UN Expert Group 2022). These guidelines focus on non-state actors’ internal emission reductions, but also includes some consideration of the use of carbon credits for achieving and complementing the net-zero target. By design, the role of carbon credits in achieving the net-zero target is minimal, since entities are expected to deliver deep cuts in their value chain emissions, and only a low amount of residual emissions (max 5-10% under SBTi) are allowed. These should be covered with carbon credits based on removals (see Box 7). In late June 2023, SBTi launched a public consultation on the definition, nature

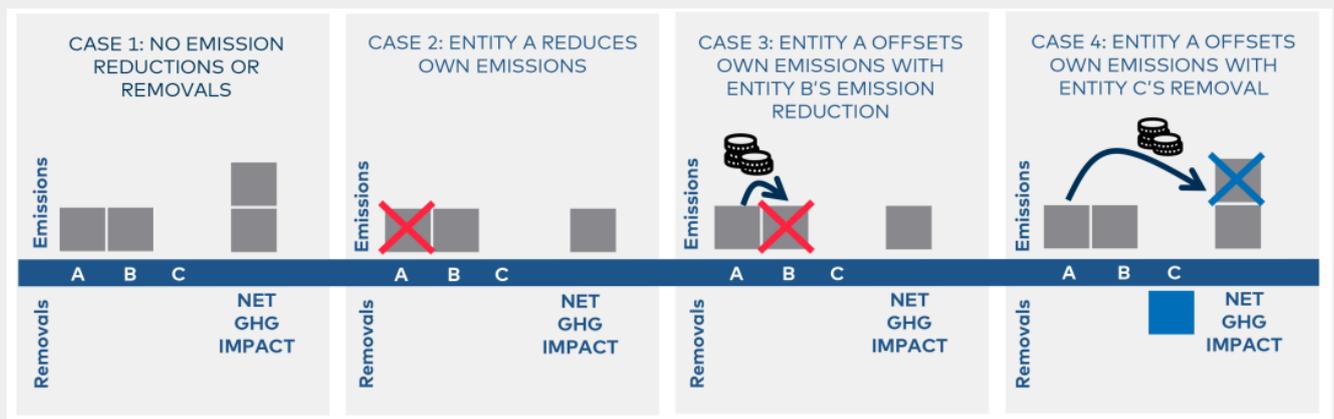
as a tool for ensuring that actions in the value chain are properly accounted for in the scope 3 inventory using an inventory accounting approach (GHG Protocol 2022).

¹⁷ Personal communication with Injy Johnstone on 24 May 2023.

and scale on beyond-value-chain mitigation, including activities that (seek to) reduce GHG emissions outside a company's value chain (SBTi 2023c). The ISO Net Zero Guidelines state that organisations must “ensure removals, credits or investments in offsets are not double counted or double claimed by multiple parties and are retired in public registries after single use.”¹⁸ In addition, these guidelines encourage non-state actors to complement their science-aligned value chain emission reductions and take responsibility for their remaining emissions by supporting mitigation beyond their value chain, including through carbon credits. Beyond-value-chain-mitigation enables non-state actors to contribute more to global mitigation efforts than what would be possible through internal emission reductions only.

Box 7. Using carbon credits based on emission reductions vs removals

While reaching net zero at the global level requires the counterbalancing of residual emissions in the target year with removals, this would not necessarily be required at the sub-global level. The current guidance for corporate-level net-zero mimics the global net zero definition (but notably not the global carbon neutrality definition). This seems to be based on the perception that the net impact on global emissions of counterbalancing using carbon credits based on emission reductions would be different from using removals-based carbon credits, also at the sub-global level. However, Ahonen et al. (2021) showed that, at the sub-global level, the net impact on global emissions is the same regardless of whether entity A counterbalances its emissions based on emission reductions or removals (see Figure 3).



Source: Ahonen et al. 2021b

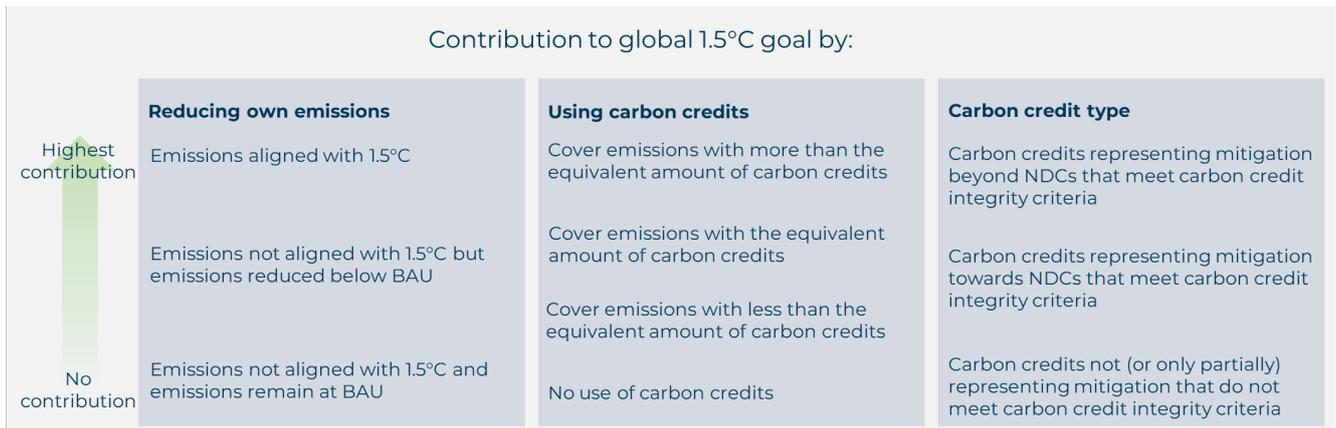
Figure 9: Net GHG impact of emission reductions and removals

A non-state actor’s contribution to global mitigation efforts consists of the reductions in its value chain emissions and any use of carbon credits. The highest contribution to global mitigation would be achieved by reducing own value chain emissions in line with the 1.5°C pathway and

¹⁸ Section 9.1.2 (q)

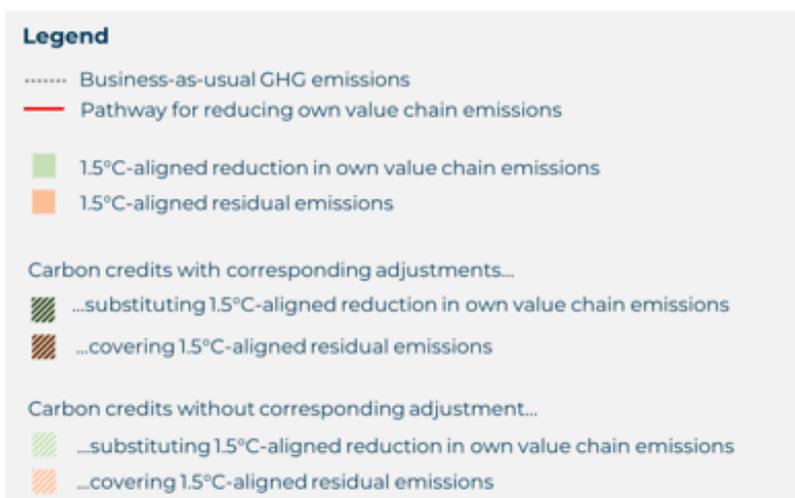
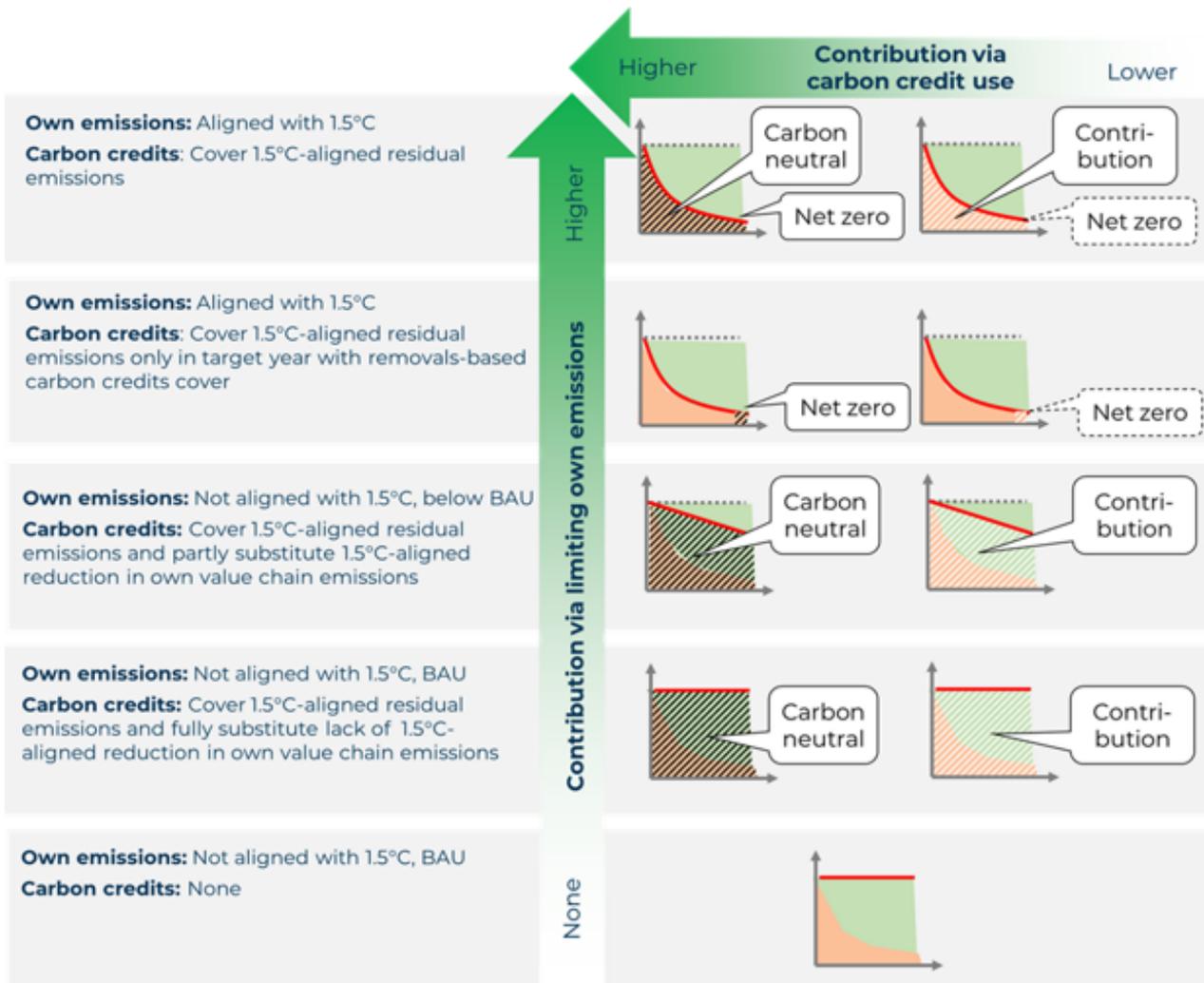
covering any residual emissions with carbon credits that represent mitigation beyond national targets (see Figure 10 and Figure 11).

When reporting an entity’s contribution to global emissions and mitigation, it is important to distinguish between GHG inventories of emissions and removals, quantification and crediting of additional mitigation outcomes relative to a baseline (reference) scenario and emissions balances for tracking progress in implementing and achieving of GHG targets (including any transfers or use of carbon credits). This helps to distinguish between double reporting and double counting. While double reporting does not pose a risk to environmental integrity, double counting may or may not pose a risk to environmental integrity, depending on how the reported information is used (GHG Protocol 2015) (see Box 8).



Source: Perspectives Climate Group 2023

Figure 10: Options for contributing to the global 1.5°C goal



Source: Perspectives Climate Group 2023

Figure 11: Contributing global mitigation by limiting own emissions and using carbon credits

Box 8. Reporting and accounting emissions and carbon credit use at different levels**What is a GHG inventory?**

GHG inventories provide an estimate of the emissions and removals of an entity, such as a country, city or organisation. Robust inventories are based on internationally recognised guidance. The Paris Agreement requires countries to prepare annual¹⁹ GHG inventories of emissions and removals within their boundaries in line with the 2006 IPCC Guidelines for National Greenhouse Gas Inventories. The GHG Protocol provides guidance for cities and corporate-level inventories.²⁰ GHG inventories are statements of emissions and removals within a certain boundary: a national inventory reports emissions and removals that happen within the national boundaries, a city-level inventory focuses on emissions and removals within the city's boundaries and/or and a corporate-level inventory focuses on the corporate value chain.

The boundaries and scopes of the GHG inventories can vary. According to the Paris Agreement, national GHG inventories shall cover emissions and removals for the energy sector, industrial processes and product use, agriculture, LULUCF and waste sectors, for seven GHGs²¹. For cities, the GHG Protocol provides guidance for two complementary frameworks: one focusing on geographically defined emissions and the other on city-induced emissions. For corporates, the GHG Protocol provide guidance for companies to report their direct and indirect emissions, including their direct (scope 1) emissions (scope 1), indirect emissions from their electricity use (scope 2); and other indirect emissions (scope 3).

How does activity-level crediting relate to inventories?

The generation of carbon credits is also based on monitoring and reporting of emissions, but it also requires the demonstration of additionality and setting of a crediting baseline. While inventories focus solely on emissions and removals, the quantification and carbon crediting of activity-level mitigation outcomes focuses on additional reductions in emissions and enhancements in removals attributed to the activity, defined as the difference between activity-level emissions or removals and a baseline (reference) scenario. This is sometimes referred to as "consequential" accounting (Hewlett 2022). Carbon crediting aims to quantify the additional reductions in emissions and enhancements in removals that happen as a direct result of the activity and would not have occurred otherwise. By contrast, inventories do not provide insights on *why* the emissions and removals are at the level reported.

The additional mitigation outcomes achieved by an activity may be reflected in the inventory as lower emissions or higher removals, but only to the extent that the inventory detects changes in emissions and removals at the activity-level. This depends on the methods applied to the national inventory and the activity-level crediting. When the national inventory and crediting are based on the same methodological approach and measurement data, the activity-level impact on emissions and removals may be fully reflected in the national inventory. By contrast, where the inventory applies methods based on default factors, the activity-level impacts may not be reflected in the inventory at all. In case of sampling, the activity-level impacts may be reflected in the inventory only if the activity is part of the sample.

¹⁹ Developed countries are required to submit national GHG inventories on an annual basis while developing countries must submit their inventories on a biennial basis.

²⁰ The Global Protocol for Community-Scale Greenhouse Gas Emission Inventories and Corporate Accounting and Reporting Standard and Land Sector and Removals Guidance

²¹ The Paris Agreement provides some flexibility to developing countries in excluding certain emission categories, but requires a justification for any exclusions.

When does double counting occur and when does it matter?

Whether double counting matters depends on how the reported information is used (GHG Protocol 2015). Double counting matters when an entity uses the reported information to make claims (e.g. about being carbon neutral or achieving its GHG target) based on mitigation outcomes that have been sold or bought as carbon credits.

It is inevitable that national, city-level and corporate-level boundaries overlap to some extent. Thus, the same emissions and removals may be reported in multiple inventories. Some “double reporting” is natural and does not undermine environmental integrity.

In inventories, double counting occurs when two or more entities of the same level (e.g. two countries, two companies or two cities) report the same emission or removal in the same scope in their inventory. In the case of countries and cities, geographically defined inventories allow for the aggregation of multiple country/city inventories while avoiding overlapping scopes and thus, double counting. For corporates, the GHG Protocol guidance defines scopes 1, 2 and 3 as mutually exclusive for the reporting company and includes guidance for scopes 1 and 2 to avoid the same emissions or removals being reported in the same scope by two or more companies. By definition, the scope 1 emissions or removals of one company may be reported in scope 3 of another company. As a result, scope 3 emissions or removals should not be aggregated across companies to determine the total emissions or removals in a given region.

The purchase and sale of carbon credits can also lead to double counting, when multiple entities claim the same emission reduction or enhancement in removals for the purposes of achieving a target and/or counterbalancing (offsetting) emissions. This type of double counting is referred to as double claiming. The Paris Agreement requires avoiding double claiming between two or more national targets, and the GHG Protocol requires avoiding double claiming between multiple entities, e.g., two companies, or one company and the host country government. Double claiming can be avoided by adjusting emissions balances for the purchase and sale of carbon credits when accounting for progress towards targets.

What is an emissions balance?

An emissions balance reflects the level of emissions and removals covered by a climate target, adjusted for any mitigation outcomes (e.g., carbon credits) acquired from or transferred to other entities. It provides the basis for tracking progress towards and achievement of targets that are defined in terms of net emissions. In case where the target has the same scope as the inventory and no mitigation outcomes have been acquired or transferred, the inventory serves as the emissions balance. It is compared with the (pathway towards achieving the) target to assess progress towards and achievement of the target.

If an entity buys or sells mitigation outcomes (e.g. carbon credits) for the purposes of counterbalancing emissions, emissions balances must be adjusted accordingly to avoid double counting. Countries may buy ITMOs to counterbalance any national net emissions that exceed their target level, and non-state entities may buy carbon credits to counterbalance their remaining emissions with mitigation outcomes achieved outside of its boundaries. An entity that has overachieved its targets may sell excess mitigation outcomes to other entities. To avoid double claiming, entities involved in the transaction should adjust their emissions balances accordingly: adjusting the emissions balance downwards for mitigation outcomes bought and upwards for mitigation outcomes sold. It is important to stress that these adjustments are not applied to the inventory but to the emissions balance, which is related but distinct from the inventory.

Box 9. Swedish case study – High-integrity use of carbon credits and related claims

As a rule of thumb, all mitigation (including from Swedish bio-CCS) achieved in Sweden, as well as international carbon credits purchased by Sweden, count towards the national target, with the exception of any mitigation that is authorised by Sweden as ITMOs or backed up by an over-achievement of the national targets. Thus, even any mitigation that may be counted at the EU level to compensate for underperformance by other EU MSs could reasonably be counted towards demonstrating achievement of the national target. Claims relating to the use of such carbon credits should be clear about this, i.e., make clear that the revenue from the sale of the carbon credits supports Sweden in meeting its national mitigation targets, in line with the recommendations of the Swedish Energy Agency (2023b).

In principle, additional mitigation outcomes from Swedish bio-CCS and biochar activities that are authorised by Sweden can be sold by the activity developer as ITMOs to voluntary and compliance markets for use towards other NDCs, CORSIA compliance or voluntary offsetting. Non-authorised carbon credits can also be sold in carbon markets. These carbon credits can be credibly used by (international or domestic) buyers for mitigation contribution claims, meaning that the buyers communicate that they are supporting the achievement of Sweden's national targets through the purchase of carbon credits to the extent that this mitigation shows up in the Swedish GHG inventory and is within in the scope of Sweden's national targets. This effectively represents a voluntary subsidy by the carbon credit buyer for supporting Sweden's national mitigation efforts. This could be the case for blending of subsidies and carbon finance, if Sweden authorizes no or only part of the mitigation from a Swedish bio-CCS activity and carbon credits are issued for all the mitigation outcomes. To the extent that non-authorised carbon credits represent mitigation that is not detected in the national inventory, they could be used for voluntary offsetting without the risk of double claiming.

From the perspective of raising global ambition, using carbon finance to subsidise mitigation action that would otherwise receive sufficient subsidies is less effective than channelling carbon finance to additional mitigation that would not otherwise be financially attractive. In case of high-cost activities such as bio-CCS in high-ambition contexts such as Sweden, this could include activities that help to close the implementation gap and demonstrate the feasibility and benefits of ambitious targets, including activities that receive a partial subsidy on the condition that they leverage additional finance. In less ambitious contexts, carbon finance may be most effective in driving mitigation ambition if it focuses on closing the ambition gap. This is because there are very few other tools available for mobilising finance for the pressing need to close the ambition gap while there are several other tools (including international climate finance) for closing the implementation gap. This said, the ambition gap can only be truly closed if the implementation gap is also closed. Thus, it is important to address the implementation gap, ideally through enhanced national policies and effective international climate finance.

Ultimately, it is the buyer and end user of the carbon credits who decides how to use its carbon credit, and whether and what related claims to make, and it is up to the end user's national authorities to regulate any claims made.

Note that the Swedish government can only control claims (1) to the extent that it has exclusive contractual carbon rights relating to mitigation outcomes from certain activities (e.g., bio-CCS activities that it subsidises); and/or (2) that are made by domestic buyers of carbon credits (through national consumer protection regulation). It cannot control the claims made by international buyers based on mitigation outcomes that Sweden does not contractually have exclusive carbon rights for. Sweden can, however, provide clear public information about the extent to which carbon credits from Swedish bio-CCS activities are (1) authorised, do not count towards Sweden's national targets and thus suitable for use towards NDCs, CORSIA compliance and credible voluntary offsetting claims; and (2) not authorised and count towards Sweden's national targets and thus suitable only credible mitigation contribution claims, not (credible) offsetting

claims. If Sweden is not clear about this, it may face a reputation risk of being associated with claims of questionable integrity.

The Swedish bio-CCS activity developers cannot control the claims made by carbon credit buyers, but they have full control over how they market their carbon credits to potential buyers. They should clearly communicate to potential buyers the extent to which the mitigation associated with the carbon credits is counted towards Sweden's national targets and effectively constitutes a voluntary subsidy to help Sweden in meeting its targets.

In its reporting to the EU and Paris Agreement, Sweden could include information on progress towards achieving its national target (beyond Sweden's EU targets), including information of the extent to which different activities and mitigation outcomes (such as bio-CCS) contribute towards Sweden's national targets, differentiating to the extent possible between Sweden's EU targets and beyond.

As for potential use of international carbon credits (beyond Sweden's EU target), Sweden may use carbon credits towards national target (beyond Sweden's EU target), and may, in the spirit of transparency and full disclosure, include in its reporting to the EU and Paris Agreement information about its use of carbon credits to achieve and potentially overachieve its national target. Sweden could note that this represent ambition-raising relative to Sweden's EU targets and are thus not considered to be ITMOs used towards NDCs. It is unclear if, how and when EU would enable/require MS to report on their possible overachievement to the EU, and how EU would, in turn, report possible MS-level/collective overachievement in its reporting to the Paris Agreement. It is also unclear how these would be reflected in the Union registry and its functions.

Swedish corporates that use carbon credits, including from Swedish bio-CCS activities, would need to report information relating to these carbon credits in line with the proposed EU Directive on corporate responsibility reporting.

5. Conclusions

In the Paris era, carbon credits can play valuable roles in channelling public and private finance for closing both the action and ambition gaps, if their integrity and robust accounting are ensured, and their use is transparently communicated, including how it complements ambitious climate targets and action by countries and non-state actors. Article 6 provides international frameworks and benchmarks also for the VCM. Carbon credits that are not authorised as ITMOs contribute to the achievement and enhancement of host country's national targets, while ITMOs can be used to contribute to other countries' targets or, through voluntary cancellation, to global ambition-raising. Claims related to the voluntary use of carbon credits should avoid double claiming and clearly distinguish between contributions towards and beyond national targets.

Safeguarding the integrity of carbon credits and their use requires continuous improvements, and continued interplay between VCM good practices, regulation and the operationalisation of Article 6 cooperation. Carbon market regulators, activity developers, carbon credit buyers and other stakeholders all have a role in promoting a race to the top and innovating solutions that foster high integrity.

References

- ADEME (2022): Use of the carbon neutrality argument in communications. ADEME Guidelines, <https://librairie.ademe.fr/developpement-durable/5609-use-of-the-carbon-neutrality-argument-in-communications.html> (accessed June 7, 2023)
- Ahonen, Hanna-Mari; Berninger, Kati; Keßler, Juliana; Möllersten, Kenneth; Spalding-Fecher, Randall; Tynkkynen, Oras (2022): Harnessing voluntary carbon markets for climate ambition: An action plan for Nordic cooperation, <https://www.norden.org/en/publication/harnessing-voluntary-carbon-markets-climate-ambition> (accessed 4 June 2023)
- Ahonen, Hanna-Mari; Kessler, Juliana; Michaelowa, Axel; Espelage, Aglaja; Hoch, Stephan (2021a): Governance of Fragmented Compliance and Voluntary Carbon Markets Under the Paris Agreement, in: *Politics and Governance*, 10, p. 235-245
- Ahonen, Hanna-Mari; Möllersten, Kenneth; Spalding-Fecher, Randall (2021b): Voluntary compensation of greenhouse gas emissions. International guidance and initiatives, <https://pub.norden.org/temanord2021-541/temanord2021-541.pdf> (accessed June 4, 2023)
- Allen, Myles; Axelsson, Kaya; Caldecott, Ben; Hale, Thomas; Hepburn, Cameron; Hickey, Conor; Mitchell-Larson, Eli; Malhi, Yadvinder; Otto, Friederike; Seddon, Nathalie; Smith, Steve (2020): The Oxford Principles for Net Zero Aligned Carbon Offsetting, <https://www.smith-school.ox.ac.uk/sites/default/files/2022-01/Oxford-Offsetting-Principles-2020.pdf> (accessed June 19, 2023)
- Bsi (n.d.): BS ISO 14068 Greenhouse gas management and related activities. Carbon neutrality, <https://standardsdevelopment.bsigroup.com/projects/2020-00508#/section> (accessed June 8, 2023)
- Cambio Climático (2021): Following COP26 climate talks, the San José Principles Coalition Recommits to Principles for High-Integrity Carbon Markets, Pledges to Act on Them Together, <https://cambioclimatico.go.cr/following-cop26-climate-talks-the-san-jose-principles-coalition-recommits-to-principles-for-high-integrity-carbon-markets-pledges-to-act-on-them-together/> (accessed June 3, 2023)
- CCQI (2022): Methodology for assessing the quality of carbon credits, <https://carboncreditquality.org/download/Methodology/CCQI%20Methodology%20-%20Version%203.0.pdf> (accessed June 16, 2023)
- CCQI (2023): Explore carbon credit quality with CCQI's scoring tool, <https://carboncreditquality.org/scores.html> (accessed June 4, 2023)
- CDM (2012): High-Level Panel on the CDM Policy Dialogue, <https://www.cdmpolicydialogue.org/> (accessed June 3, 2023)
- Carbon Market Watch (2021): Companies can do better than offsetting, <https://carbonmarketwatch.org/2021/01/28/companies-can-do-better-than-offsetting/> (accessed June 10, 2023)

- Carbon Market Watch (2022): Regulating corporate green claims and greenwashing – policy recommendations, <https://carbonmarketwatch.org/publications/regulating-corporate-green-claims/> (accessed June 19, 2023)
- Compensate (2023): Non-offset claims. How to make a robust claim?, https://assets.ctfassets.net/f6kng81cu8b8/6YsnU3s1fYWlp-sICgEY7Os/6ba9de2417db5d214e9ad3591bea1724/How_to_make_a_robust_claim_Claim_Compensate_2023_090623.pdf (accessed June 10, 2023)
- European Commission (2022b): Proposal for a Directive of the European Parliament and of the Council amending Directives 2005/29/EC and 2011/83/EU as regards empowering consumers for the green transition through better protection against unfair practices and better information, https://eur-lex.europa.eu/resource.html?uri=cellar:ccf4e0b8-b0cc-11ec-83e1-01aa75ed71a1.0012.02/DOC_1&format=PDF (accessed June 8, 2023)
- European Commission (2022a): Proposal for a regulation of the European Parliament and the Council establishing a Union certification framework for carbon removals. SEC(2022)423 final, https://climate.ec.europa.eu/system/files/2022-11/Proposal_for_a_Regulation_establishing_a_Union_certification_framework_for_carbon_removals.pdf (accessed June 3, 2023)
- European Commission (2023): Directive of the European Parliament and of the Council on substantiation and communication of explicit environmental claims (Green Claims Directive), <https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52023PC0166&from=EN> (accessed June 5, 2023)
- European Council (2023): Proposal for a Directive of the European Parliament and of the Council amending Directives 2005/29/EC and 2011/83/EU as regards empowering consumers for the green transition through better protection against unfair practices and better information, <https://data.consilium.europa.eu/doc/document/ST-9008-2023-INIT/en/pdf> (accessed June 8, 2023)
- European Parliament (2023a): P9_TA(2022)0233 Land use, land use change and forestry (LULUCF), https://www.europarl.europa.eu/doceo/document/TA-9-2022-0233_EN.pdf (accessed June 5, 2023)
- European Parliament (2023b): P9_TA(2023)0066. Land use, land use change and forestry (LULUCF), https://www.europarl.europa.eu/doceo/document/TA-9-2023-0066_EN.pdf (accessed June 5, 2023)
- European Parliament (2023c): Report on the proposal for a directive of the European Parliament and of the Council on amending Directives 2005/29/EC and 2011/83/EU as regards empowering consumers for the green transition through better protection against unfair practices and better information, https://www.europarl.europa.eu/doceo/document/A-9-2023-0099_EN.html (accessed June 8, 2023)
- European Union (2022): Directive (EU) 2022/2464 of the European Parliament and of the Council of 14 December 2022 amending Regulation (EU) No 537/2014, Directive 2004/109/EC, Directive 2006/43/EC and Directive 2013/34/EU, as regards corporate sustainability reporting, <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32022L2464> (accessed June 3, 2023)

- G7 (2021): G7 Climate and Environment: Ministers' Communiqué, London, 21 May 2021, <https://www.gov.uk/government/publications/g7-climate-and-environment-ministers-meeting-may-2021-communicue/g7-climate-and-environment-ministers-communicue-london-21-may-2021#climate-change> (accessed June 19, 2023)
- G7 (2023a): G7 Climate, Energy and Environment Ministers' Communiqué, <https://www.env.go.jp/content/000127828.pdf> (accessed June 19, 2023)
- G7 (2023b): Principles of High Integrity Carbon Markets, <https://www.meti.go.jp/information/g7hirosima/energy/pdf/Annex004.pdf> (accessed June 19, 2023)
- GHG Protocol (2015): A corporate accounting and reporting standard. Revised edition, <https://ghgprotocol.org/sites/default/files/standards/ghg-protocol-revised.pdf> (accessed June 9, 2023)
- GHG Protocol (2022): Land sector and removals guidance. Part 1: Accounting and reporting requirements and guidance, <https://ghgprotocol.org/sites/default/files/2022-12/Land-Sector-and-Removals-Guidance-Pilot-Testing-and-Review-Draft-Part-1.pdf> (accessed June 10, 2023)
- Gold Standard (2022): Claims guidelines, <https://globalgoals.goldstandard.org/105-par-claims-guidelines/> (accessed June 8, 2023)
- Hewlett, Owen (2022): Double claiming. Inventory accounting and the role of credits, <https://www.linkedin.com/pulse/double-claiming-inventory-accounting-role-credits-owen-hewlett/> (accessed June 9, 2023)
- Hynes, David; Hall, Hall, Maia; Machnik, Denis (2023): Implementing Article 6 – An overview of preparations in selected countries, https://www.goldstandard.org/sites/default/files/implementing_article_6-an_overview_of_preparations_in_selected_countries.pdf (accessed June 17, 2023)
- ICAO (2019): CORSIA emissions unit eligibility criteria, https://www.icao.int/environmental-protection/CORSIA/Documents/ICAO_Document_09.pdf (accessed June 4, 2023)
- ICC (2021): ICC Framework for responsible environmental marketing communications, <https://iccwbo.org/wp-content/uploads/sites/3/2021/11/icc-environmental-framework-2021-final.pdf> (accessed June 7, 2023)
- Icelandic Standards (2022): ÍST TS 92:2022: Carbon offsetting: Specification with guidance, <https://stadlar.is/stadlabudin/vara/?ProductName=IST-TS-92-2022> (accessed June 8, 2023)
- ICVCM (2023a): Core carbon principles, <https://icvcm.org/wp-content/uploads/2023/03/CCP-Section-2-FINAL-27Mar23.pdf> (accessed June 3, 2023)
- ICVCM (2023b): Assessment Framework, <https://icvcm.org/wp-content/uploads/2023/03/CCP-Section-4-FINAL-27Mar23.pdf> (accessed June 3, 2023)
- IETA, University of Maryland and CPLC (2019): The Economic Potential of Article 6 of the Paris Agreement and Implementation Challenges,

https://static1.squarespace.com/static/54ff9c5ce4b0a53decccfb4c/t/5d89fee3ad16452612f73374/1569333620247/CLPC_IETA_A6+report (accessed June 21, 2023)

- II-AMT (2023): International Initiative for Development of Article 6 Methodology Tools (II-AMT), <https://www.perspectives.cc/public/initiatives/international-initiative-for-development-of-article-6-methodology-tools-ii-amt/> (accessed June 4, 2023)
- IPBES (2019): Global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, <https://zenodo.org/record/6417333> (accessed June 17, 2023)
- IPCC (2015): Global Warming of 1.5 °C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty, <https://www.ipcc.ch/sr15/> (accessed June 17, 2023)
- IPCC (n.d.): Glossary, <https://apps.ipcc.ch/glossary/searchlatest.php> (accessed June 2, 2023)
- ISO (2022): IWA 42:2022. Net zero guidelines, <https://www.iso.org/obp/ui/en/#iso:std:iso:iwa:42:ed-1:vl:en> (accessed June 7, 2023)
- Kreibich, Nicolas; Brandemann, Victoria; Jüde, Franziska (2022): Governing corporate claims: Increasing transparency of climate-related claims, https://www.carbon-mechanisms.de/fileadmin/media/dokumente/Publikationen/Policy_Paper_03_2022_Claims.pdf (accessed June 7, 2023)
- Kreibich, Nicolas; Schöneberg, Gesa (2023): Beyond Offsetting. Streamlining the Concept of Private Finance Contributions, In: Carbon Mechanisms Review, Vol 11, No 2, https://www.carbon-mechanisms.de/fileadmin/media/dokumente/Publikationen/CMR/CMR_02_2023.pdf (accessed June 20, 2023)
- Laine, Anna; Ahonen, Hanna-Mari; Pakkala, Anna; Laine, Jenni; Kulo-vesi, Kati; Mäntylä, Iris (2023): Guide to good practices for voluntary carbon markets : Supporting voluntary mitigation action with carbon credits, <https://julkaisut.valtioneuvosto.fi/handle/10024/164732> (accessed June 1, 2023)
- Laininen, Jenni; Ahonen, Hanna-Mari; Laine, Anna, Kulo-vesi, Kati (2022): Selvitys – Vapaaehtoiseen päästökompensointiin liittyvät erityiskysymykset. https://valtioneuvosto.fi/documents/1410903/33891761/Selvitys_Vapaaehtoiseen+p%C3%A4st%C3%A4st%C3%B6kompensointiin+liittyv%C3%A4t+erityiskysymykset-FINAL-.pdf/ece9af07-2cf1-e9f3-206f-7c8bbc90d4c5/Selvitys_Vapaaehtoiseen+p%C3%A4st%C3%A4st%C3%B6kompensointiin+liittyv%C3%A4t+erityiskysymykset-FINAL-.pdf?t=1664526153936 (accessed June 17, 2023)
- Leining, Catherine; White, Dominic (2021): Boosting voluntary climate action in Aotearoa New Zealand, <https://www.motu.nz/assets/Documents/our-research/environment/climate-change-mitigation/Boosting-Voluntary-Climate-Action-Motu-Overview.pdf> (accessed June 20, 2023).

- Lo Re, Luc; Ellis, Jane; Greiner, Sandra (2022): The birth of an ITMO: authorisation under Article 6 of the Paris Agreement, <https://read.oecd.org/10.1787/3d175652-en?format=pdf> (accessed June 19, 2023)
- Marr, Marc André; Ahonen, Hanna-Mari; Samaniego Figueroa, Ximena (2023): Supporting authorisations under Article 6 of the Paris Agreement, https://www.goldstandard.org/sites/default/files/supporting_authorizations_under_article_6.pdf (accessed June 19, 2023)
- Michaelowa, Axel; Ahonen, Hanna-Mari; Keßler, Juliana; Singh, Aayushi (forthcoming): Interlinkages of registries and implications for functions and structures in the context of Article 6, Discussion paper, Perspectives Climate Group, Freiburg
- Ministry for the Environment (2022): Interim guidance for voluntary climate change mitigation, <https://environment.govt.nz/assets/publications/interim-guidance-voluntary-climate-change-mitigation.pdf> (accessed June 9, 2023)
- Ministry of Climate and Enterprise (2023): Sweden's Fifth Biennial Report under the UNFCCC. <https://unfccc.int/sites/default/files/resource/Sweden%E2%80%99s%20Fifth%20Biennial%20Report%20under%20the%20UNFCCC%20Final.pdf> (accessed 1 June 2023)
- NCI (2022): Corporate Climate Responsibility Monitor 2022: Assessing the transparency and integrity of companies' emission reduction and net-zero targets, <https://newclimate.org/sites/default/files/2022-06/CorporateClimateResponsibilityMonitor2022.pdf> (accessed June 10, 2023)
- New Zealand Government (2021): Guidance for voluntary carbon offsetting – updated and extended until 31 December 2021, <https://environment.govt.nz/assets/Publications/Files/guidance-for-voluntary-carbon-offsetting-updated-and-extended-until-31-December-2021.pdf> (accessed June 9, 2023)
- Perspectives Climate Group (2023): Can carbon credits be used for raising ambition?, <https://perspectives.cc/private/can-carbon-credits-be-used-for-raising-ambition/> (accessed June 21, 2023)
- SBTi (2023a): SBTi corporate net-zero standard. Version 1.1, <https://sciencebasedtargets.org/resources/files/Net-Zero-Standard.pdf> (accessed June 7, 2023)
- SBTi (2023b): SBTi corporate net-zero standard criteria. Version 1.1, <https://sciencebasedtargets.org/resources/files/Net-Zero-Standard-Criteria.pdf> (accessed June 7, 2023)
- SBTi (2023c): Science Based Targets Initiative public consultation on beyond value chain mitigation (BVCM), Version 1, <https://sciencebasedtargets.org/resources/files/SBTi-Public-Consultation-on-Beyond-Value-Chain-Mitigation.pdf> (accessed June 19, 2023)
- Schneider, Lambert; La Hoz Theuer, Stephanie (2019) Environmental integrity of international carbon market mechanisms under the Paris Agreement, *Climate Policy*, 19:3, 386-400
- Swedish Energy Agency (2023a): Statligt stöd för bio-CCS, <https://www.energimyndigheten.se/klimat--miljo/ccs/statligt-stod-for-bio-ccs/> (accessed June 10, 2023)
- Swedish Energy Agency (2023b): Bio-CCS: bokföring och rapportering av negativa utsläpp samt disposition av dessa, <https://www.energimyndigheten.se/492ae9/globalassets/klimat-->

[miljo/ccs/promemoria-bio-ccs-bokforing-och-rapportering-av-negativa-utslapp-samt-disposition-av-dessa.pdf](#) (accessed June 10, 2023)

Swedish Consumer Agency (2021): Summary of a memorandum in marketing law. Environmental claims concerning climate compensated products and products with carbon offsets in marketing, <https://www.konsumentverket.se/contentassets/6059fffaa60b41daa76cf3dfe0849867/environmental-claims-concerning-climate-compensated-products-and-products-with-carbon-offsets-in-marketing.pdf> (accessed June 7, 2023)

Swedish Environmental Protection Agency (2017): Sweden's Climate Act and Climate Policy Framework, <https://www.naturvardsverket.se/en/topics/climate-transition/sveriges-klimatarbete/swedens-climate-act-and-climate-policy-framework/#:~:text=The%20Climate%20Act&text=The%20Act%20states%20that%20the,tar-gets%20are%20to%20be%20achieved> (accessed 4 June 2023)

UN Expert Group (2022): Integrity matters: Net zero commitments by business-es, financial institutions, cities and regions. Report from the United Nations' High-level Expert Group on the Net Zero Emissions Commitments of Non-state Entities, https://www.un.org/sites/un2.un.org/files/high-level_expert_group_n7b.pdf https://www.un.org/sites/un2.un.org/files/high-level_expert_group_n7b.pdf (accessed June 7, 2023)

UNEP (2022): Emissions Gap Report (EGR) 2022: The Closing Window – Climate crisis calls for rapid transformation of societies, <https://www.unep.org/resources/emissions-gap-report-2022> (accessed June 17, 2023)

UNFCCC (2021): Race to Zero Lexicon, <https://racetozero.unfccc.int/wp-content/uploads/2021/04/Race-to-Zero-Lexicon.pdf> (accessed June 7, 2023)

UNFCCC (2022a): Guidance on cooperative approaches referred to in Article 6, paragraph 2, of the Paris Agreement. Decision 2/CMA.3, https://unfccc.int/sites/default/files/resource/cma2021_10a01E.pdf (accessed June 1, 2023)

UNFCCC (2022b): Rules, modalities and procedures for the mechanism established by Article 6, paragraph 4, of the Paris Agreement. Decision 3/CMA.3, https://unfccc.int/sites/default/files/resource/cma2021_10a01E.pdf (accessed June 1, 2023)

UNFCCC (2022c): Starting line and leadership practices 3.0 – Minimum criteria required for participation in the Race to Zero campaign, <https://climatechampions.unfccc.int/wp-content/uploads/2022/06/Race-to-Zero-Criteria-3.0-4.pdf> (accessed June 7, 2023)

UNFCCC (2023): Report of the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement on its fourth session, held in Sharm el-Sheikh from 6 to 20 November 2022. 7/CMA.4, Sharm el-Sheikh

VCMI (2022): Provisional Claims Code of Practice, <https://vcmintegrity.org/wp-content/uploads/2022/06/VCMI-Provisional-Claims-Code-of-Practice.pdf> (accessed June 10, 2023)

- VCMi (2023a): Virtual event, <https://vcmintegrity.org/claims-code-launch-event/> (accessed June 19, 2023)
- VCMi (2023b): VCM Access Strategy Toolkit, <https://vcmintegrity.org/wp-content/uploads/2023/05/VCMi-VCM-Access-Strategy-Toolkit-1.pdf>? (accessed June 19, 2023)
- Verra (2021): The future of the voluntary carbon market, <https://verra.org/the-future-of-the-voluntary-carbon-market/> (accessed June 9, 2023)
- WWF (2019): WWF position and guidance on voluntary purchases of carbon credits, https://files.worldwildlife.org/wwfcmsprod/files/Publication/file/773q5lvbf0_WWF_position_and_guidance_on_corporate_use_of_voluntary_carbon_credits_EXTERNAL_VER-SION_11_October_2019_v1.2.pdf?_ga=2.258989006.59723189.1681673496-1427169030.1681481678 (accessed June 10, 2023)
- WWF (2020): WWF recommendations for corporate climate strategies in the era of the Paris Agreement and the (new) role of «compensation» projects, https://www.wwf.ch/sites/default/files/doc-2021-10/2020_12_15_WWF_Recommendations_Climate_Strategies_in_the_Paris_Era.pdf (accessed June 19, 2023)
- WWF (2021): Fit für Paris: Ein Leitfaden, wie sich unternehmerische Klimastrategien im Pariser Abkommen vereinbaren lassen, <https://www.wwf.de/fileadmin/fm-wwf/Publikationen-PDF/Unternehmen/WWF-Leitfaden-Klimastrategien-Fit-fuer-Paris.pdf> (accessed June 10, 2023)



Perspectives

Climate Group GmbH
Hugstetter Str. 7
79106 Freiburg, Germany
info@perspectives.cc
www.perspectives.cc