Swedish participation in the voluntary carbon market

Guidance for potential buyers and sellers

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Final report

Freiburg, Germany, 12.12.2025

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Abbreviations

AER	Authorised Emission Reduction (type of A6.4ER)
GHG	Greenhouse gas
MCU	Mitigation Contribution Unit (type of A6.4ER)
A6.4ER	Article 6.4 Emission Reduction
BAU	Business-as-usual
Bio-CCS	Biogenic carbon capture and storage
CBAM	Carbon Border Adjustment Mechanism
CCPs	Core Carbon Principles
CCQI	Carbon Credit Quality Initiative
CCS	Carbon Capture and Storage
CDM	Clean Development Mechanism
CDR	Carbon dioxide removal
CO_2	Carbon dioxide
CORSIA	Carbon Offsetting and Reduction Scheme for International Aviation
CRCs	Carbon removal credits
CRCF	EU Carbon Removal and Carbon Farming framework
CSDDD	Corporate Sustainability Due Diligence Directive
CSRD	Corporate Sustainability Reporting Directive
DACCS	Direct Air Carbon Capture and Storage
ESRS	European Sustainability Reporting Standards
ETS	Emissions trading system
GS-VERs	Gold Standard Verified Emission Reductions
ICVCM	Integrity Council for the Voluntary Carbon Market
ITMO	Internationally Transferred Mitigation Outcome
LULUCF	Land use, land use change and forestry
MoU	Memorandum of Understanding
NBS	Nature-based solutions
NDC	Nationally Determined Contribution
NEFCO	Nordic Environment Finance Corporation
NICA	Nordic Initiative for Cooperative Approaches
PACM	Paris Agreement Crediting Mechanism
REDD+	Reducing Emissions from Deforestation and Forest Degradation in developing countries
SBTi	Science Based Targets initiative
SEK	Swedish krona
tCO_2e	Metric tonne of CO_2 equivalent
VCMI	Voluntary Carbon Market Integrity Initiative
VCS	Verified Carbon Standard
VCUs	Verified Carbon Units

About this report

This report provides a basis for advice and recommendations for Swedish actors who want to engage in the voluntary market for carbon credits from activities that are associated with the removal of greenhouse gases and their durable storage, such as the capture and durable storage of greenhouse gases from biogenic sources or directly from air.

This report has been commissioned by the Swedish Energy Agency. The content does not, however, represent the Swedish Energy Agency's views, opinions, attitudes or recommendations.

1. Background

This chapter provides an overview of global climate goals, and on the role of non-state actors, the voluntary carbon market and emission reductions and removals in achieving these goals. Action by non-state actors within and beyond their boundaries and value chains is critical for meeting the global climate goals, and the voluntary carbon market is a tool for mobilising funding for additional climate action. Reaching the global goals requires deep and rapid emission reductions, as well as large volumes of removals. The voluntary carbon market offers opportunities also for Swedish non-state actors to mobilise funding for additional emission reductions and removals.

1.1. How can non-state actors contribute to global climate goals?

The Paris Agreement aims to limit the increase in the global average temperature to below 1.5°C[1]. Many non-state actors are committed to ambitious climate action and are taking steps to contribute to the worldwide efforts to achieve this goal. There is a broad consensus on the need for non-state actors to prioritise reductions in their value chain greenhouse gas (GHG) emissions, i.e., their direct and indirect emissions, at a scale and pace compatible with the Paris Agreement's long-term goal. These efforts contribute to the mitigation targets of the countries in which they are implemented and can help countries to enhance their targets over time. In other words, such climate action has the potential to make contributions towards closing the "action" and "ambition" gaps (Ahonen et al., 2023; Laine et al., 2023) (see Figure 1). These two gaps, respectively, stem from countries' existing and planned policies falling short of their current targets, and countries' current targets falling critically short of the collective efforts needed to meet the Paris Agreement's goals.

[1] In July 2025, the International Court of Justice provided an advisory opinion whereby it considers the 1.5°C threshold to be the "primary" temperature goal agreed under the Paris Agreement, noting that this interpretation is consistent with Article 4.1 of the Paris Agreement, which requires that mitigation measures be based on the "best available science". (International Court of Justice, 2025, p. 11-12)

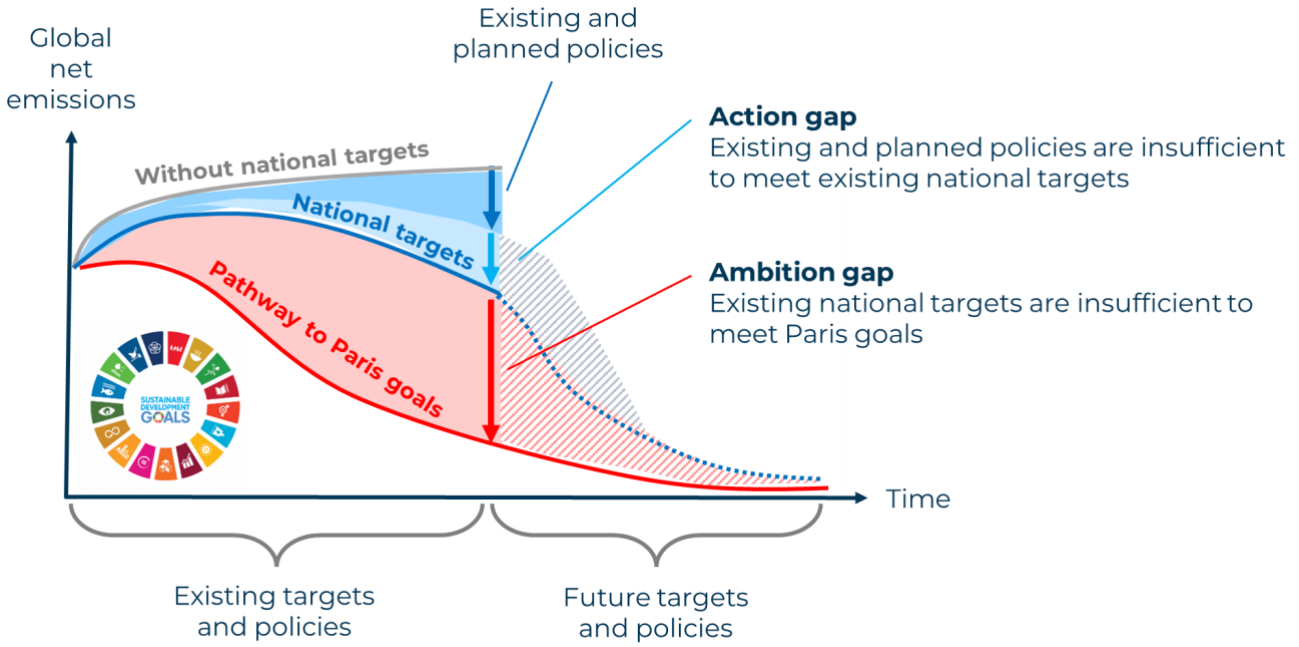

Figure 1. Action and ambition gaps

Source: Adapted from Laine et al., 2025, p. 28

In addition to reducing their own direct emissions, non-state actors can contribute to global mitigation efforts by supporting mitigation (removals and emission reductions) within and beyond their boundaries or value chains, for example, by buying carbon credits. To make a real impact, these mitigation outcomes should be of high integrity (see Section 2.2). Depending on their other properties, mitigation outcomes may contribute towards meeting existing national mitigation targets (i.e., closing the "action gap") or raising global ambition beyond existing targets (i.e., closing the "ambition gap") (see Figure 2).

Depending on the type of mitigation action, it may or may not be possible to quantify the volume of mitigation outcomes attributed to (i.e., directly resulting from) a specific action. For example, it is possible to quantify the mitigation outcomes attributable to a renewable energy investment while it may not be possible to quantify the mitigation outcomes resulting from policy advocacy, research and development, or piloting new climate solutions. Carbon credits are based on mitigation outcomes that can be quantified and attributed to a specific activity and that meet integrity criteria relating to, for example, additionality, baselines and verification (see Section 2.2). This makes carbon credits a useful tool for incentivising, demonstrating and funding mitigation benefits that would not happen without payments for these benefits.

Figure 2. Examples of non-state actors' contributions to global mitigation

Source: Adapted from Ahonen et al., 2023, p. 55

1.2. How can the voluntary carbon market contribute to global climate goals?

Broadly speaking, **carbon markets** are tools for mobilising finance for mitigation activities. They do so by putting a price on carbon – making polluters pay and rewarding those who invest in mitigation. Carbon markets can be categorised as **emission allowance markets**, which set an emissions cap to discourage emissions, and **carbon credit markets**, which set a crediting baseline to encourage mitigation relative to the baseline (see e.g., Wetterberg et al., 2024). Figure 3 provides an overview of carbon credit markets. Entities that develop mitigation activities can generate carbon credits under carbon crediting programmes and sell them in carbon credit markets to receive carbon credit revenue for their activity. Certain carbon credits can be used for compliance with legal obligations and carbon credits can also be used for voluntary purposes. The voluntary carbon market caters for voluntary buyers and compliance carbon markets for compliance buyers (Ahonen et al., 2023; Wetterberg et al., 2024). The **voluntary carbon market** focuses primarily of carbon credits while the **compliance carbon market** constitutes largely of emissions allowances but includes also carbon credits that are used for compliance. Regardless of their use, all carbon credits are meant to meet integrity criteria (see Section 2.2) that are designed to ensure, inter alia, that finance is channelled to mitigation that is additional, meaning that it would not have happened without the incentive from carbon credits.

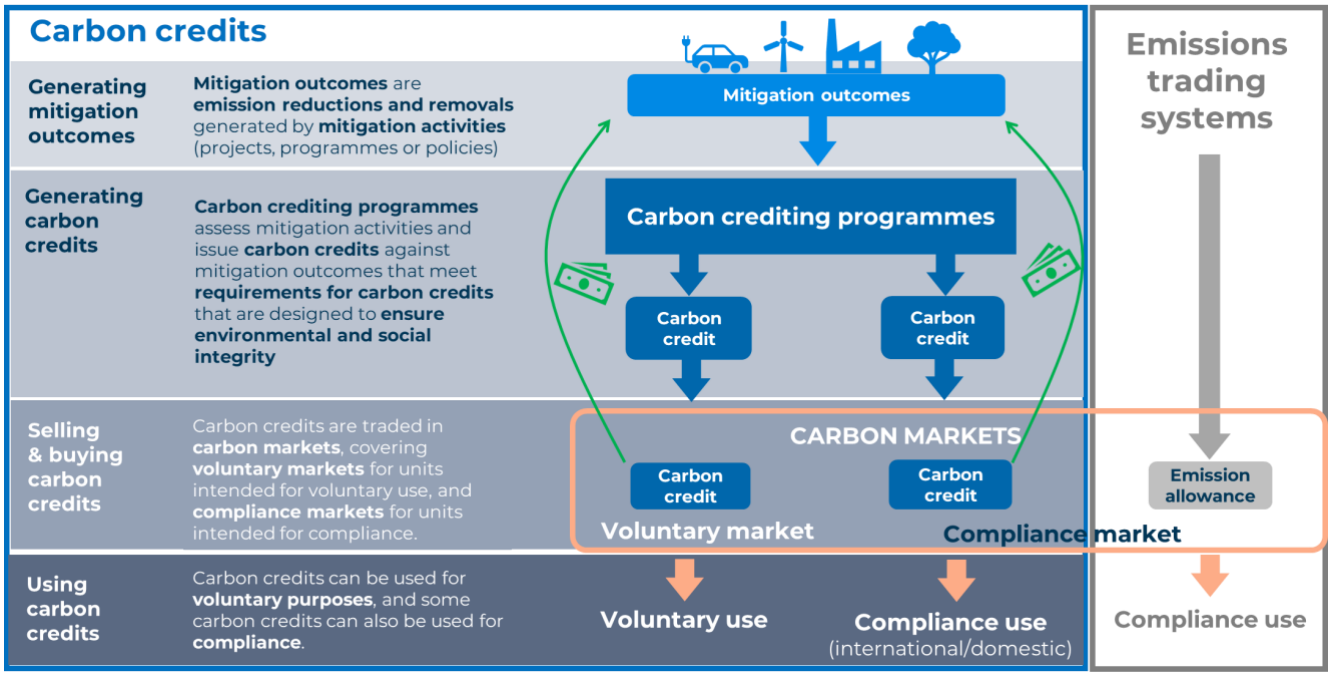

Figure 3. Overview of carbon credit markets

Adapted from: NEFCO, 2022

For many actors, fully eliminating their own emissions is not a feasible option, and even if it were possible, it would take time. To keep our global climate goals within reach, it is critical to achieve deep reductions in global net emissions already in the near term. Actors can complement their direct emission reduction efforts by supporting mitigation achieved within and outside of their value chains and boundaries, for example by buying carbon credits. The **voluntary purchase and use of carbon credits** enable actors to support more, faster and/or earlier mitigation than would be possible by solely taking ambitious action to reduce their direct emissions.

To truly contribute to global climate action, the voluntary use of carbon credits needs to be of **high integrity**. This means that the **carbon credits** that actors use should be of high integrity (see Section 2.2) and that actors should use these carbon credits only to **complement** – not to substitute – ambitious reductions of their own emissions. Furthermore, **information** about targets, emissions and carbon credit use should be **transparently disclosed**, and **claims** about the use of carbon credits should be **truthful and clear**. The use of carbon credits should ideally also promote other sustainable development benefits, through the carbon credit-generating activities and/or other mechanisms. While these general principles of the high-integrity voluntary use of carbon credits are well established, international and national **guidance** on their **interpretation and application** in different contexts and for different purposes **continues to evolve** (Laine et al., 2025).

In the context of the voluntary use of carbon credits and its contribution towards global climate goals, an important distinction is whether the mitigation associated with the carbon credit counts towards a country's national mitigation target or not (see Figure 4 for details).

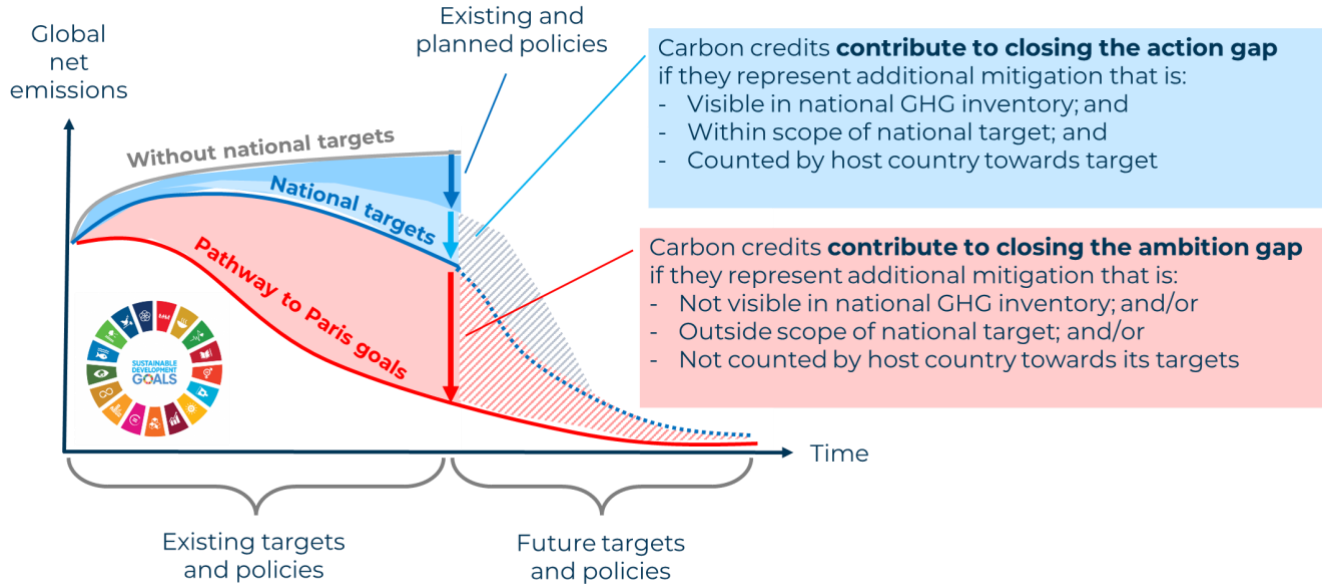

Figure 4. Carbon credit use for closing the action and ambition gaps

To the extent that the mitigation outcomes are reflected in the national GHG inventory and within the scope of the host country's mitigation targets, the host country can count them towards its target, and the carbon credit user contributes towards the achievement of that target, i.e. closing the action gap. By contrast, to the extent that the mitigation outcomes are not counted towards the host country's mitigation targets, the carbon credit user contributes to raising global mitigation efforts beyond existing national targets, i.e., closing the ambition gap. This would be the case if the mitigation is not visible in the host country's GHG inventory and/or is outside the scope of the host country's mitigation targets and/or the host country applies corresponding adjustments in its emissions balance so that it does not count those mitigation outcomes towards its target.

Source: Adapted from Laine et al., 2025, p. 28

1.3. How can emission reductions and removals contribute to global climate goals?

Efforts to limit global warming are based on mitigation actions that limit concentrations of GHG in the atmosphere. This can be achieved by reducing GHG emissions or removing GHGs from the atmosphere. In the Paris Agreement, countries agreed that achieving the agreement's long-term goals requires global peaking of GHG emissions "as soon as possible" and "rapid reductions thereafter in accordance with best available science", to achieve a balance between global human-induced emissions and removals in the second half of this century. However, the aggregate ambition of countries' national mitigation targets and the actual pace of emission reductions to date fall critically short of what is needed to keep the global long-term goal within reach. This means that, even if countries and non-state actors significantly step up mitigation, there is a risk of "overshooting" the long-term temperature goal. "Overshoot" refers to temporarily exceeding a specific global warming threshold[2] before returning to or below that limit later.

[2] This period of excess warming may result in severe and often irreversible impacts on ecosystems and society.

According to the Intergovernmental Panel on Climate Change, limiting global warming to 1.5°C with no or limited overshoot would require reaching a balance between global carbon dioxide (CO_2) emissions and removals by around mid-century and a balance between global GHG emissions and removals around the 2070s (Shukla et al., 2022). Modelled pathways included in the assessment report that limit warming to 1.5°C include peaking of global GHG emissions between 2020 and at the latest before 2025 (Shukla et al., 2022). This would require rapid and deep reductions in global emissions to a level where only hard-to-abate emissions remain, as well as large volumes of removals to counterbalance these hard-to-abate emissions as well as any overshooting.

At the end of 2025, the world was not on track to meeting the Paris Agreement's goals. The global average temperature of 2023-2025 is likely to exceed the 1.5°C threshold for the first time, global GHG emissions continued to increase and hit a new record in 2024, and countries' mitigation targets and policies remain insufficient, collectively leading to 2.3-2.8°C warming (ECMWF, 2025; United Nations Environment Programme, 2025). However, even with temporary overshooting, the 1.5°C goal remains relevant and within reach in the longer term, provided that the global community urgently and drastically ramps up mitigation action and makes up also for the overshoot.

On the sub-global level, countries and non-state actors have set mitigation targets that mirror these global goals, including near- and long-term targets for emission reductions as well as long-term targets for achieving a balance between emissions and removals. There is broad consensus that countries and non-state actors should prioritise deep and rapid emission reductions within their system boundaries, ideally following a science-based Paris-aligned emissions reduction pathway. There is also general agreement that eliminating all emissions will be extremely challenging or impossible in many cases, especially in the near-term and to some extent even in the long-term. There is general agreement that, besides reducing their own emissions, countries and non-state actors can contribute to global mitigation efforts and take responsibility for their ongoing emissions by supporting emission reductions and removals outside their boundaries and value chains. While many countries and non-state actors have set long-term targets to counterbalance their hard-to-abate emissions specifically with permanent removals, counterbalancing these hard-to-abate emissions with permanent emission reductions would have the same impact on contributing to the global balance between emissions and removals (see Figure 5).

Although the impact on global net GHG emissions remains the same regardless of whether the mitigation is based on emission reductions or removals, the choice has further implications than atmospheric impact. Clearly, the more emissions are reduced, the less removals are needed to achieve a balance between global emissions and removals. This said, since global emissions cannot be fully eliminated, removals are necessary for reaching a global balance between emissions and removals. Therefore, removals need to be scaled up from today's marginal levels. Non-state actors can be instrumental in this upscaling, as a source of voluntary demand and funding for removals through the voluntary carbon market. While removals are primarily relevant at the stage of hard-to-

abate emissions, which remains a distant prospect as the world lags behind its emission reduction objectives, the provision of early market signals can be a valid argument for a non-state actor for choosing to support removals over emission reductions, to ensure that sufficient removals are available once only hard-to-abate emissions remain. However, there are also advantages of channelling finance to emission reductions, such as:

- Emission reductions will constitute the bulk of the contribution towards global net-zero.
- The marginal cost of abatement for the majority of emission reductions is significantly lower than the marginal cost for the bulk of permanent removals, meaning that more mitigation is achievable on the same budget if emission reductions are chosen.
- Emission reductions usually imply co-benefits such as better air quality, while removal methods are more heavily burdened by trade-offs with other sustainable development objectives in many applications.
- Contributing to a demand for novel emission reduction approaches through carbon markets (e.g. fossil-free steel production or cement production with carbon capture and storage) can also incentivise and speed up technological development on the emission reduction side and, thereby, reduce the future need for removals.

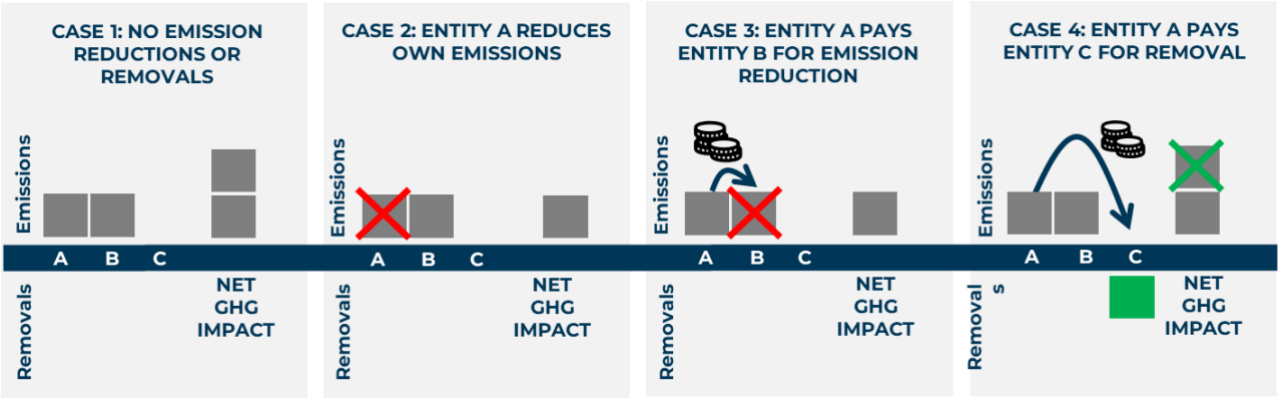

Figure 5. Net GHG impact of emission reductions and removals

Contributing to achieving a balance between global emissions and removals does not require countries and non-state actors to balance their own emissions with removals. Balancing emissions with emission reductions has the same impact on global net GHG emissions as balancing emissions with removals, as illustrated in the figure above. Case 1 represents business-as-usual, where entities A and B each emit an equal amount of GHG emissions and entity C does not emit any emissions. In Case 2, entity A reduces its own emissions, while in Case 3, it pays entity B to reduce its emissions by the same amount and in Case 4, it pays entity C to remove the same amount of CO_2 from the atmosphere. The net impact on global emissions is the same in Cases 2-4, and lower compared to Case 1.

Source: Adapted from Ahonen et al., 2021, p. 44

2. Key terms and guidance

This chapter describes the key terms and guidance that non-state actors need to understand when engaging in the voluntary carbon market. It covers terminology and guidance relevant for generating carbon credits, using them voluntarily and making associated claims. Precise and widely understood terminology as well as robust and consistent guidance are prerequisites for a credible market for durable carbon removals and for robust risk management.

There is still a lack of universally agreed definitions and guidance. Existing standards and guidelines differ in their purpose, focus and scope. Together, they are designed to promote "end-to-end integrity", from setting targets for reducing own emissions to generating and buying carbon credits and making claims. Some standards and guidelines complement each other while others are alternatives. Despite efforts to promote alignment across standards and approaches, there are still differences, for example, in key definitions and requirements. This chapter highlights issues where there is already broad agreement, as well as issues that are still unclear or under debate. It also notes where Swedish terms exist or are lacking.

This section helps Swedish actors to understand the key opportunities and challenges with participating in the voluntary carbon market. For Swedish actors planning to invest in durable removals, this market offers a potential revenue stream through the generation and sale of durable CRCs, potentially unlocking further finance and scaling up durable removals. For Swedish actors wanting to fund durable removals, for example to contribute to global net zero by taking responsibility for their remaining emissions and achieving organisation-level net zero, the voluntary carbon market provides a means to do so without needing to directly invest in the underlying removal activities.

This report focuses on carbon credits from activities that are associated with the **removal** of CO_2[3] and its **durable storage** (hereafter referred to as "**durable Carbon Removal Credits**" or durable CRCs), covering their **generation** under carbon crediting programmes, their **trading** in the voluntary carbon market, their **use** for voluntary purposes and related **claims**. In this report, "carbon" is used to refer to CO_2 and potentially also other GHGs, as is commonplace in the context of climate targets and carbon markets.

2.1. What are removals and emission reductions?

There are two main types of GHG mitigation activities in today's carbon credit markets: activities that reduce emissions, resulting in **emission reductions**, and activities that remove carbon from the atmosphere, resulting in **removals**. Removals and emission reductions are jointly referred to as **mitigation outcomes**. Although "emission avoidance" is sometimes considered as a separate category, this report considers it to be a sub-category of emission reductions, reflecting the approach used under the Kyoto Protocol and the Paris Agreement for carbon credits.

[3] In principle, also other GHGs besides CO_2 could be removed from the atmosphere. In practice, however, such solutions do not yet exist.

Figure 6 illustrates some examples of different types of mitigation activities, categorised into emission reductions and removals, and activities with and without carbon storage. Emission reduction **activities that do not involve any carbon storage** generate **permanent** emission reductions that have no risks relating to the durability of storage or reversal of mitigation outcomes. By contrast, removal or emission reduction **activities involving carbon storage** have **various levels of durability and reversal risks**. Storage options and durability are discussed in Section 2.1.3. Activities that generate removals and/or emission reductions based on the protection and/or enhancement of biological sequestration and storage, for example by protecting existing forests and planting new ones, are often referred to as **nature-based** solutions. Removals generated by direct air carbon capture and storage (DACCS) are often referred to as "**technical**" removals while removals from biochar and the capture and storage of biogenic carbon (bio-CCS) could be considered to be "**hybrid**" removals since they include both nature-based and technical elements (see Section 2.1.2).

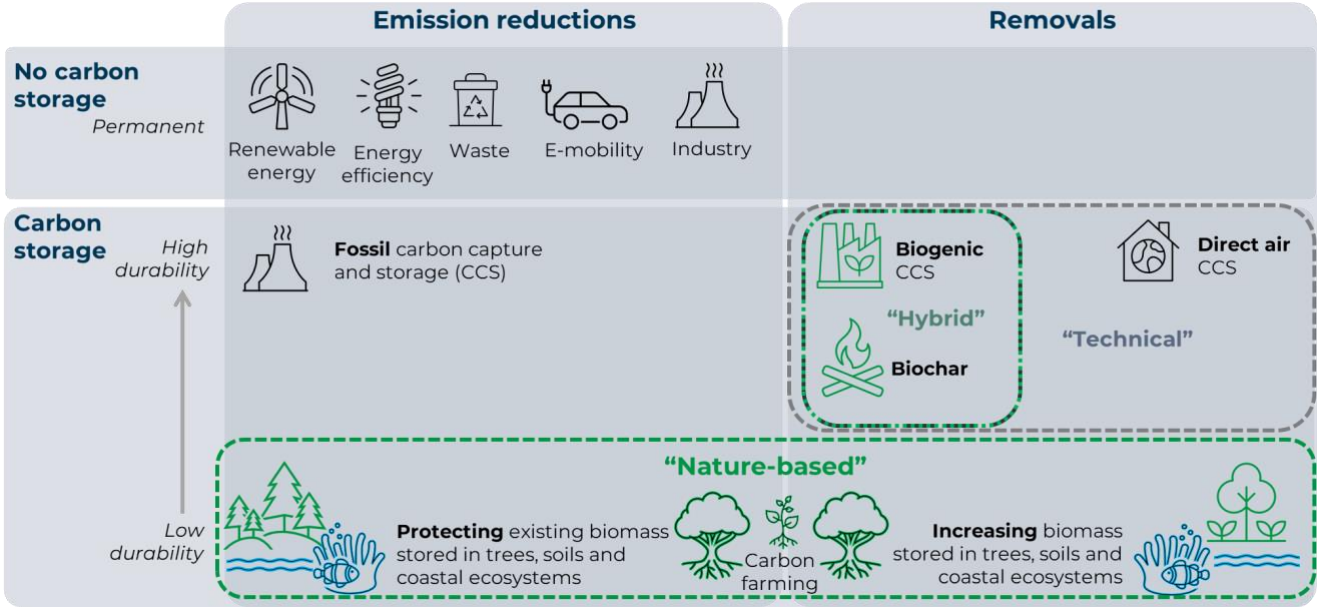

Figure 6. Types of mitigation activities (illustrative and non-comprehensive)

Source: Perspectives Climate Group

2.1.1. Emission reductions

In the context of carbon credits, there are three broad categories of options for emission reductions (see e.g. Johnstone et al., 2025), namely **reducing emissions from**:

- **the geosphere without carbon storage**, e.g., by deploying renewable or low-carbon energy sources to replace fossil fuel use, or by improving energy efficiency.

- **the biosphere with carbon storage** by protecting carbon stored in ecosystems and their soils and vegetation from damage or degradation.
- **the geosphere with carbon storage** by capturing fossil carbon from industrial point sources or fossil-fuelled power stations and storing it.

In the context of carbon credits, emission reductions are defined relative to a crediting baseline and thus include the "avoidance" of emissions. In the voluntary carbon market, the terms "emission reductions" and "emission avoidance" are used inconsistently and there is no universal agreement on what they mean and how they should be used. For example, carbon credits from Reducing Emissions from Deforestation and Forest Degradation in developing countries (REDD+) are often referred to as "emission avoidance credits", despite the reference to "reducing emissions".

2.1.2. Removals

In the context of carbon credits, the Paris Agreement Crediting Mechanism defines removals as "the outcomes of processes by which **greenhouse gases are removed from the atmosphere as a result of deliberate human activities** and are either **destroyed** or durably **stored** through anthropogenic activities" (UNFCCC, 2024, p. 4). This is consistent with the IPCC's definition of **carbon dioxide removal (CDR)** as a collective term for "anthropogenic activities removing CO_2 from the atmosphere and durably storing it in geological, terrestrial, or ocean reservoirs, or in products" (IPCC, 2022, p. 1796). Notably, while both definitions refer to "durable" storage, neither specify a threshold for what is considered durable (see Section 2.1.3). In practice, however, the terms "CDR" and "removals" are often used more broadly to include activities that do not guarantee durable storage.

Removals are commonly categorised into **nature-based** and **technical**[4] removals. The former refers to carbon that is sequestered via biological processes and stored in biological reservoirs while the latter refers to carbon removal methods that involve capturing carbon via technical means and storing it in geological or other long-term reservoirs (Smith et al., 2024). In addition, the term **"hybrid" carbon removal methods** is sometimes used to describe approaches such as biogenic carbon capture and storage (bio-CCS)[5] and biochar[6] carbon removalthat combine natural sequestration processes with „technical" capture and geochemical storage. Many types of removals do not fit neatly into the nature-based or technical removal category, and there are also other, more nuanced ways to classify removals, for example based on their storage type (see Section 2.1.3).

[4] Technical removals are also referred to as "engineered", "industrial" or "novel" removals.

[5] Note that, to be considered as a removal, the biogenic carbon needs to be associated with sustainable sources, for example, from sustainably produced biomass or organic waste.

[6] Biochar is produced through pyrolysis which is not a "nature-based" process.

2.1.3. Carbon storage options and duration

As noted above, both emission reductions and removals can be associated with carbon storage. There are three main options for storing carbon (Smith et al., 2023), namely:

- **Biological storage (on land and in oceans)**. Trees can retain their carbon for decades, centuries or more. Soils and wetlands are a further store of carbon, derived from compounds exuded by roots and dead plant matter. In the oceans, aquatic biomass may sink to the ocean floor and become marine sediment. Carbon can be retained durably in these ecosystems, especially if managed carefully to reduce disturbances.
- **Product storage.** Some carbon-based products constitute durable storage. For example, construction materials and biochar can store carbon for decades or more. These carbon-based products can be made from conversion of harvested biomass (in the cases of biochar and wood in construction), from concentrated CO_2 streams or even from CO_2 from ambient air (in the case of aggregates).
- **Geochemical storage.** Concentrated CO_2 can be stored in geological formations, using depleted oil and gas fields or saline aquifers, or reactive minerals such as basalt. Geochemical capture leads directly to long-term storage of CO_2 in the form of carbonate minerals or bicarbonate in the ocean.

Different carbon pools have very different characteristic timescales for storage and risks of reversal. Carbon storage longevity is often talked about as permanent or temporary, but there is a need for a more nuanced vocabulary. **"Permanence"** is a binary concept that is a function of the **durability** of storage and **reversal risk** of storage, both of which are continuums rather than binary. On a case-by-case basis, carbon storage activities often fit one of the following descriptions (Bednar et al., 2023):

- **Permanent storage**, with no practical risk of reversal (for example, mineralisation).
- **Stable storage** with some, but very low risk of reversal (for example in geologic reservoirs).
- **Long-term temporary storage** (ocean sinks, biochar[7]), gradually released over centuries/millennia.
- **Vulnerable storage** with a medium to high risk of reversal (biomass, soils, products).
- **Short-term temporary storage** where the carbon is lost after a few years to decades (e.g., short-rotation energy crops).

[7] For further information on the durability of biochar, see e.g. Schmidt et al., 2025.

There is no consensus on the minimum durability required for carbon storage to be considered durable, or for removal credits to be considered "permanent", with thresholds for durability ranging from decades to centuries or even millennia (Michaelowa et al., 2023).

2.2. How are carbon credits generated?

Carbon credits are tradable units that are issued by carbon crediting programmes. Each carbon credit represents one metric tonne of CO_2 equivalent (tCO_2e) of additional and verified GHG emission reductions or removals (jointly referred to as **mitigation outcomes**), generated by a mitigation activity. Carbon credits are defined as mitigation outcomes that meet well-established carbon credit integrity criteria (Box 1) that are designed to ensure that the carbon credit represents at least one real, additional, permanent and verified tCO_2e of mitigation outcomes, relative to a conservative crediting baseline. While these high-level criteria have remained relatively constant over time, the **carbon crediting programmes, standards and methodologies** used to operationalise and apply them to different activity types evolve on an ongoing basis, embodying over two decades of learning.

Although all carbon credits are meant to meet these criteria, stakeholders have raised concerns that this is not the case in practice. There are differing views on the share of carbon credits that do not meet these criteria. Some integrity concerns have focused on specific activities, activity types or methodologies while other concerns have focused on the broader credibility of certain carbon crediting programmes. Mistrust about carbon credit integrity creates reputational and market risks, which are discussed in Section 5.

Box 1. Carbon credit integrity criteria

- **Demonstration of additionality**, meaning that the mitigation outcomes would not have happened without the incentives from the sale of carbon credits, considering all financial sources (including any subsidies), as well as all relevant laws, regulations and policies.
- **Robust crediting baseline**, meaning a plausible and conservative scenario for emissions and removals without the mitigation activity, considering uncertainties and relevant national laws and policies. Carbon credits are quantified relative to the baseline.
- **Robust quantification, monitoring and reporting**, meaning that the activity's emissions and mitigation outcomes are quantified based on appropriate and conservative approaches for measurement and estimation of emissions and removals that do not overestimate the additional mitigation outcomes attributed to the activity, including by taking into account potential leakage.
- **Third-party validation and verification**, meaning the ex-ante assessment of a mitigation activity (validation) and ex-post assessment of mitigation outcomes (verification) by a competent independent third-party against relevant criteria.
- **Permanence**, meaning that the mitigation outcomes are durable and any reversals are fully addressed (see also section 2.1.3 and
- Box 2).
- **Avoidance of double counting**, meaning that the same mitigation outcome is not issued as more than one carbon credit ("double issuance"), the same carbon credit is not used more than one time ("double use") or the same mitigation outcome is not claimed by more than one entity ("double claiming").

- **Environmental and social safeguards**, meaning that activities that generate carbon credits should not cause negative environmental and social impacts.

Furthermore, carbon crediting programmes that issue carbon credits should meet criteria relating to robust governance and transparency.

Sources: Ahonen et al., 2022; CCQI, n.d.; ICVCM, 2024; Laine et al., 2023

Box 2. Key terms: Permanence, durability and reversals

According to the Integrity Council for the Voluntary Carbon Market, "the GHG emission reductions or removals from the mitigation activity shall be permanent or, where there is a risk of reversal, there shall be measures in place to address those risks and compensate for reversals" (ICVCM, 2024). Their Assessment Framework requires certain categories of activities[8] to assess reversal risk and manage material risks, and certain categories of activities[9] to monitor and compensate for reversals.

The Science Based Targets initiative defines permanence/durability as "the longevity of a carbon pool and the stability of its stocks, given the management and disturbance environment in which it occurs" and notes that "storage duration can differ significantly, depending on the type of reservoir" (SBTi, 2025a, p. 91).

The Paris Agreement Crediting Mechanism's Removals Standard requires activity participants to address non-permanence by preventing and minimising the risk of reversals and fully remediating the reversal of removals for which carbon credits have been issued (UNFCCC, 2024). In the standard on addressing non-permanence and reversals, a reversal is defined as "a net loss in the storage of a greenhouse gas or a precursor of a greenhouse gas for which A6.4ERs have been issued, calculated across all applicable greenhouse gas reservoir(s) over a period of time covered by a monitoring report" (UNFCCC, 2025, p. 4).

Carbon **crediting programmes** aim to ensure that carbon credits meet the integrity criteria. This is done by assessing activities and their mitigation outcomes against the integrity criteria and issuing carbon credits against these criteria. While all carbon crediting programmes apply the same integrity criteria, they can have different interpretations and methodologies for operationalising these criteria, as well as differences in their sectoral and geographic scopes and governance. Some crediting programmes of international scope are governed by United Nations bodies (e.g., the Paris Agreement Crediting Mechanism, see Section 3.1, while others are governed by non-state actors (e.g., the Verified Carbon Standard and the Gold Standard). Some programmes are national in scope and government by national authorities (e.g., Australian Carbon Credit Unit Scheme). The EU has set up the EU Carbon Removal and Carbon Farming (CRCF) framework to approve methodologies for crediting removals within the EU. CRCF units can be issued by carbon crediting programmes that have been approved by the European Commission to do so. The number of carbon crediting programmes has increased significantly over time and, in the Paris era, several programmes specialised in carbon removals have emerged (e.g., Puro.earth and Isometric).

[8] Biochar, carbon capture with geological storage or mineralisation, enhanced weathering, activities that displace non-renewable biomass, CO_2 in concrete utilisation

[9] Conservation and avoided conversion, forestry and agriculture soil carbon sequestration, wetland and marine ecosystem restoration/management

Most carbon crediting programmes apply similar **assessment cycles**, 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 (Figure 7). Activity developers submit activity design **documentation** to the selected carbon crediting programme to be assessed against the programme's requirements, including the detailed requirements specified in an **approved methodology** that is applicable to the activity category. The assessment determines whether the activity can be **registered** and thus eligible to **issue** carbon credits under the selected programme. After registration, the activity may be implemented, and it will be subject to **monitoring**, in accordance with the applicable methodology, and **reporting**. On a regular basis, the activity developer prepares a monitoring report and submits it to a third party for **verification**. Subject to a positive verification, carbon credits can be **issued** by the crediting programme.

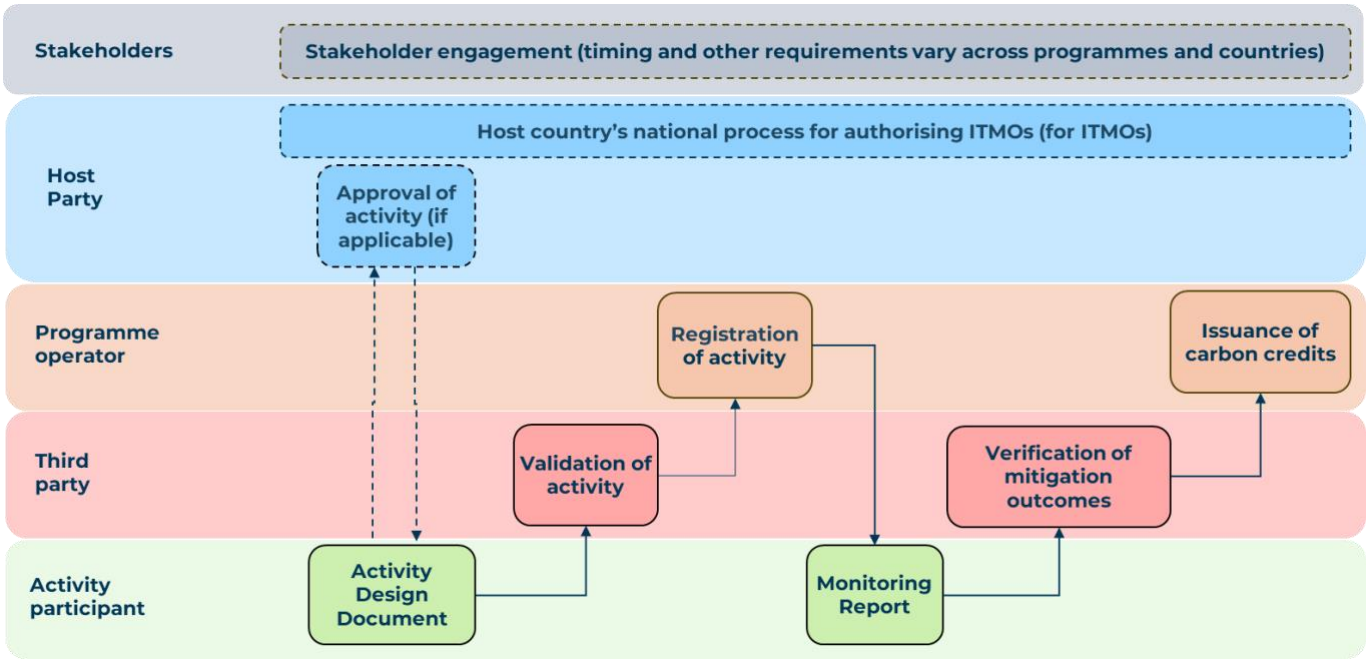

Figure 7. Key steps in generating carbon credits

The solid lines indicate elements that are common across most carbon crediting programmes and activities while the dashed lines indicate elements that are relevant in some, but not all, cases. For example, some carbon crediting programmes, such as Gold Standard, require activity developers to offer stakeholders engagement opportunities throughout the design and implementation of the activity. The host country's national process for authorising ITMOs is only relevant for carbon credits authorised as ITMOs, while the host country's approval of activities is only relevant for activities registered under the PACM, unless the host country requires approval also for activities registered under other carbon crediting programmes.

Adapted from: Perspectives Climate Research and GHG Management Institute, 2025

Upon **issuance**, carbon credits are recorded in a carbon credit **registry**. Carbon registries have an important role in promoting transparency. 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. Most carbon crediting programmes operate their own registry where they record and track carbon credits issued under the programme.

Carbon credits issued by different programmes have **different names**. For example, the Verified Carbon Standard issues Verified Carbon Units (VCUs) and the Gold Standard for the Global Goals issues Gold Standard Verified Emission Reductions (GS-VERs), while carbon credits issued under the Paris Agreement Crediting Mechanism (PACM) are called Article 6.4 Emission Reductions (A6.4ERs), and carbon credits authorised under Article 6.2 are referred to as Internationally Transferred Mitigation Outcomes (ITMOs).

The generation of carbon credits takes time and requires expertise and financial resources. It can take a year or more to progress from activity design to registration, and the first carbon credits are typically issued at least a year later. The assessment cycle involves various transaction costs, relating to the activity design documentation, validation and verification, registration and issuance. In case the proposed activity lacks an existing applicable methodology and, thus, requires the development and approval of a new methodology, this could involve significant additional costs. While many of these costs occur before issuance, payments from the sale of carbon credits typically are not made until they are delivered to the buyer, upon or after issuance.

To promote greater consistency and confidence in the integrity of carbon credits, industry-led initiatives such as the Integrity Council for the Voluntary Carbon Market (ICVCM) and the Carbon Credit Quality Initiative (CCQI) have developed requirements and frameworks for evaluating the integrity of carbon crediting programmes and the credits they issue, based on their interpretation of what constitutes “high integrity” (CCQI, n.d.; ICVCM, 2024). These initiatives assess integrity at the level of carbon crediting programmes and activity types or methodologies, but do not conduct activity-level assessments. The CCQI offers a free online scoring tool while the ICVCM approves carbon crediting programmes and activity type categories that meet its Core Carbon Principles (CCPs). Carbon credits can be tagged as CCP-approved if they are issued by CCP-eligible programmes for CCP-approved categories. Private carbon credit rating agencies assess individual activities and provide integrity ratings, based on their own assessment methodologies.

2.3. How can carbon credits be used and claimed?

The use of carbon credits entails the purchase of carbon credits and their retirement or cancellation in a carbon registry. In this report, claims refer to marketing claims made by companies, based on the voluntary use of carbon credits.

Carbon credits can be used for various purposes, including to comply with international targets and national obligations or to voluntarily **offset** or **inset** emissions or **contribute** to climate action (see Box 3). Not all types of carbon credits are suitable for all types of uses. Their suitability for specific uses is determined by aspects such as the carbon crediting programme used and whether the underlying emission reductions or removals are authorised as ITMOs (see Section3.1). Various standards, guidelines and legislation specify the conditions under which carbon credits are suitable for particular use cases. The Paris Agreement rules state that ITMOs can be used for international compliance. The Paris rules also provide for the use of ITMOs for other purposes and their voluntary cancellation, for example for the purpose of voluntary offsetting (including for carbon neutrality and net zero claims, see Box 4) or as a voluntary contribution to global ambition-raising. There is also broad agreement that carbon credits that are not authorised as ITMOs can be used to voluntarily contribute to global/national mitigation efforts, and they can also be suitable for domestic compliance, provided that they are reflected in the national GHG inventory and are within the scope of the target. Furthermore, there is general agreement that carbon credits that are used to **neutralise** "residual" emissions (see below) should be based on removals, rather than emission reductions. There are differing views on whether carbon credits that are not authorised as ITMOs provide a valid basis for voluntary offsetting (including neutralisation), and what types of removals could be used for neutralisation. While there is general agreement that the **like-for-like** principle should be applied to offsetting, interpretations differ on what this means in practice (see Box 5).

Box 3. Key terms: Insetting, offsetting and contributions

In the context of carbon credits:

Insetting refers to mitigation outcomes (including, but not limited to carbon credits) achieved **within** an actor's scope 1, 2, or 3, in order to compensate for GHG emissions, such that an actor's net contribution to global emissions is reduced (Race to Zero, 2021)As of 2025, there is no formal definition for the term but various but organisations such as SBTi and GHG Protocol are working on a definition and accounting approaches (SBTi, 2025b; WWF, 2024). According to the WWF, when used for insetting, carbon credits are a useful tool for measurement, monitoring and tracking (WWF, 2024).

Offsetting refers to the use of carbon credits sourced **outside** the user's boundaries or value chain to **counterbalance** an equivalent amount of GHG emissions within the user's boundaries or value chain (ISO, 2023). In general, to counterbalance is defined as " to have an equal but opposite effect", and as a synonym for the verb "offset" (Oxford Learner's Dictionaries, n.d.). In the context of carbon credits, counterbalancing means that the combined impact of the emissions and the carbon credit use on global net emissions is zero. In this context, offsetting and **compensation** are commonly used as synonyms (Ahonen et al., 2022). The SBTi is an exception, defining offsetting narrowly as purchasing carbon credits from activities outside of an actor's value chain as a substitute for reducing emissions within its value chain, and compensation as counterbalancing value chain emissions with an equivalent volume of mitigation from outside its value chain (SBTi, 2025a). The United Nations' Race to Zero defines compensation broadly as including offsetting but also "other activities an actor makes outside its value chain that are contributions to mitigation" (Race to Zero, 2021, p. 6).

Neutralisation refers to balancing residual emissions of an actor with GHG removals outside an actor's emissions inventory, such that an actor's net contribution to global emissions is reduced or eliminated (Race to Zero, 2021). In the SBTi Corporate Net-Zero Standard (version 1.3), neutralisation is defined as "measures companies take to remove carbon from the atmosphere and permanently store it, counterbalancing the impact of emissions that remain unabated after the long-term science-based target is achieved" (SBTi, 2025b).

Contributions refer to **contributing** to global or national mitigation by voluntarily supporting mitigation **outside** the actor's value chain, for example through the voluntary purchase of carbon credits, **without implying** that this support counterbalances (i.e., offsets) the actor's value chain emissions (Carbon Market Watch, 2020; Fearnehough et al., 2023; Gold Standard, 2025a; Kreibich et al., n.d.; Petersen et al., 2025; SBTi, 2024).

Box 4. Key terms: Carbon neutrality, climate neutrality and net zero

While **carbon neutrality** and **net zero** are defined as synonyms at the global level as a balance between emissions and removals (IPCC, 2022), these terms are not necessarily used as synonyms at the sub-global level. At the sub-global level, carbon neutrality can refer to a situation where any GHG emissions attributed to a country or an entity (e.g., its operations, products or services) have been fully offset by using at least an equivalent amount of carbon credits, so that the combined impact on global net emissions is zero. Carbon neutrality can thus be achieved already before reaching a stage when only hard-to-abate emissions remain, by offsetting all remaining emissions. By contrast, net-zero can only be achieved at the stage when only residual hard-to-abate emissions remain and have been balanced with removals. In Swedish, furthermore, "klimatneutral" has a meaning which is distinct from "nettonoll", in line with the conventions in English. At the level of non-state actors, there is no universal agreement on the distinctions between carbon neutrality and net-zero. These terms are also not well defined in national (or EU) legislation. Box 6 provides examples on how key standards define carbon neutrality and net zero for non-state actors.

At the global level, the IPCC differentiates between **carbon neutrality**, **GHG neutrality** and **climate neutrality**, with carbon and GHG neutrality referring to a balance between CO_2 and GHG emissions and removals, respectively, and climate neutrality referring to a state where human activities result in no net effect on the climate system (IPCC, 2022, 2018). This would require achieving GHG neutrality as well as accounting for other human activities that, for example, affect surface albedo or local climate. By contrast, in the context of carbon credit markets, the terms carbon neutral, GHG neutral, and climate neutral are usually used as synonyms, and refer to balancing GHG emissions with an equivalent amount of carbon credits or removals. In Swedish, they are all commonly referred to as "klimatneutral".

Box 5: Key terms: Like-for-like principle

Like-for-like refers to equivalence in terms of the warming impact, and in terms of the timescale and durability of carbon storage (Race to Zero, 2021). In the context of carbon credits, the rationale for the like-for-like principles applies to the use of carbon credits for offsetting (Cullenward, 2023). The principle requires the emission reductions or removals associated with the carbon credits to be equivalent to the emission reductions or removals that they are counterbalancing (offsetting) in terms of their global warming potential as well as the timescale and durability of carbon storage. For example, emissions from fossil sources that remain in the atmosphere for centuries or even millennia should be offset with either a reduction of an equivalent amount of reductions in fossil emissions, or the removal of an equivalent amount of GHGs from the atmosphere and their storage for an equivalent duration (Streck et al., 2025). Short-lived emissions (e.g., of methane) could be offset with emission reductions or removals that are associated with shorter-term durability, such as from forest conservation or soil carbon sequestration.

The authors are not aware of any universal definition of the like-for-like principle. According to the Oeko-Institut "flexibility should only be allowed on a 'like-for-like' basis, i.e. not mix uncertain reductions or removals from land-use sectors with permanent CO_2 emissions" (Graichen et al., 2025b) and "they do not ensure equivalence in the duration of emission reductions or removals compared to carbon credits without reversal risks. Therefore, carbon credits subject to reversal risks should not be used to offset permanent emissions. This would pose considerable integrity risks, particularly as some ecosystems are shifting from a sink to a source of emissions. It would also raise equity issues, as the partner countries would ultimately bear responsibility for any future reversals" (Schneider et al., 2025). In the context of carbon credits, the like-for-like principle is sometimes (mis)understood or (misre)presented as meaning that fossil emissions can be offset only with permanent (technical) removals ("Do Not Rule Out Nature from Climate Action," 2025; Höglund et al., 2023). There is no science-based rationale for excluding the option of offsetting fossil emissions with reductions in fossil emissions, since, at the sub-global level, both permanent emission reductions and permanent removals have an equivalent impact on global net emissions (Möllersten et al., 2024). An alternative view on the science-aligned use of permanent removals is that it should be limited to hard-to-abate emissions, so not just any fossil emissions: "We will never be able to scale enough high-quality carbon removals to offset like-for-like currently avoidable fossil fuel emissions. The use of finite carbon removals needs to be preserved for hard-to-abate emissions and then bringing us back to safe levels after we almost certainly overshoot 1.5 degrees, and not sustaining existing fossil fuel interests" (University of Oxford, 2024).

In the **compliance space**, there is consensus that all forms of double counting must be avoided, including double claiming of the same mitigation outcome by more than one country. This type of double claiming is avoided through the use of ITMOs (see Section 3). ITMOs represent mitigation

outcomes that are not counted towards the host country's NDC and can thus be uniquely claimed by the user. Under the Paris Agreement, governments can use ITMOs towards their NDCs. Relevant authorities, such as the regulators of emissions trading systems or carbon taxes, decide whether to accept carbon credits towards compliance, and on what conditions. For example, Swiss fossil fuel importers are required to purchase ITMOs and surrender them to the Swiss government as a contribution towards meeting the Swiss NDC, while companies covered by Singapore's carbon tax may use ITMOs to offset up to 5% of their taxable emissions (FOEN, 2024; Singapore National Environment Agency, 2023). The European Commission has proposed accepting ITMOs towards the EU's 2040 target, but not towards EU ETS compliance (see Section 4.1). International airlines will need to use ITMOs to meet their obligations for carbon-neutral growth under the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) from the first phase (2024-2026) onwards. These ITMOs must fulfil also other criteria for CORSIA Eligible Emissions Units (ICAO, 2025).

In the **voluntary space**, there is an ongoing debate on whether the credible voluntary use of carbon credits requires the avoidance of double claiming with national mitigation targets. It is undisputed that this type of double claiming can be avoided by using carbon credits authorised as ITMOs for offsetting, and using carbon credits that lack such authorisation for contributions (see below). Some standards and guidelines, such as the **ISO 14068-1 Carbon Neutrality Standard**, the Gold Standard's **Climate Responsibility Framework** and the **Oxford Principles for Responsible Engagement with Article 6**, explicitly require the avoidance of double claiming with national mitigation targets, while other standards and guidelines, such as the **Voluntary Carbon Market Integrity Initiative's (VCMI) Claims Code**, the **revised Oxford Principles for Net Zero Aligned Carbon Offsetting, the SBTi Corporate Net-Zero Standard Version 1**[10] and **the ICVCM**, remain silent or ambiguous about this issue.

To date, non-state actors have used carbon credits mainly to **offset** emissions (see Box 3) relating to, e.g., their operations or products, often to claim that their operations or products are "**carbon neutral**" as a result (see Box 4). However, there are increasing instances where consumer watchdogs have deemed offset claims to be misleading and thus in breach of anti-greenwashing regulations. In the EU, product-level claims based on offsetting will be banned as of 2026 (see Section 4.1.4). On the level of non-state actors, corporate net-zero guidelines and standards allow for the limited use of carbon credits for **"counterbalancing"** (ISO, 2022) / "**neutralising**" (SBTi, 2025b) **residual emissions** to reach a state of **net zero**. To achieve net zero, the actor must reduce its value chain emissions in line with its long-term net-zero target and neutralise any residual emissions with an equivalent volume of removals. These removals could (but do not have to) be issued as carbon credits. There is broad agreement that removals with durable storage, such as bio-CCS and DACCS,

[10] The consultation for version 2 of the SBTi Corporate Net-Zero Standard introduces a requirement to use only removals with corresponding adjustments for neutralisation.

could be used for neutralisation but there are differing views on whether and under which conditions removals with shorter-lived storage could also be used. While there is no universal definition for neutralisation, it is often defined as counterbalancing emissions, and thus a form of offsetting, for example by the ISO Carbon Neutrality Standard and Net Zero Guidelines, the SBTi Corporate Net-Zero Standard (version 1[11]) and Gold Standard (Gold Standard, 2025b) . The ISO 14068-1 is a standard for making organisation- or product-level **carbon neutrality claims**, and the SBTi Corporate Net-Zero Standard provides a basis for making corporate **net-zero claims** (see Box 6). In 2026, the SBTi aims to launch a new version of its Corporate Net-Zero Standard and the ISO also aims to launch a standard for net zero-aligned organisations. These claims are available for actors that have "science-based" targets for value chain emissions reductions. According to these standards and guidelines, net zero is a state that non-state actors would need to achieve by 2050 (by counterbalancing any residual emissions with removals) while carbon neutrality is a state that actors could achieve already today (by counterbalancing their remaining emissions with carbon credits based on emission reductions or removals).

The contribution model is emerging as an alternative to offsetting. This model is promoted by stakeholders that are critical of offsetting, such as the Carbon Market Watch and the WWF, as a credible way for non-state actors to use high-integrity carbon credits to take **climate responsibility** for their ongoing emissions. The Gold Standard has developed a Climate Responsibility Framework (Gold Standard, 2025a) and SBTi has introduced a framework for taking responsibility for ongoing emissions as part of the revision of its Corporate Net-Zero Standard (SBTi, 2025c), building on its work on "beyond value chain mitigation" (SBTi, 2024). Contribution claims convey that an actor has contributed to global or national mitigation by voluntarily supporting mitigation outside its value chain, without implying that its value chain emissions are counterbalanced as a result. The VCMI, which offers a set of Carbon Integrity Claims for non-state actors that have science-aligned targets, does not require carbon credits to be authorised as ITMOs (VCMI, 2025) (see Box 6). Framing these claims as contributions would avoid any double claiming with national mitigation targets. The VCMI remains silent about the type of these claims and the need to avoid double claiming with national targets, and recommends that companies "communicate that the high-quality carbon credits which they purchased and retired to meet the requirements for Carbon Integrity Claims are a contribution to both the company's own climate goals and to global efforts to mitigate climate change" (VCMI, 2023, p. 3).

Carbon credits that are sourced within a company's value chain can be used for **insetting** to account for mitigation outcomes that are attributed to a particular value chain mitigation activity. Companies can use insetting as a tool to cooperate with value chain partners, and to incentivise and

[11] The consultation for version 2 of the SBTi Corporate Net-Zero Standard does not define neutralisation as "counterbalancing".

reward mitigation within the value chain. Insetting can be used to meet value chain emission reduction targets.

Box 6. Examples: Carbon neutrality, net-zero and Carbon Integrity claims

ISO 14068 is a standard for **carbon neutrality** claims for organisations and products, the VCMI provides a code of practice for enterprise-level **Carbon Integrity Claims**, and SBTi is a standard for **corporate net-zero**. These claims are available for organisations that have **science-aligned targets** in place. The carbon neutrality and Carbon Integrity Claims can be made **on the way to net zero** (i.e., already today) while net-zero claims can only be made once the organisation has **achieved its net-zero target** and reduced its emissions to zero or residual levels (typically around 2050).

To make a **carbon neutrality claim under ISO 14068 Carbon Neutrality Standard**, an organisation would need to have in place a carbon neutrality target, including science-based short- and long-term targets, for minimising the carbon footprint of the subject (i.e., organisation or product) and cover all remaining emissions with carbon credits that meet the standard's criteria and avoid double claiming with other entities, including governments. While this is generally considered to be an improvement compared to earlier carbon neutrality standards (Laine et al., 2025), the ISO 14068 has nonetheless been criticised for insufficient ambition (Huckestein et al., 2024).

To make a **Carbon Integrity Claim under the VCMI**, a non-state actor would need to have "science-aligned near-term emission reduction targets consistent with reaching net zero emissions no later than 2050" and demonstrate progress towards meeting this target (VCMI, 2025). Actors can make claims by purchasing and retiring carbon credits equal to a certain share of its remaining emissions, ranging from 10% to over 100%. Carbon credits must be approved by the ICVCM or issued under the PACM. The Claims Code remains silent about avoiding double claiming with national mitigation targets and does not require carbon credits to be authorised as ITMOs.

To make a **corporate net-zero claim under the SBTi Corporate Net-Zero Standard (version 1)**, a company or financial institution would need to reduce its value chain emissions to zero or "residual" levels and neutralise any residual emissions with carbon removals. While version 1 of the SBTi Corporate Net-Zero Standard required removals used for neutralisation to be "permanent" (without clearly defining the term) (SBTi, 2025b), proposals for version 2. 0 of the standard include a requirement for a certain share of the removed carbon to be stored "long-lived" while allowing the rest to be stored in "short-lived" reservoirs (SBTi, 2025c). Furthermore, while version 1 remained silent about the need to avoid double claiming between these removals and national mitigation targets, proposals for version 2 include a requirement that removals that are used for neutralisation must demonstrate corresponding adjustments by the host country, thus avoiding double claiming with national targets.

3. The role of Article 6 of the Paris Agreement for the voluntary carbon market

This chapter covers Article 6 of the Paris Agreement, including how countries can cooperate through Article 6 in implementing their nationally determined contributions and how its overlaps with the voluntary carbon market.

This chapter also outlines how and why Swedish non-state actors may want to generate or use carbon credits that are issued under the Paris Agreement Crediting Mechanism and/or authorised as internationally transferred mitigation outcomes under Article 6.2 of the Paris Agreement.

3.1. What is Article 6 of the Paris Agreement about?

Article 6 of the Paris Agreement enables countries to cooperate in implementing their nationally determined contributions (NDCs) to allow for higher ambition, ensure environmental integrity and promote sustainable development. Countries can do this by voluntarily engaging in market-based cooperation and public and private entities can be authorised to participate.

Article 6.2 provides for cooperation involving **internationally transferred mitigation outcomes (ITMOs)**, while **Article 6.4** establishes an international crediting programme **(Paris Agreement Crediting Mechanism, PACM)** for issuing carbon credits (**Article 6.4 Emission Reductions, A6.4ERs**) (Figure 8).

In addition to the general carbon credit integrity criteria (see Box 1 in Section 2.2), all ITMOs and A6.4ERs must also meet further requirements, such as setting baselines below business-as-usual and addressing any reversal in full. For ITMOs, there are only high-level criteria at the international level, which participating countries operationalise through their national legislation and frameworks. Many countries have also concluded bilateral Article 6 cooperation agreements with partner countries. By contrast, the integrity of A6.4ERs is overseen by the international Supervisory Body of the PACM. In addition, Article 6.4 activities need to be approved by the host country. To become an ITMO, a carbon credit would need to be authorised and first-transferred by the host country. Double counting is avoided through the application of corresponding adjustments (Box 7). Corresponding adjustments ensure that ITMOs represent mitigation that is not counted towards the host country's target and can thus be uniquely counted by the ITMO user. A6.4ERs can, but do not have to be authorised as ITMOs (Box 8). A6.4ERs that have not been authorised as ITMOs are referred to as Mitigation Contribution Units (MCUs) and they may count towards the host country's national target. Contributions to adaptation and overall mitigation in global emissions are mandatory under the PACM and voluntary under Article 6.2.

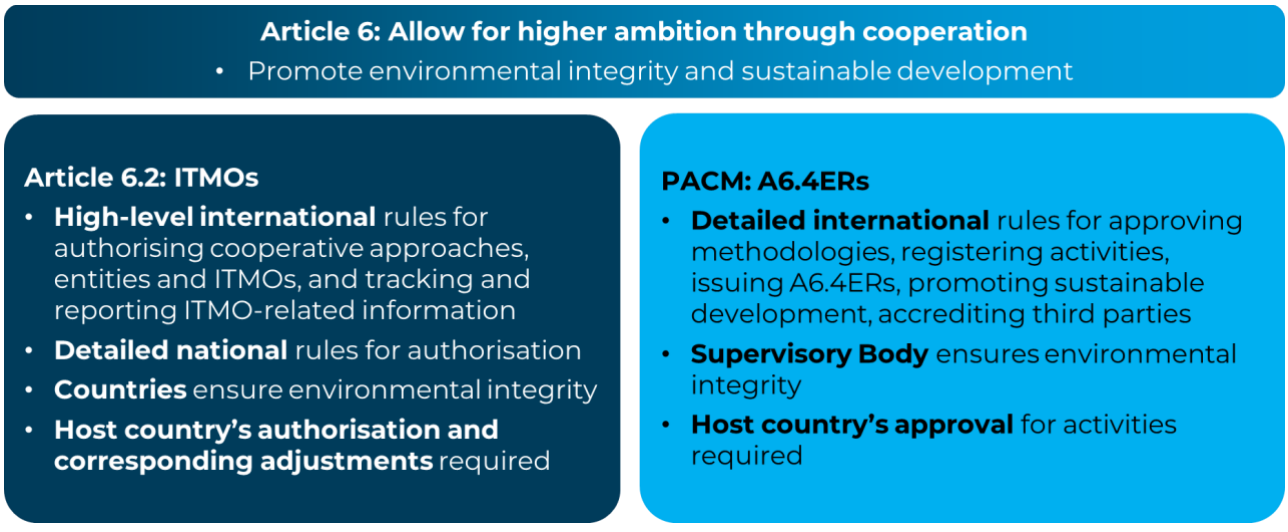

Figure 8. Article 6.2 and Paris Agreement Crediting Mechanism

Box 7. Overview of Article 6.2

The international Article 6.2 rules provide international guidance on cooperation involving ITMOs.

What are ITMOs?

ITMOs are **real**, **verified** and **additional emission reductions** and **removals** that are **measured** in tCO_2e or other non-GHG metrics and generated from the year 2021 onwards, **authorised** and **transferred** by the host country for use towards an NDC, for international mitigation purposes (e.g. CORSIA), or for other purposes.

What is the role of participating countries?

Countries participating in ITMO cooperation are required to **ensure environmental integrity** and transparency, **apply robust accounting**, including to avoid double counting, and **promote sustainable development** in accordance with international Article 6.2 guidance. This includes ensuring **additionality**, conservative **baselines below business-a-usual**, accounting for uncertainties in estimations and fully addressing any **reversals** and **leakage**. Participating countries must have access to a **registry** and track, record and **report** ITMO-related information, and **account** for their ITMO cooperation as part of their national reporting and accounting under the Paris Agreement. Host countries must have **national arrangements** for **authorising** ITMOs and have to apply **corresponding adjustments** to their national emissions balance for ITMOs that they have first-transferred. Buyer countries must apply corresponding adjustments for any ITMOs that they use towards their NDC. The application of corresponding adjustments ensures that **double counting is avoided** between the host country and the end-user and ITMOs are counted only for the end-user.

Box 8. Overview of the Paris Agreement Crediting Mechanism

The Paris Agreement Crediting Mechanism (PACM) issues carbon credits (Article 6.4 Emission Reductions, A6.4ERs) for verified mitigation outcomes from registered activities, in line the PACM's standards and procedures.

What are A6.4ERs?

A6,4ERs are carbon credits issued under the PACM for mitigation outcomes that meet the PACM's detailed requirements, for example for demonstrating **additionality**, setting **baselines** conservatively and adjusting them downwards **below business-us-usual**, addressing **leakage** and any **reversals** in full. Activities can generate A6.4ERs if they meet the PACM's requirements, for example relating to minimising **negative environmental and social impacts**, promoting **sustainable development**, encouraging **ambition** over time and aligning with the **long-term goals** of the Paris Agreement. Furthermore they need to be approved by the host country. A6.4ERs are issued into the Article 6.4 mechanism registry. At issuance, a specific share of A6.4ERs will be deducted as mandatory contributions to the **Adaptation** Fund and to **overall mitigation in global emissions**. Participating countries can authorise public and private entities to participate in Article 6.4 activities and have accounts in the mechanism **registry**.

What is the role of the Supervisory Body?

The mechanism's international **Supervisory Body** is responsible for approving **standards** (including **methodologies**), procedures and tools, and overseeing the **registration** of activities and the **issuance** of A6.4ERs. The Supervisory Body **accredits** independent third parties to **validate** activities and **verify** mitigation outcomes against the PACM requirements. The Supervisory Body is supported by the Methodological Expert Panel and the UNFCCC Secretariat.

What is the role of host countries?

To be registered under the PACM, activities need to be **approved** by the host country. Host countries must designate a national authority and submit information, for example, on the types of activities that they would consider approving and how they would contribute to achieving their national mitigation targets and sustainable development objectives. Host countries can also apply national requirements, for example for baseline approaches and crediting periods. Host countries may, but do not have to, authorise A6.4ERs as ITMOs in line with the international Article 6.2 rules. Authorised A6.4ERs are referred to as **Authorised Emission Reductions** (AERs) while A6.4ERs that are not authorised as ITMOs are referred to as "**Mitigation Contribution Units**" (MCUs). MCUs can be used for mobilising international or domestic finance for mitigation that counts towards the host country's NDC. A6.4ERs can also be used for voluntary purposes. Mitigation outcomes that meet the PACM's requirements are issued as A6.4ERs into the mechanism registry.

The operationalisation of the Article 6 market takes time. The first ITMO authorisations were announced in late 2022, the first ITMOs were issued a year later and the first ITMO transfer took place in April 2024. The international rules for Article 6 were finalised in December 2024, nine years after the adoption of the Paris Agreement, enabling the PACM to become operational in 2025. The first

methodology under the PACM was approved in October 2025, and the first A6.4ERs are expected to be issued in 2026.

3.2. What is the relationship between Article 6 and the voluntary carbon market?

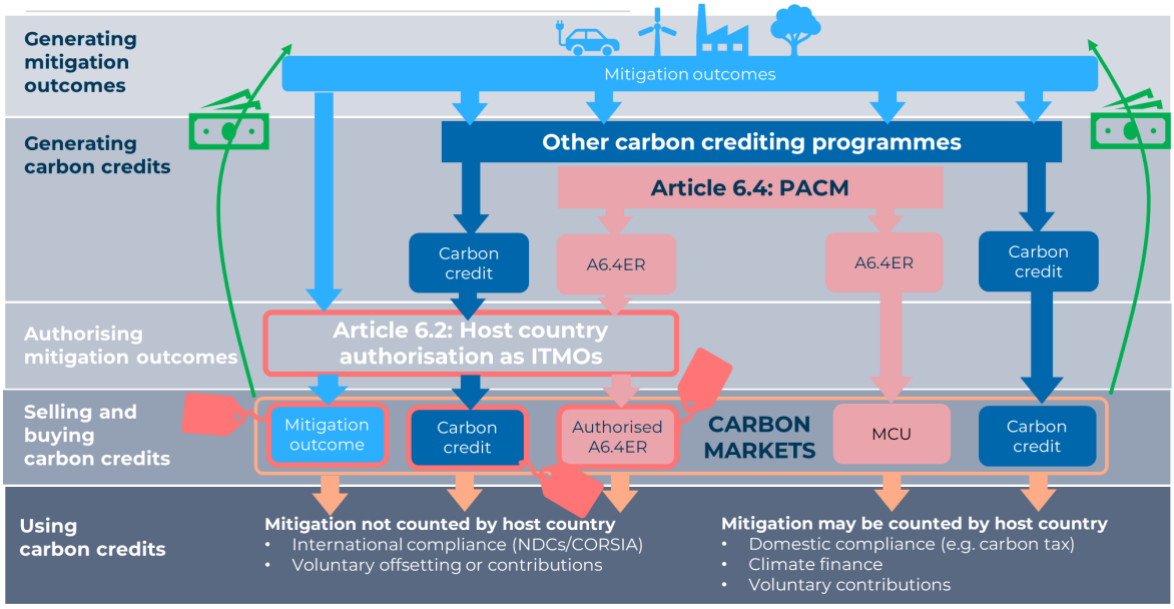

Figure 9. Carbon credit markets and Article 6

Source: Project development under the Paris Agreement, 2025

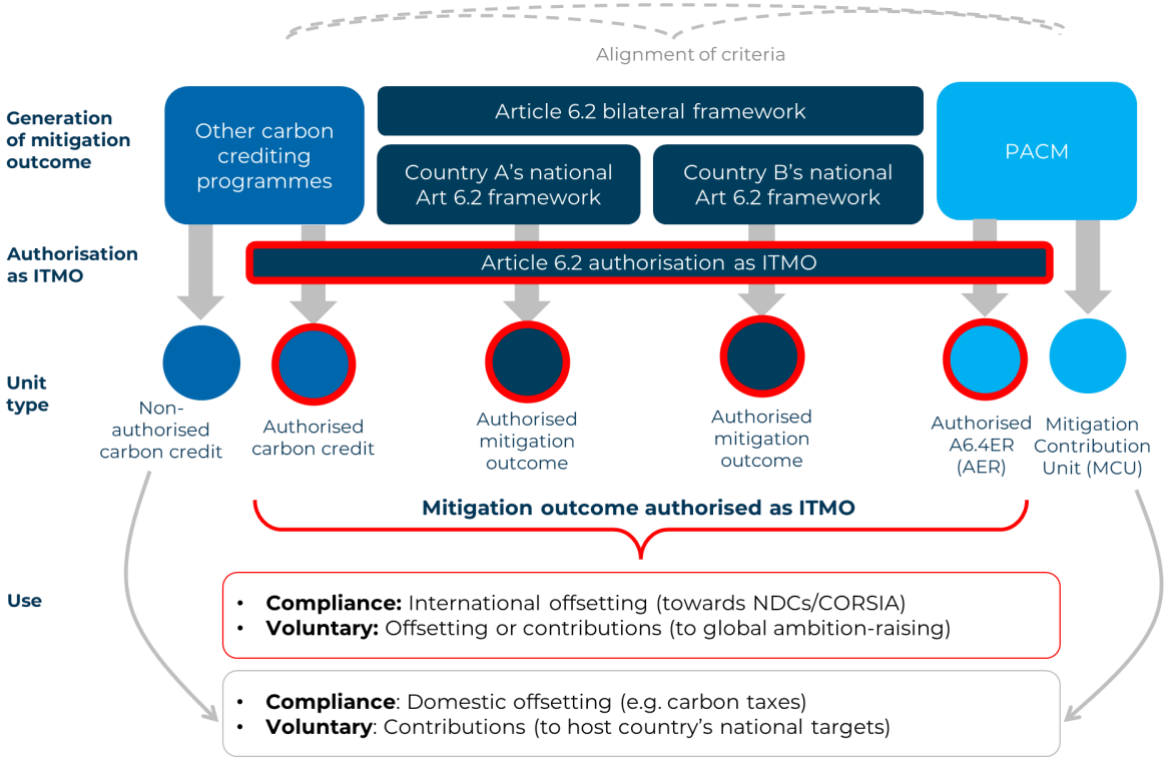

Figure 10. Carbon credits, A6.4ERs and ITMOs

Adapted from Ahonen et al., 2023, p. 44

Article 6 of the Paris Agreement overlaps with the voluntary carbon market in several ways, as illustrated in Figure 10. Carbon credit sellers can seek to have their carbon credits issued as A6.4ERs under the PACM and/or authorised as ITMOs under Article 6.2. These can be purchased and used also by voluntary buyers. A6.4ERs are carbon credits that have an international stamp of approval by the Supervisory Body. While this does not automatically guarantee high integrity nor eliminate reputational risks, many experts consider the PACM requirements to be significantly improved compared with the Clean Development Mechanism (CDM) and more stringent than other carbon crediting programmes (Hoch et al., 2025; Manuell, 2025; Wetterberg et al., 2024). ITMOs allow voluntary buyers to make voluntary offset claims that avoid double claiming with national mitigation targets, and they can also be used to voluntary contribute to global ambition-raising (Ahonen et al., 2023).

These overlaps and interactions can promote alignment of carbon credit integrity across voluntary and compliance markets. By aligning their standards with Article 6 of the Paris Agreement, carbon crediting programmes can issue carbon credits that can be authorised as ITMOs, and thus cater for international compliance buyers, such as governments and international airlines, in addition to voluntary buyers. For example, the Gold Standard for Global Goals is developing a methodological tool for adjusting baselines downwards below business-as-usual, in line with the Article 6 requirements (Gold Standard, 2025c). Some carbon crediting programmes, such as the Verified Carbon Standard and the Gold Standard for Global Goals, have already issued carbon credits that have been authorised as ITMOs. In fact, the voluntary carbon market constitutes a significant share of the early supply of carbon credits authorised as ITMOs (IETA, n.d.).

The ICVCM also has a key role in driving alignment between the voluntary carbon market and Article 6. Most major carbon crediting programmes have applied for CCP eligibility, and revised their standards and methodologies to align with the ICVCM's CCP requirements. The PACM's methodological work takes into account the methodologies and best practices applied under other carbon crediting programmes. For example, a CCP-approved methodology became the first methodology to be approved also under the PACM. The operationalisation of Article 6 and voluntary carbon market good practices are ongoing, parallel processes that can and should inform and interact with each other.

3.3. What is the relevance of Article 6 to Swedish non-state actors?

Swedish activity developers could have an interest in seeking ITMO authorisation for their durable CRCs if there is demand for authorised CRCs, for example from buyers that need ITMOs for compliance (e.g., Swiss companies, international airlines) or buyers that want to use ITMOs for voluntary offsetting or contributions to global ambition-raising. Swedish carbon credit buyers could have an interest in buying ITMOs if they want to voluntarily offset emissions or raise global ambition.

By using ITMOs, the buyer can make a unique voluntary offset claim that avoids double claiming with national targets, thus reducing reputational risks relating to offsetting (see Section 5 for more information on risks). This could include offsetting on the way to net zero, as well as neutralisation at and beyond net zero. ITMOs also provide a basis for making make a claim about contributing to global ambition-raising beyond existing NDCs.

Swedish activity developers could have an interest in seeking to have their activities registered under the PACM, if there is demand for A6.4ERs issued for these activities. This demand could stem from buyers who prefer A6.4ERs over carbon credits issued under other carbon crediting programmes. If no applicable methodologies have been approved under the PACM, activity developers can propose methodologies for approval. Swedish carbon credit buyers could have a preference for A6.4ERs if they consider that the PACM can ensure the high integrity of carbon credits better than other carbon crediting programmes and thus reduce the reputational risk relating to carbon credit integrity (see Section 5 for more information on risks).

Sweden is an early mover in Article 6 implementation. The bilateral Article 6 cooperation agreements between Sweden and its partner countries could help Swedish companies to engage in ITMO cooperation, either as developers of activities in the partner country or as ITMO buyers.

4. European context

This chapter provides an overview of EU legislation relevant for removals, Article 6, the voluntary carbon market and climate claims. It also covers national laws and guidance as well as joint European multi-country statements and declarations that are relevant for Swedish non-state actors that participate in the voluntary carbon market.

4.1. Relevant EU legislation

4.1.1. EU legislation on mitigation targets

EU-level targets are set in the **EU Climate Law**. According to it, the EU aims to achieve climate neutrality, defined as achieving a balance between economy-wide emissions and removals domestically within the EU by 2050, and achieve negative emissions thereafter. The EU Climate Law also requires the EU to set interim mitigation targets for 2030, 2035 and 2040. The 2030 target was set in 2015 and updated in 2023, and the 2035 and 2040 targets are expected to be agreed in 2026.

Under the Paris Agreement, the EU and its Member States have a single, **joint NDC**. In its first NDC, the EU committed to a net domestic reduction of at least 55% in GHG emissions by 2030 compared with 1990 levels. In November 2025, the EU submitted an updated NDC that introduces an indicative reduction of 66.25-72.5% compared with 1990 levels by 2035 (EU, 2025), and EU Member States and the European Parliament also confirmed their support for a 90% net emission reduction target for

2040, including "an adequate contribution" of high-quality international credits under Article 6 of the Paris Agreement (Council of the European Union, 2025; European Parliament, 2025). The EU Climate Law will be updated to reflect these developments.

The EU-level targets are allocated to different sectors and Member States through EU legislation, for example the EU Emissions Trading System (ETS) Directive and regulations for the land use, land use change and forestry (LULUCF) sector and the rest of economy (referred to as the effort-sharing sector). Until 2030, the EU intends to achieve its 2030 target through domestic (i.e. EU-wide) means, with the exception of cooperation with a small group of European non-Member States[12]. For the period 2031-2035, the EU Member States and the European Parliament support a "pilot period to initiate a high-quality international credit market", and for the 2035-2040 period, they support international credit use of up to 5% of 1990 EU net emissions. This would reduce the amount of emission reductions achieved within the EU, with the actual impact depending on details yet to be agreed (Graichen et al., 2025a). As of the end of 2025, EU Member States and non-state actors can acquire ITMOs from outside the EU for voluntary purposes but mitigation outcomes generated within the EU cannot be authorised as ITMOs (Ahonen et al., 2025b).

4.1.2. The role of removals in EU legislation

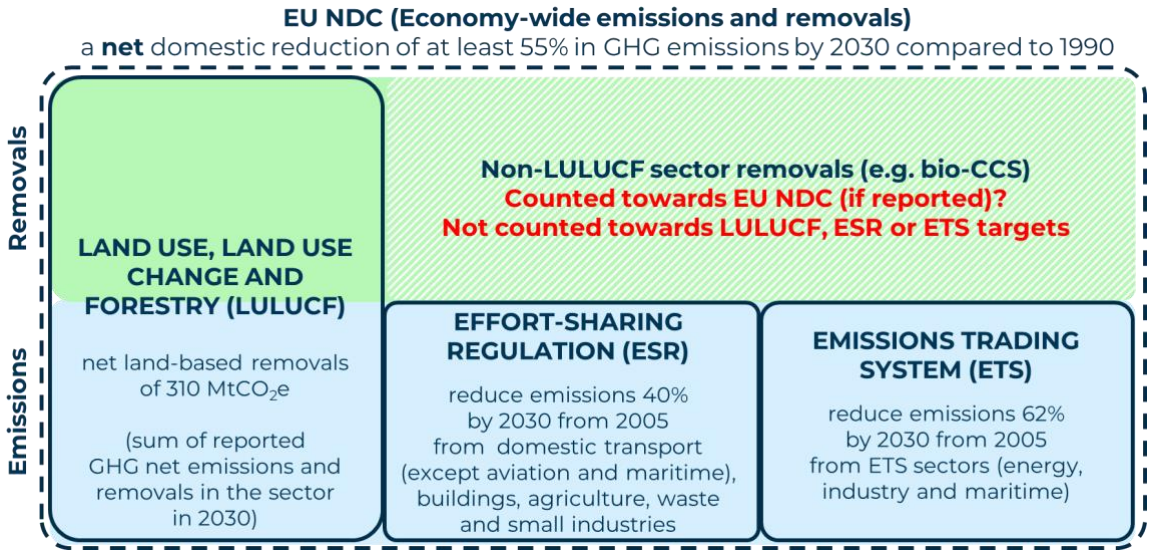

Figure 11. EU 2030 climate targets

Source: Ahonen et al., 2025b, p. 9

[12] The EU NDC is implemented in cooperation with some non-EU Member States, namely Norway, Iceland and Liechtenstein. In addition, the EU ETS is linked with Switzerland, and the EU will account for this linking in accordance with Article 6.2 of the Paris Agreement.

The European Climate Law encompasses emissions and removals that are **regulated in EU law**. Removals include natural and technological solutions, as reported in the EU's GHG inventory to the UNFCCC. As of the end of 2025, the EU ETS Directive and the Effort-Sharing Regulation regulate only emissions and **do not cover removals**, while the LULUCF Regulation covers land-based emissions as well as **land-based removals**, requiring Member States to achieve a balance between emissions and removals from the sector. This means that, as of the end of 2025, **industrial carbon removals** (which are not considered "land-based" removals), such as those from bio-CCS and DACCS activities, are **not regulated** in EU law. Until EU law is revised to regulate also industrial removals, the **Innovation Fund** offers the only EU-level incentives for industrial carbon removals by funding the demonstration of innovative low-carbon technologies.

In 2024, the European Commission adopted the **Industrial Carbon Management Strategy**, outlining an approach to scale up the removal of carbon from the atmosphere and the capture of carbon from fossil, biogenic or atmospheric origin for permanent geological storage or for utilisation to substitute fossil-based carbon in construction products, chemicals or fuels. The strategy notes that, to achieve the EU climate neutrality objective, significant amounts of carbon should be captured from biogenic sources or directly from the atmosphere already by 2040. In 2024, the EU also adopted the **Carbon Removals and Carbon Farming (CRCF) Regulation**, which creates the first EU-wide voluntary framework for certifying carbon removals, carbon farming and carbon storage in products within the EU. The framework should contribute to the achievement of the EU's NDCs and climate neutrality objective. It enables the certification of four types of units, using Commission-approved methodologies and carbon crediting programmes recognised by the Commission. All units must meet relevant criteria on quantification; additionality; storage, monitoring and liability; and sustainability. Initially, these certified units will rely on voluntary demand, for example as the proof of climate-related corporate claims. In the future, some of these units may be accepted for compliance, for example under the EU ETS. The first methodologies are expected to be approved in 2026. According to some experts, the draft CRCF methodologies fall short of international best practice and the PACM's requirements (Fallasch et al., 2025). The Commission has been tasked to assess, and potentially present a legislative proposal, on the need for additional requirements to align the Regulation with the rules and guidance of Article 6 and with best practices in the voluntary carbon markets. That assessment should compare methodological requirements, including baselines, monitoring period, activity period, additionality, leakage, non-permanence and liability, as well as address requirements related to authorisation and corresponding adjustments. It represents an opportunity to align EU requirements with international best practices. Swedish carbon credit sellers and buyers can – but do not have to – make use of the CRCF certification framework, once operational. Although the CRCF represents an EU stamp of approval, the use of credits certified under the CRCF does not eliminate reputational risks.

These developments have paved the way for integrating industrial carbon removals into EU legislation and targets. According to the Commission, when integrating industrial removals into EU law, the key objectives to consider are: (1) Removals serve to offset hard-to-abate emissions and then to go net-negative; (2) The ramp-up of both industrial and nature-based carbon removal solutions should be incentivised; (3) Double counting should be avoided (European Commission, 2024a, p. 2). In 2026, the Commission will share its assessments on options, including a separate EU target for domestic permanent (i.e., industrial) removals, as well as options for EU policies and support mechanisms for industrial removals, including their role under the EU ETS to compensate for residual hard-to-abate emissions (European Commission, 2024b).

Table 1. Carbon Removal and Carbon Farming certification framework

On 27 November 2024, the European Parliament and Council adopted a regulation establishing an EU certification framework for permanent carbon removals, carbon farming and carbon storage in products also known as the Carbon Removals and Carbon Farming (CRCF) Framework (European Union, 2024a).

According to the regulation, carbon removals, carbon storage in products, and soil emission reductions can be certified under the framework. The regulation specifies the quality criteria and rules for verification, certification, issuance and use of certified units, as well as of rules for the functioning and recognition by the Commission of certification schemes.

The framework aims to enhance the environmental integrity and transparency of permanent carbon removals, carbon farming and carbon storage in products and promote trust in their certification while reducing the associated administrative costs. Existing and new public and private crediting programmes that seek to certify emission reductions and removals under the CRCF framework can apply for recognition by the Commission under the CRCF Regulation. However, they can operate in the EU even without such recognition.

The regulation includes the following units which should be distinct from each other:

- Permanent carbon removal units
- Carbon farming sequestration units
- Carbon storage in products units
- Soil emission reduction units

All units need to meet relevant criteria on quantification; additionality; storage, monitoring and liability; and sustainability. The activities should take place within the EU, with the Commission considering the possibility of allowing geological carbon storage in neighbouring third countries (e.g., Norway and UK).

The Commission will establish certification methodologies in close consultation with the Expert Group on Carbon Removals. The Commission must prioritise the development of methodologies for those activities that are the most mature, have the potential to provide the largest co-benefits or where EU legislation relevant for the development of those methodologies has already been adopted. Regarding bio-CCS, the regulation notes that the Innovation Fund sets out rules relevant for the development of certification methodologies for bio-CCS. Clear liability mechanisms will be introduced within the certification methodologies in case of reversals and the consequences of incomplete monitoring and non-compliance by the operators during the monitoring period.

To generate certified units, activity operators must obtain a certificate of compliance for the activity from a crediting programme that is recognised by the Commission, and undergo regular re-certification audits. Until an EU-wide Union registry is established and maintained by the Commission, certified units may be issued by crediting programmes into registries that meet relevant criteria. Regarding the use of units, the regulation states that that the units generated under this framework shall contribute to the EU NDC and its climate objectives, and not to third party NDCs or international compliance schemes.

The CRCF Regulation includes provisions for regular review, taking into account, inter alia, the relevant developments concerning the rules and guidelines related to the implementation of Article 6, as well as best practices in the voluntary carbon market.

Sources: Ahonen et al., 2025a, p. 46; Ahonen et al., 2025b

4.1.3. EU legislation on corporate sustainability

The EU **Corporate Sustainability Reporting Directive** (CSRD) requires large and listed companies to regularly report about the key environmental and social risks and actions, including about their GHG emissions, mitigation targets, removals and carbon credit use, in line with the **European Sustainability Reporting Standards** (ESRS) (European Union, 2023). According to the ESRS, companies must report their value chain emissions separately from any removals and storage resulting from projects within its operations or value chain, as well as from any use of carbon credits. Companies that have disclosed a net-zero target must explain "the scope, methodologies and frameworks applies and how the residual GHG emissions (after approximately 90-95% of GHG emission reduction with the possibility for justified sectoral variations in line with a recognised sectoral decarbonisation pathway) are intended to be neutralised by, for example, GHG removals in its own operations and upstream and downstream value chain". Companies that have made claims based on carbon credits must provide information on the extent and quality of these credits. In case they have made GHG neutrality claims that involve the use of carbon credits, they must explain "whether and how these claims are accompanied by GHG emission reduction targets […] whether and how these claims and the reliance on carbon credits neither impede nor reduce the achievement of its GHG emission reduction targets, or, if applicable, its net zero target; and the credibility and integrity of the carbon credits used, including by reference to recognised quality standards". The ESRS defines recognised quality standards for carbon credits as "quality standards for carbon credits that are verifiable by independent third parties, make requirements and project reports publicly available and at a minimum ensure additionality, permanence, avoidance of double counting and provide rules for calculation, monitoring, and verification of the project's GHG emissions and removals".

The EU **Corporate Sustainability Due Diligence Directive** (CSDDD) introduces obligations to large companies regarding adverse impacts of their activities on human rights and environmental protection, including activities of their subsidiaries and business partners along their value chain (European Union, 2024b). It requires EU Member States to ensure that large companies adopt climate change mitigation transition plans for aligning the company's business model and strategy with the transition to a sustainable economy and with the limiting of global warming to 1.5 °C in line with the Paris Agreement. This plan must be put into effect, updated every 12 months and reported in line with the ESRS. It needs to contain, inter alia, time-bound targets for 2030 and in five-year steps up to 2050, based on conclusive scientific evidence.

In February 2025, the European Commission put forward the so-called **Omnibus package** to simplify EU rules for companies (European Commission, 2025). This package includes proposals to reduce the reporting burden and postpone the start date of reporting under the CSRD, and to reduce the requirements under the CSDDD, including for transition plans. Negotiations on these proposals are expected to be concluded in 2026.

4.1.4. EU legislation on green claims

The EU **Unfair Commercial Practices Directive** provides the overarching EU legislation for consumer protection. In February 2024, it was amended by the **Empowering Consumers for the Green Transition Directive**, which introduced new requirements to address greenwashing (i.e., making misleading claims about the environmental merits of a product or service) (European Union, 2024c). According to this directive, using carbon credits to voluntarily offset the carbon footprint of a product can mislead consumers to think that the product itself has a reduced environmental impact when that is not the case. Thus, the directive prohibits companies from making product-level offset claims in the EU. This ban must be implemented in Member States' national legislation by 2026. The directive notes that companies are not prevented from "advertising their investments in environmental initiatives, including carbon credit projects, as long as they provide such information in a way that is not misleading and that complies with the requirements laid down in [EU] law" (European Union, 2024c, p. 4). Companies that make climate-related claims about their future environmental performance, for example their transition to carbon neutrality by a certain date, must backed them up with clear and verifiable commitments and targets as well as detailed and realistic implementation plans, including actions and resources for achieving them. These claims should be regularly verified by an independent third party, whose findings should be made available to consumers.

In 2023, the Commission published its proposal for a complementary directive on the substantiation and communication of explicit environmental claims ("**Green Claims Directive**") (European Commission, 2023). The proposal included specific guidance for claims based on carbon credits, including publicly disclosing information about the amount, type and quality of carbon credits used. Regarding future climate-related performance, the proposal states that they should be, as a priority, based on improvements inside the claimant's own operations and value chains, rather than relying on offsetting. The European Parliament and the Council of the EU adopted their positions in 2024 (Council of the European Union, 2024; European Parliament, 2024). Regarding claims based on carbon credits, both positions differentiated between offset and contribution claims[13], and included specific requirements for these claims as well as a mandate for the Commission to develop more detailed requirements. Both propose to allow companies to make offset claims only if they have science-aligned targets in place and publicly disclose information about these targets, including progress towards them. In July 2025, the proposal came under threat of withdrawal, and as of the end of 2025, its fate is unclear.

[13] The Parliament's position would only allow offsetting (which they call "compensation") of "residual" emissions, effectively limiting offsetting to neutralisation and allowing the use of carbon credits for offsetting only in the net zero target year (around 2050) and thereafter. By contrast, the Council's position would allow companies to use carbon credits to offset their emissions already now, on their way to net zero, and not only in the future, in and after the net zero target year.

4.2. Relevant joint initiatives by European countries

In addition to national net-zero or similar targets (Dufour and Möllersten, 2025), the Nordic countries have committed to achieve regional carbon neutrality in the **Declaration on Nordic Carbon Neutrality,** which states that "Finland, Iceland, Sweden, Norway and Denmark want to lead by example" by intensifying regional cooperation in the green transition and catalysing global mitigation efforts (Nordic prime ministers, 2019). This includes, inter alia, encouraging Nordic companies, investors, local governments, cities, organisations and consumers to step up their efforts towards carbon neutrality.

The **Nordic Initiative for Cooperative Approaches** (NICA) is a joint initiative between Nordic countries and the Nordic Environment Finance Corporation (NEFCO), to support the ambitious implementation of market-based cooperation under Article 6 of the Paris Agreement, including voluntary carbon markets. NICA has developed a Nordic approach for ambitious and inclusive carbon market cooperation (NEFCO, 2022). This includes a Nordic vision, whereby Nordic actors engage in international carbon market cooperation to promote greater ambition of global climate action and support environmentally and socially sustainable mitigation activities that are compatible with the transition needed to limit global warming to 1.5°C and meet the United Nations Sustainable Development Goals. The approach complements international integrity criteria with additional Nordic goals and priorities, for example on enabling transformational change, facilitating private sector participation, embracing prompt action and learning by doing, and fostering partnerships and synergies.

The Nordic Declaration on Climate Neutrality points out bio-CCS as a key area for cooperation, with proposed measures such as establishing common Nordic infrastructure and hubs for CCS and developing Nordic business models (Nordic prime ministers, 2019). Denmark and Sweden have introduced **national support schemes for bio-CCS** in their pursuit for net-zero emissions, which **allow the blending of state support with revenues from selling carbon removal credits on the voluntary carbon market**. For further detail concerning the support system, see Section 4.3.2.

Sweden and Switzerland have concluded a Memorandum of Understanding (MoU) with each other on piloting the transfer of removals under Article 6.2 of the Paris Agreement. The piloting concerns the international transfer of a "symbolic amount" of ITMOs from industrial carbon removal activities, such as bio-CCS, between the two countries. Private entities could be involved as sellers and/or buyers in both countries. This pilot cooperation aims "to engage with private stakeholders to advance the use of Article 6 of the Paris Agreement for development and deployment of carbon removal technologies and to enhance the understanding of the necessary frameworks at international and national level" (Swedish Energy Agency and Federal Department of Environment, Transport, Energy and Communications of the Swiss Confederation, 2023).

In **the Nordic statement on climate compensation claims in marketing**, the consumer protection authorities of the Nordic countries encourage businesses to review their offset claims (Nordic Consumer Agencies, 2024). Referring to a ruling of the Swedish Patent and Market Court, the Nordic consumer protection authorities recognise the difficulties of verifying claims on climate compensation according to Directive 2005/29/EC on unfair commercial practices, as transposed in the Nordic countries. Instead of using general claims based on offsetting, which the statement declares most businesses will have trouble proving are true, businesses should describe the concrete actions they are taking to, for example, enhance carbon sinks. The statement points to challenges related to offset claims that are due to the lack of permanence, the risk of double counting and lack of additionality. It is stressed that the Nordic consumer protection authorities can initiate enforcement actions to ensure that claims on climate compensation are compliant with Directive 2005/29/EC on unfair commercial practices, as transposed in the Nordic countries.

In a **joint statement on claims in the voluntary carbon markets**, a group of like-minded EU Member States —Austria, Belgium, Finland, France, Germany, Spain, and the Netherlands—agreed on principles promoting full transparency, high-quality carbon credits, and credible climate **claims** aligned with the Paris Agreement (Ministry of Economic Affairs, Netherlands, 2023). Their statement stresses that the voluntary use of carbon credits should supplement, not substitute, companies' direct emissions reduction efforts. The joint statement focuses on preventing greenwashing through robust standards and safeguards addressing credit quality, host country impacts, transparency, and regular reporting. The purpose is to rebuild trust in the voluntary carbon market. It emphasises avoiding double claiming by ensuring that when organisations make offset claims based on carbon credits, these claims should not overlap with mitigation outcomes counted towards the national climate targets of the host country. The statement proposes that contribution claims can be made associated with carbon credits that help meet host country targets without double counting.

The **Coalition to Grow Carbon Markets** is a government-led initiative to strengthen high-integrity corporate demand for carbon credits. Launched in 2025 and co-chaired by the UK, Kenya and Singapore—with France and Panama as founding members—the Coalition aims to provide clear, consistent guidance for how companies can use carbon credits responsibly while supporting global climate change mitigation. The Coalition's **Shared Principles** outline how companies should engage with carbon credit markets (The Coalition to Grow Carbon Markets, 2025). They emphasise using carbon credits in addition to internal decarbonisation, selecting only high-quality credits from activities that meet rigorous requirements for social, economic, and environmental safeguards, and ensuring fair value and social benefits for host communities. Companies are encouraged to report transparently on credit use, make accurate and substantiated claims to avoid greenwashing, and actively support the development of a strong, credible international carbon market. These principles aim to boost trust, integrity, and investment in carbon markets worldwide.

4.3. Relevant Swedish legislation and rules

4.3.1. Swedish consumer law and the voluntary use of carbon credits

The Swedish Consumer Agency is a government agency whose responsibility is to safeguard consumer interests. The Consumer Agency has stated that claims such as carbon neutral, climate compensated, net-zero and similar are unclear and undefined (Konsumentverket, 2021). The Consumer Agency furthermore argues that when such claims are made in the marketing of products without a prominent specification or explanatory statement, consumers are at risk of being misled about a product's environmental credentials, since the average consumer cannot be expected to understand what these claims mean or to make an informed transactional decision based on these claims. For example, it might be difficult for the consumer to understand that these claims refer to the purchase and use of carbon credits, nor is it entirely certain that the consumer will understand that the product will still have an environmental negative impact caused by the emissions it actually generates.

Just like any other environmental claims, marketing using such terms must meet the requirements stipulated in the Swedish Marketing Act, which requires good marketing practice and bans any misleading marketing claims. Vague and undefined climate-related claims concerning products that are based on offsetting must, therefore, be supplemented by prominent specifications or explanatory statements to be used. The Consumer Agency has, however, not provided any general information about what such specifications and explanatory statements must include. Individual assessments must be made in each case, considering which project the emission reduction units are assigned.

According to the Swedish Consumer Agency, even climate compensation claims that are supplemented by prominent specifications or explanatory statements, and which a company can prove, can also be deemed misleading (Konsumentverket, 2021). The Consumer Agency elaborates that being able to prove the environmental advantages of the product according to the literal claim in the marketing is not sufficient. Marketers must be capable of providing evidence that covers the consumers' overall impression of the claim. Claims with a factually correct basis can, therefore, also be misleading, depending on the overall impression generated by the way the product is marketed.

In 2021, the Swedish Consumer Ombudsman took legal action against a Swedish company for using the claim "net zero climate footprint" in its marketing. The Swedish Patent and Market Court stated that the claim gave consumers the impression that the product had no impact on the climate, or that the product's impact had been fully compensated. This is what the trader had to prove for the claim not to be misleading. The trader had offset emissions based on carbon credits from, for example, afforestation and reforestation projects and REDD+. According to the court ruling, the trader had not been able to verify the claim according to Directive 2005/29/EC, as transposed in

Swedish legislation. Hence, the claim was considered misleading and unfair and, consequently, prohibited. (Nordic Consumer Agencies, 2024)

4.3.2. Swedish support system for bio-CCS and voluntary carbon markets

The Swedish government has implemented a state support system based on reverse auctions to enable the implementation of bio-CCS (Dufour et al., 2024). In the reverse auctions, the state is the buyer of removals from bio-CCS, and actors with bio-CCS potentials make bids. The lowest bid per ton of stored CO_2 wins, and is granted state support for 15 years to capture and geologically store biogenic carbon dioxide (Government of Sweden, 2023). Thus far, approximately 30 billion Swedish krona (SEK) have been allocated towards the support system. The intention is to use the resulting removals towards national mitigation targets for counterbalancing residual emissions, ultimately to attain net-zero GHG emissions by 2045 at the latest.

In December 2023, the Swedish government proposed in its strategic climate action plan that actors receiving state support for bio-CCS should be allowed to sell carbon removal credits on the voluntary carbon market (Government of Sweden, 2023). Sweden will claim the resulting removals towards Swedish mitigation targets while the buyers of carbon removal credits will be able to claim the mitigation outcome that they represent towards their own voluntary climate targets. Buyers of these carbon removal credits shall make clear in their climate reporting that the removals are contributing to Sweden's possibility to reach its climate targets.

The first reverse auction resulted in Stockholm Exergi winning government support of just over SEK 20 billion. Six companies applied for the auction, but Stockholm Exergi was the only participant deemed to have a feasible implementation plan. The funding will be disbursed over a maximum of 15 years starting from the commencement of geological CO_2 storage which is planned to commence in 2028. The project aims to permanently remove 800,000 tonnes of biogenic CO_2 annually (Swedish Energy Agency, 2025). A support level of around SEK 1,700 per tonne CO_2 can be derived from those figures.

Stockholm Exergi has landed a significant agreement with Microsoft, described as the world's largest voluntary carbon market permanent carbon removal deal. This partnership involves Microsoft purchasing permanent carbon removals from Stockholm Exergi, supporting the financing of the bio-CCS project and helping Microsoft meet its net-zero emission goals. Stockholm Exergi has stated that the average price of the carbon credit that they sell is approximately 3000 SEK/ton (Granmar, 2025). A combined level of state support and carbon revenue of around SEK 4,700 per tonne CO_2 can thus be estimated.

4.4. Other relevant national guidance

The Finnish government has published a series of studies on the voluntary carbon market, including **a guide for good practices** in 2023 and an analysis of the implications of international voluntary carbon market developments for Finnish companies in 2025 (Laine et al., 2025, 2023). The Finnish guide for good practices provides an overview of international good practice for the generation and voluntary use of carbon credits, and related claims.

The UK government published its **principles for voluntary carbon and nature market integrity** in 2024 (UK Government, 2024). These principles include using credits in addition to ambitious actions within value chains; using high-integrity credits; measuring and disclosing the planned use of credits as part of sustainability reporting; planning ahead; making accurate green claims using appropriate terminology; and co-operating with others to support the growth of high integrity markets. In 2025, the UK consulted on the implementation of these principles, seeking views on how they could be implemented through guidance, standards and regulatory oversight (UK Government, 2025).

5. Managing risks of voluntary carbon market participation

This chapter provides an overview of key risks relevant to potential carbon credit buyers and sellers, and options on how they can manage these risks. Risks can relate to deliveries, legislation and regulatory changes, reputation and/or carbon credit markets. Carbon credit sellers, buyers and regulators have various options for managing and sharing different risks. Risks can be interrelated and change over time. Some risks are specific to certain types of activities or carbon credits, such as durable CRCs.

We recommend that, at minimum, Swedish non-state actors use applicable methodologies approved by reputable carbon crediting programmes, comply with relevant legislation and transparently disclose information about their carbon credit generation or use. They can manage risks even further by following good practices for the generation and use of carbon credits and related claims, for example, using of best-in-class methodologies to generate carbon credits and applying the contribution approach to carbon credit use and related claims.

5.1. What are the key risks?

As with most activities, there are risks associated with the generation, sale, purchase and use of carbon credits, as well as with making claims based on carbon credits. They affect actors differently and the possibilities to control or manage specific risks also differ across actors.

There are various ways to categorise risks. In this report, risks are grouped into four categories:

- **Delivery risks**: Risks relating to the activity's ability to generate and deliver carbon credits
- **Legal and regulatory risks**: Risks relating to existing legislation and changes in regulation associated with carbon credits
- **Reputational risks**: Risks relating to negative publicity associated with carbon credits
- **Market risks**: Risks relating to the market-level supply, demand and price of carbon credits

These risk categories are described in more detail in Table 2 below.

Table 2. Key risks

Delivery risks	Delivery risks apply to carbon credits that have not yet been issued and delivered. They are highest at early stages of activity design, and fall over time as the activity achieves key milestones, such as implementation, registration and carbon credit issuance. It is common that the volume of the carbon credits generated and the timing of their issuance and delivery deviate from the original estimations, for example due to adjustments made during the validation and registration process, the underperformance of the underlying activity, delays in the carbon crediting cycle or the reversal of mitigation outcomes. At worst, the activity fails to generate or deliver any carbon credits. This could be due to a failure to secure the funding or permits needed for its implementation, or failure to be successfully registered under a carbon crediting programme. The failure to secure host country approval or authorisation would prevent the generation and delivery of certain types of carbon credits, for example A6.4ERs issued under the PACM and carbon credits authorised as ITMOs. **For carbon credit sellers**, delivery risks mean uncertainties about receiving revenue flows and attaining profitability. Since carbon credit buyers would typically only make payments against the

	delivery of carbon credits, carbon credit sellers face uncertainties about the actual amount and/or timing of payments for carbon credits until they have been issued. **For carbon credits buyers**, delivery risks mean uncertainties about how many carbon credits they will actually receive, and when.
Legal and regulatory risks	Legal and regulatory risks refer to risks relating to existing and future legislation, including gaps, lack of clarity and unpredictable changes, for example relating to the ownership of carbon credits and requirements for claims based on carbon credits. **For carbon credit sellers**, key legal and regulatory risks relate to uncertainties about the legal status and ownership of the carbon credit and the underlying mitigation outcomes. **For carbon credit buyers**, key legal and regulatory risks relate to the eligibility of the carbon credit for use cases and claims based on the carbon credit, which are regulated by anti-greenwashing legislation.
Reputational risks	Reputational risks refer to negative publicity for the carbon credit seller and/or buyer relating to carbon credits, due to actual or perceived problems with the underlying activity, the carbon credits or their use and related claims. The negative publicity may focus on a specific activity or carbon credit buyer, more broadly on certain activity types, or even on the carbon credit markets as a whole. The level and focus of reputational risks may vary over time, reflecting the latest criticism raised by researchers, non-governmental organisations and/or the media. **For carbon credit sellers**, reputational risks typically relate to concerns about the negative environmental and social impacts of the underlying activity and/or or concerns over the integrity of carbon credits. Insufficient revenue-sharing with local communities and/or excessive profit margins can also cause reputational risks. **For carbon credit buyers**, reputational risks relate to accusations of greenwashing (i.e., misleading claims), for example, due to concerns over carbon credit integrity and/or using carbon credits to substitute or postpone value chain emission reductions. In addition, negative environmental and/or social impacts of the activity and/or insufficient benefit-sharing with the local communities can cause reputational risks.
Market risks	Market risks refer to risks relating to supply, demand and price of carbon credits, as well as the functioning of the carbon credit market overall. **For carbon credit sellers**, key market risks relate to uncertainties in securing carbon credits buyers and/or a sufficient carbon credit price to make the carbon credit activity viable and profitable, as well as committing to long-term contracts with low prices in a context of uncertain market price projections. **For carbon credit buyers**, key market risks relate to uncertainties in securing a supply of carbon credits that match the buyers' preferences in terms of type, volume and timing of delivery, at a competitive unit price, as well as committing to long-term contracts with high prices in a context of uncertain market price projections.

The main risks for **carbon credit sellers** relate to **delivering carbon credits** and **securing sufficient revenue** from the sale of these credits. Delivery risks are influenced by the performance of the underlying activity and the success and timing of the registration of the activity and issuance of carbon credits under a carbon crediting programme. Risks with securing sufficient revenue from the sale of carbon credits depend on the success and timing of securing buyers for a sufficient volume, at a sufficient price. This, in turn, depends on the demand and willingness-to-pay for the types of carbon credits (e.g., durable CRCs, authorised credits) that the seller offers. These are influenced by standards, guidelines and legislation, as well as general trust in the integrity of carbon credit markets.

Key risks for **carbon credit buyers** relate to **finding high-quality carbon credits** at a reasonable price and **making credible claims**. There is a risk that high-quality carbon credits are in high

demand, and securing access to them requires the buyer to commit to their purchase at an early stage, when delivery risks are still relatively high. When making claims based on carbon credits, carbon credit buyers face legal and regulatory as well as reputational risks. Legal and regulatory risks arise from gaps and lack of clarity in national legislation and guidance regarding acceptable claims and requirements for their substantiation and communication. Reputational risks arise from a lack of international (and EU consensus) on the requirements for credible claims, and mistrust among stakeholders and the general public about claims based on carbon credits, relating to the carbon credits used and/or the claimant's internal mitigation efforts. Legal and reputational risks are higher for claimants that do not have science-aligned targets for reducing their own emissions, and for claimants that make voluntary offset claims.

5.2. How can key risks be managed?

Carbon credits sellers and buyers have various options for managing and sharing risks. Regulators also has a role in reducing risks. These options are summarised in Table 3.

Table 3. Risk management options

Delivery risks	**Carbon credit sellers** can manage delivery risks through a range of efforts designed to ensure the successful operation of the activity and the generation of carbon credits. At the design stage, feasibility studies on the financial, technical and carbon crediting aspects can help the seller to assess delivery risks. Capable staff, appropriate technological solutions and effective project management can reduce operational risks. Risks related to the carbon crediting cycle can be managed with carbon credit expertise. Contracts for the sale of carbon credits should be based on conservative assumptions. **Carbon credit buyers** can reduce delivery risks by conducting due diligence on potential sellers, selecting sellers with proven track records and purchasing carbon credits from a diverse portfolio of activities. Buyers can even eliminate the delivery risk entirely by buying already issued carbon credits. Sellers and buyers can reduce risks relating to host country approval/authorisation by selecting host countries with clear national frameworks and a solid track record. There are also some insurance products available to insure against certain host country risks, including the risk that the host country revokes an ITMO authorisation or does not apply corresponding adjustments for mitigation outcomes it has authorised as ITMOs. In the future, further insurance products may become available, for example for addressing reversal risks. **Regulators** can reduce delivery risks by providing a clear and predictable regulatory environment for financing and implementing mitigation activities. Host country regulators can reduce delivery risks relating to ITMOs by providing a robust national framework for ITMO authorisations, the possible revocation of authorisations, the application of corresponding adjustments and compliance with other international requirements.
Reputational risks	**Carbon credit sellers and buyers** can manage reputational risks relating to the underlying activity and carbon credit integrity by selecting activity types, methodologies and carbon crediting programmes that are considered to be of high integrity by e.g., ICVCM, and applying good practices for environmental and social safeguards, using e.g. the PACM's Sustainable Development Tool. Good practices also include ex-post issuance of carbon credits, i.e., only after mitigation outcomes have been generated and verified. Working in host countries that have a strong track record in respecting human and labour rights and environmental protection can also reduce reputational risks. **Carbon credit buyers** can manage reputational risks relating to carbon credit use and related claims by applying good practices for reducing their own value chain emissions, making claims and reporting about their climate action, carbon credit use and claims (see Section 5.3 for more information on good practices). **Regulators** can reduce reputational risks by providing clear guidance, recommendations and/or legislation relating to carbon credit integrity, voluntary use cases and related claims. Regulators could also provide nationally governed carbon crediting programmes and/or national labels or claims based on the voluntary use of carbon credits. However, to what extent such stamps of approval from the regulator reduce reputational risks depends on to what extent they are trusted by key stakeholders.

Legal and regulatory risks	**Carbon credit sellers and buyers** can manage legal and regulatory risks relating to the generation, ownership, trading and use of carbon credits by negotiating robust contracts, favouring countries that have clear and robust legal frameworks, following regulatory developments and insuring against political risks. **Carbon credit buyers** can manage legal and regulatory risks relating to claims based on carbon credits by applying good practices for making claims. **Regulators** can reduce legal and regulatory risks by providing a clear and predictable regulatory environment for mitigation activities, carbon crediting and the voluntary trade in carbon credits. For example, regulators could provide legal clarity on the ownership of carbon credits and the underlying mitigation outcomes, acceptable voluntary use cases for carbon credits and eligible claims involving carbon credits (incl. requirements for their substantiation and communication).
Market risks	**Carbon credit sellers** can manage market risks relating to uncertain demand and price by seeking to secure carbon credit revenue for future carbon credits, for example through long-term (offtake) contracts at favourable terms. **Carbon credit buyers** can manage market risks relating to uncertain supply and price of carbon credits by entering into long-term offtake contracts for the purchase of future carbon credits at favourable terms, and by diversifying the carbon credit portfolio. **Regulators** can reduce market risks by providing a clear and predictable regulatory environment for the demand, supply and trading of carbon credits, including for voluntary purposes.

The **distribution of risks between the carbon credit seller and buyer** is specified in the contract on the purchase and sale of carbon credits (Aristizaba and Maldonado, 2023). In general, risk-sharing should take into consideration the seller's and buyer's possibilities to manage the risk in question. For example, carbon credit sellers[14] have control over the technical, financial and legal aspects of the underlying activity while carbon credit buyers have control over the carbon credit use and related claims. Thus, carbon credit sellers are best positioned to manage delivery risks relating to the activity's performance, while carbon credit buyers are best positioned to manage legal and reputational risks relating to greenwashing. Reputational risks relating to carbon credit integrity can be managed by both carbon credit sellers and buyers, by selecting high-integrity activity types and crediting programmes, and ensuring that best practices are applied in activity design and implementation. Delivery risks relating to the activity's registration under a carbon crediting programme and the issuance of carbon credits are typically borne by carbon credit sellers.

Some risks can be **transferred to third parties**. For example, insurance provider MIGA, which is part of the World Bank Group, provides political risk insurance for carbon credit-generating activities, covering expropriation, transfer restrictions, and war and civil disturbance. MIGA's Breach of Contract guarantee could cover carbon-related risks in certain cases, for example in case the host country has issued an insurable Letter of Authorisation that authorises the entity to own and trade carbon credits as ITMOs and commits the government to applying corresponding adjustments (MIGA, n.d.).

[14] Assuming that the carbon credit seller is also the activity owner. This is not necessarily the case.

Regulators have a role in reducing risks for buyers and sellers engaging in the voluntary carbon market, by providing clear and predictable regulatory frameworks for financing and implementing mitigation activities, generating and trading carbon credits, and making claims based on carbon credits. This includes addressing gaps and lack of clarity in regulation, providing guidance and recommendations and potentially even providing national carbon crediting programmes and/or labels. In the EU, for example, the adoption of the Green Claims Directive with clear definitions and provisions for claims based on carbon credits could reduce legal - and potentially also reputational – risks relating to these claims in the EU. For ITMOs, regulators can reduce risks relating to authorisation and corresponding adjustments by providing a well-functioning national Article 6 framework, including clear and predictable national criteria for authorisations and conditions for their possible revocation.

The risk level can **change over time**. For example, delivery risks are highest at the early stages of an activity, before it has reached financial close, has been registered and has started operating. Once activities have a track record of operation, verification and issuance, these risks are reduced and become easier to estimate. Carbon credit buyers typically make payments for carbon credits only if and after they have been issued and delivered to the buyer. Buyers have the option to commit to purchasing carbon credits that are issued and delivered in the future and/or buying carbon credits that have been already issued. For some activities, securing carbon credit buyers in advance may be a precondition for a positive investment decision. By committing to purchasing future carbon credits, buyers could access carbon credits that would otherwise not be available to them. This can also help to manage market risks relating to the lack of supply of carbon credits that match the buyer's preferences.

Risks can be **interrelated**. For example, reputation risks relating to carbon credit quality and legal and regulatory risks relating to eligible use cases and claims may reduce voluntary demand for carbon credits, which, in turn, could undermine supply, and carbon credit markets as a whole. Another example would be regulatory changes in the host country, e.g., the introduction of carbon market taxes or levies, that make the planned activities less financially viable. Some risk management options can address several types of risks, as illustrated in Table 4. For example, environmental and social impact assessments and management plans can reduce delivery risks (e.g., relating to the activity's successful implementation) as well as reputational and legal and regulatory risks (e.g., relating to negative impacts). Selecting a reputable carbon crediting programme and methodology can reduce reputational risks which, in turn, can reduce overall market risks. Selecting a host country with robust, well-functioning national frameworks can reduce legal and regulatory risks (e.g., related to regulatory gaps and unpredictable regulatory changes), which, in turn, can reduce delivery risks (e.g., relating to additionality and authorisation), as well as reputational risks (e.g., relating to sustainable development benefits).

Some risks are **specific to, or especially relevant for durable CRCs**. For example, the lack of agreement on definitions, thresholds and methodological requirements for "durable" removals impose uncertainties and risks to the generation of durable CRCs and their use. For bio-CCS credits, the lack of clear definitions and requirements for the sustainability of biomass can increase risks. On the supply side, the requirements for addressing reversals and managing reversal risks differ across carbon crediting programmes and methodologies, and they continue to evolve. It can be challenging for carbon credit sellers and buyers to understand the differences between carbon crediting programmes and methodologies and to follow the latest developments. Reversal risks increase delivery risks, since reversals could reduce the issued volume and/or delay the timing of issuance which, in turn, impacts the revenue flow. On the demand side, the current lack of agreement on what constitutes a "durable CRC" creates legal and reputational risks relating to use cases (e.g., neutralisation) and claims (e.g., net zero), to the extent that these require the use of durable CRCs. Possible future developments in regulation and/or guidance could undermine the demand for durable CRCs in several ways, for example by prohibiting or complicating the intended use case or claim, prohibiting or limiting the use of already contracted durable CRCs or allowing also the use of other types of carbon credits for the intended use case or claim.

Table 4. Key risks and their management by carbon credit sellers and buyers

Risk management option	Who?	Delivery risks	Reputational risks	Legal and regulatory risks	Market risks
Activity design and carbon crediting					
Feasibility studies - Financial feasibility - Technical feasibility - Carbon crediting potential	Seller	●	●		
Due diligence of seller and its partners, and the environmental and social aspects of activities	Buyer	●	●	●	
Environmental and social impact assessment and management plan for the activity	Seller	●	●	●	
Selection of an applicable carbon crediting programme and methodology	Seller & buyer	●			
Selection of a reputable carbon crediting programme and methodology	Seller & buyer		●		●
Selection of host country with clear and predictable regulatory framework	Seller & buyer	●	●	●	
Stakeholder engagement	Seller	●	●		
Training and capacity building for activity implementation and carbon credit cycle management	Seller (& buyer)	●	●		
Portfolio diversification	Buyer	●			●
Contracts and insurance					
Contractual arrangements, including: - Ownership and legal title of carbon credits - Possible advance payments - Payments on delivery	Seller & buyer	●		●	●

Insurance for, e.g. - Revocation of ITMO authorisation - Lack of corresponding adjustments - Reversals	Buyer	●		●	
Carbon credit use and claims					
Recommendations for buyers on claims/disclosure	Seller		●	●	
Credible claims	Buyer		●	●	
Transparent disclosure of carbon credit use	Buyer		●	●	

5.3. Recommendations for minimum and good practice strategies for risk mitigation

At **minimum**, it is recommended that Swedish carbon credit sellers and buyers mitigate risks by using reputable carbon crediting programmes, transparently disclosing information about carbon credits and complying with relevant national legislation on climate-related claims and disclosure.

Activity developers that intend to **generate and sell carbon credits** can mitigate risks by:

- developing an understanding of the minimum requirements for generating and using carbon credits, including the relevant options for carbon crediting programmes and methodologies and their key differences;
- securing sufficient expertise, time and resources for developing the carbon credit aspects of the activity and minimising negative environmental and social impacts of the activity;
- using an applicable methodology approved by a reputable carbon crediting programme for generating carbon credits;
- being aware of, and transparent about whether their activities generate mitigation outcomes that are counted towards the host country's national targets.

Actors that intend to **voluntarily buy and use carbon credits and make related claims** can mitigate risks by:

- developing a clear climate strategy with value chain emission reductions as a priority and carbon credit use as a separate complementary element;
- conducting due diligence on carbon credit sellers and their partners, and the environmental and social aspects of activities;
- purchasing carbon credits issued under reputable carbon crediting programmes;
- using and making claims and reporting on their carbon credit use in line with relevant regulations.

Regarding **claims**, voluntary offset claims are associated with a higher risk of greenwashing accusations, especially for actors that do not have science-aligned value chain emission reduction targets, and especially for emissions above residual levels. In general, the EU considers offset

claims that are based on carbon credits as misleading (European Union, 2024c). In 2024, the EU agreed to ban product-level offset claims. However, this ban does not apply to organisation-level offset claims. The VCMI cautions that "a company that uses or intends to use a claim such as 'carbon neutral', which an average consumer may interpret as the company's emissions being eliminated at source, puts itself at greater risk of accusations of greenwashing, and of litigation for what could be interpreted as a misleading claim. VCMI therefore suggests that companies avoid making compensation claims entirely." (VCMI, 2023, p. 6). Contribution claims are generally considered to have a lower risk of misleading consumers compared with offset claims (Carbon Market Watch, 2023; Petersen et al., 2025; SBTi, 2024; VCMI, 2023). Actors can mitigate these risks by avoiding offset claims and favouring contribution claims. This applies also to future claims about neutralising residual emissions to achieve net-zero.

Carbon credit sellers and buyers can reduce their risks – especially reputational risks – further by applying **good practices** provided, for example, by the Gold Standard's Climate Responsibility Framework (Gold Standard, 2025a), the Finnish Guide to Good Practices for the Voluntary Carbon Markets (Laine et al., 2023) and the Oxford Principles for Responsible Engagement with Article 6 (Johnstone, Injy et al., 2025). These provide general, relatively high-level guidance and recommendations that cover the generation and use of carbon credits and related claims, including on ambitious targets and actions for reducing value chain emission reductions, using carbon credits to complement rather than substitute value chain emission reductions, ensuring the high integrity of carbon credits, making credible claims and transparently tracking and reporting progress and carbon credit use.

More detailed good practices are specified for carbon credit integrity, carbon credit use and claims, in various standards and guidelines that focus on these specific aspects.

Carbon credit sellers and buyers can mitigate risks relating to **carbon credit integrity** by generating and using carbon credits that are issued under the PACM or ICVCM-approved carbon crediting programmes and methodologies (and thus have CCP approval under the ICVCM), have received a high score by the CCQI and/or have received a high rating by a carbon rating agency. The high-level integrity criteria for carbon credits are listed in Box 1. Carbon credits with CCP approval are tagged in the registry of the carbon crediting programme that has issued them.

Risks relating to **carbon credit use and making related claims** can be mitigated by applying relevant standards or guidance, for example, the ISO 14068-1 for carbon neutrality claims, VCMI for carbon integrity claims, SBTi for net-zero claims (SBTi, 2025b) and for beyond value chain mitigation (SBTi, 2024), the VCMI Claims Code for VCMI Carbon Integrity Claims (VCMI, 2025) and Gold Standard guidance for contribution claims (Gold Standard, 2023) and beyond value chain mitigation (Hewlett et al., 2024). First and foremost, this includes using high-integrity carbon credits in addition to, rather than as a substitute to ambitious reductions of own value chain emissions. The three former (ISO,

SBTi, and VCMI) are available only to entities that have set science-aligned targets for value chain emissions while the latter (Gold Standard) is available also to other actors.

According to good practice, **offset claims** should be limited to emissions that remain after the actor has reduced its value chain emissions in line with a science-aligned pathway to net-zero, and to carbon credits that avoid double claiming with national mitigation targets. The ISO **carbon neutrality claims** are offset claims that require the avoidance of double claiming, noting that this can be achieved by using carbon credits authorised as ITMOs. The ISO enables both product- and organisation-level carbon neutrality claims, but the former are prohibited in the EU. Although this EU ban does not apply to organisation-level offset claims, they are nonetheless associated with a higher legal and reputational risk than contribution claims. Using the ISO 14068-1 reduces these risks somewhat, given that it requires entities to reduce their value chain emissions in line with science and avoid double claiming with national mitigation targets, both of which are in line with good practice. Also **net-zero claims** are generally considered to be offset claims, so using removals authorised as ITMOs would reduce legal and reputational risks. In general, net-zero claims are considered to have lower legal and reputational risks than carbon neutrality claims, when they are made by actors that have reduced their value chain emissions to a residual level consistent with the 1.5°C goal.

Entities that do not have science-aligned targets or that are not making progress towards these targets can reduce legal and reputational risks by using carbon credits for **contributions** rather than offsetting. Using carbon credits for contributions has lower legal and reputational risks compared to the use for offsetting. The Gold Standard provides general guidance for making and communicating contribution claims, emphasising transparency. This said, as long as clear national legislation and public trust in climate claims are lacking, having science-aligned targets and making contribution claims does not fully eliminate all legal and reputational risks.

Although these high-level principles for good practices are well established, their application to different contexts and their interpretations **can differ** across different standards and guidelines and they **evolve on an ongoing basis**. To mitigate risks, especially reputational risks, carbon credit sellers and buyers should follow carbon credit market developments and adapt their strategies and activities, as needed. This requires ongoing efforts to monitor these developments and understand their implications to own operations, as discussed in the next section.

6. Looking forward

This chapter provides an overview of how the voluntary carbon market continues to evolve. It highlights key developments that actors interested in engaging in the market should follow, including developments in standards, guidance and legislation, covering methodologies, programmes, activity and credit types, use cases and claims. Although challenging to navigate, the voluntary carbon market also offers valuable opportunities for non-state actors to contribute to global climate efforts. Successful participation in the voluntary carbon market requires active monitoring of key developments and adapting of strategies and actions as the market evolves.

Although engaging in the voluntary carbon market requires navigating a complex and risky landscape of standards, guidance and legislation, it also offers valuable opportunities for non-state actors to contribute to global climate efforts and take responsibility for their ongoing emissions. It mobilises funding from those who wish to provide results-based support to mitigation beyond their boundaries to entities that invest in additional mitigation. To seize these opportunities, non-state actors should actively follow the developments in relevant standards, guidance and regulations and revise and adapt their voluntary carbon market engagement strategies and actions to reflect these developments. There is no simple way to follow all the relevant developments. There are countless news and advisory services, knowledge products, networks and capacity building initiatives available, offering different focuses and perspectives and sometimes contradicting information. Regulators can play an important role in supporting non-state actors in building knowledge, capacity and networks for responsible engagement in the voluntary carbon market.

Existing carbon crediting **methodologies** and **programmes** evolve on an ongoing basis, and new methodologies, programmes and registries are also entering the markets. Regarding **carbon credit integrity**, there is pressure towards increasingly stringent requirements, for example for additionality and baselines, under the ICVCM as well as the PACM. This would mean that fewer activities would be deemed additional, and they would generate lower volumes of carbon credits. This, in turn, limits supply and drive up unit prices, relative to less stringent requirements. On the other hand, it could enhance trust in carbon credit integrity, thus boosting demand. In the EU, relevant developments include the approval of methodologies and programmes under the EU CRCF framework and discussions on EU criteria for the potential use of international carbon credits towards EU climate targets (see below).

The demand for carbon credits from a mix of **different types of activities** is likely to continue and vary over time. There is a scientific basis for the continued use of carbon credits to finance additional emission reductions until hard-to-abate emission levels are reached, as well as for using carbon credits to support nature-based solutions and durable removals. The demand and willingness to pay for specific types of carbon credits, such as carbon credits based on durable CRCs, authorised as ITMOs and/or issued under the PACM, is likely to continue to vary, depending on their

role in key standards and guidelines (e.g., the SBTi's and ISO's net zero standards), their price relative to the costs of in-value chain mitigation and the price of other types of carbon credits, claims regulation, as well as their acceptance for compliance use (e.g., towards EU NDCs or in the EU ETS). The demand for credits from nature-based solutions would also depend on whether non-state actors introduce specific targets for nature, for example in line with the guidance from Gold Standard and WWF, and the UK Principles for Voluntary Carbon and Nature Market Integrity (Hewlett et al., 2025; Petersen et al., 2025; UK Government, 2024).

Regarding carbon **credit types and use cases**, "temporary" carbon credits are emerging as a distinct carbon credit type, alongside carbon credits that are based on "durable" emission reductions or removals, for example in the EU CRCF. This reflects an increasing recognition that, besides offsetting, there can also be other use cases for carbon credits where durability may not be critical. While offsetting fossil emissions must be based on durable emission reductions or removals to be credible, durability is not critical for the credibility of contribution claims (Cullenward, 2023). Definitions related to the durability of removals, and the role of CRCs in neutralisation in the context of corporate net zero, continue to evolve as the SBTi and ISO develop their net-zero standards. For example, the proposals for version 2 of the SBTi Corporate Net-Zero Standard introduce new categories of "long-lived" and "short-lived" removals, instead of referring to "permanent" removals (SBTi, 2025c).

As for **claims based on carbon credits**, there is an emerging trend towards contribution claims, at least in Europe, at least for companies without science-aligned value chain emission reduction targets, and at least for emissions above residual levels. This trend is supported by growing criticism of offsetting. In 2025, both the European Parliament and Council supported the inclusion of contribution claims into the proposed Green Claims Directive, alongside offset claims. As of the end of 2025, the fate of this proposal remains unclear. Further developments in EU legislation and guidance on green claims are highly relevant for European carbon credit sellers and buyers. The adoption of EU legislation or guidance on contribution claims could provide a significant boost the demand and acceptance of these claims. This could be especially important for creating demand for units certified under the EU CRCF framework, which should contribute to the achievement of the EU's NDC and its climate objectives.

The rules and possibilities for the **compliance use of carbon credits** continue to evolve, including in the EU. Voluntary carbon credit sellers and buyers are advised to follow developments also in compliance use, since compliance buyers may compete for the same carbon credits as the voluntary carbon credit buyers, e.g. carbon credits based on durable removals and/or authorised as ITMOs. In the EU, the discussions on integrating removals into EU law and allowing limited use of ITMOs towards EU targets, in the contexts of the revision of the EU Climate Law and the EU Emissions Trading System Directive, are especially relevant.

While the voluntary carbon market continues to evolve, its fundamental purpose remains unchanged. The voluntary carbon market exists to enable actors to join forces to achieve more mitigation that what would happen with national policies and market forces alone. As long as national policies and market forces fail to deliver mitigation at the speed and scale needed to prevent dangerous climate change, the voluntary carbon market has an important role in empowering non-state actors to bridge these gaps and keep our global climate goals within reach.

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