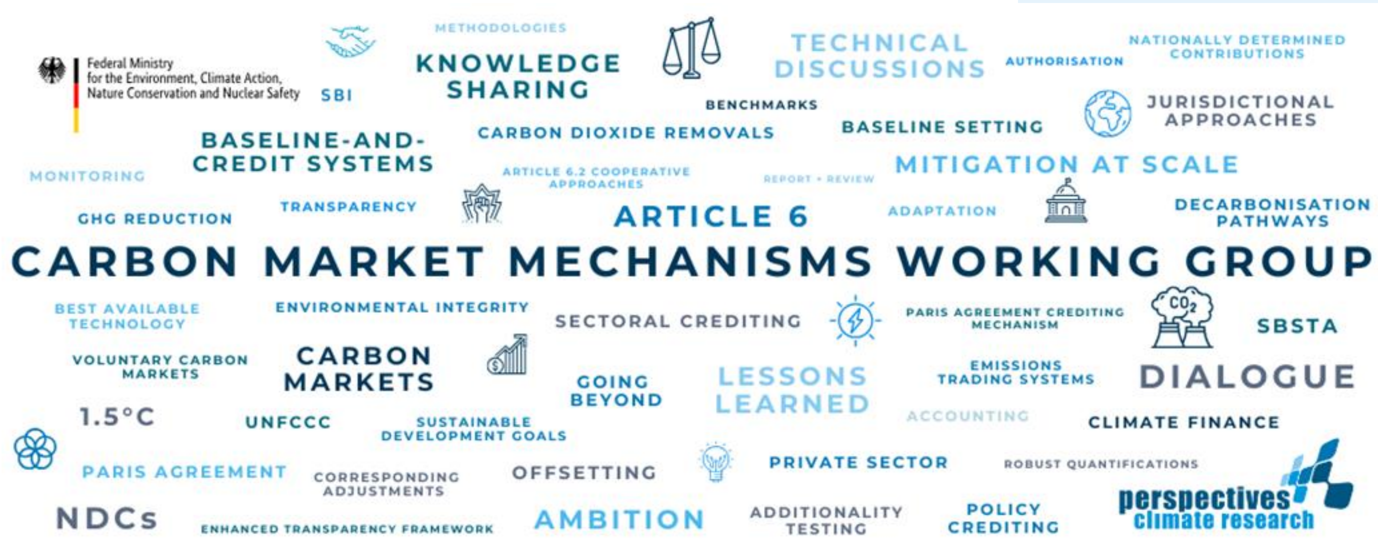
Paris-alignment in carbon crediting

What it means, why it matters and how it can be implemented

July 2026



Discussion paper

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Abbreviations

BAT	Best available technology
BAU	Business-as-Usual
CCP	Core Carbon Principles
CMM-WG	Carbon Market Mechanisms Working Group
CORSIA	Carbon Offsetting and Reduction Scheme for International Aviation
EIB	European Investment Bank
EU	European Union
GHG	Greenhouse gas
ICVCM	Integrity Council for the Voluntary Carbon Market
IPCC	Intergovernmental Panel on Climate Change
ITMO	Internationally Transferred Mitigation Outcome
LT-LEDS	Long-term Low Emission Development Strategy
MDB	Multilateral Development Bank
MRV	Monitoring, reporting and verification
NCCS	National Climate Change Secretariat (Singapore)
NDC	Nationally Determined Contribution
OMGE	Overall Mitigation in Global Emissions
PACM	Paris Agreement Crediting Mechanism
SBTi	Science Based Targets Initiative
SD	Sustainable Development
UK	United Kingdom
UNEP	United Nations Environment Programme
US	United States
VCM	Voluntary Carbon Market

1. Introduction

This section sets the scene for exploring what Paris-alignment can mean and why and how it matters for carbon credit markets.

Figure 1. *Contextualising Paris alignment. Source: Authors*

Carbon credits are a tool for channelling finance for additional climate change mitigation. They are issued by carbon crediting programmes for activities generating mitigation outcomes – carbon dioxide removals and greenhouse gas emission reductions – that meet criteria relating to, inter alia, additionality, crediting baselines, monitoring, reporting and verification, addressing non-permanence and leakage, environmental and social safeguards, and avoidance of double counting. These criteria are designed to ensure that each carbon credit represents additional mitigation of at least one additional metric tonne of carbon dioxide equivalent. While all carbon crediting programmes apply the same high-level criteria for carbon credits, the detailed requirements relating to these criteria – elaborated in the programme's standards and activity-type-specific methodologies – can differ across programmes and evolve over time(Ahonen *et al.*, 2022).

Carbon credit markets evolve over time, in response to changes in the (political, technological, market etc.) circumstances for climate action. When these markets emerged in the late 1990s, only a fraction of global greenhouse gas emissions were covered by national emission reduction commitments under the Kyoto Protocol, since the protocol did not assign any commitments to developing countries and the US decided not to join the treaty. The Kyoto Protocol introduced international rules and mechanisms for generating and transferring carbon credits that were eligible for use towards countries' Kyoto commitments. In parallel, a voluntary market developed to cater for – especially UK and US-based - companies that wished to voluntarily buy carbon credits to offset their emissions, thereby contributing to global mitigation efforts. Although the Kyoto Protocol's carbon crediting mechanisms served as a blueprint also for the voluntary market, different standards and programmes applied for compliance and voluntary markets, reflecting the limited scope of the Kyoto Protocol and self-regulation in the voluntary market (Ahonen *et al.*, 2022).

Due to its global scope, the Paris Agreement is relevant for all mitigation activities across the world, including activities financed through carbon credit markets. The agreement, adopted in 2015, aims to strengthen the global response to the threat of climate change, in the context of sustainable development and efforts to eradicate poverty. It introduces ambitious global goals for limiting global warming to well below 2°C, while pursuing efforts to limit it to 1.5°C, strengthening adaptation and resilience to climate change, and making finance flows consistent with a pathway towards low emissions and climate-resilient development. The Paris Agreement also requires all countries to set and implement national climate change mitigation targets through Nationally Determined Contributions (NDCs), track and report progress made towards these targets, and enhance the level of ambition over time. Moreover, countries are asked to define long-term low emission development strategies (LT-LEDS). The agreement recognises that countries may wish to cooperate with each other, including through the transfer of mitigation outcomes, provided that these transfers ensure environmental integrity and transparency, promote sustainable development and apply robust accounting. The Paris Agreement is not only a rulebook for governments – it is a global framework for climate goals and action.

Carbon credit cooperation could have implications on the achievement of the global and national mitigation targets under the Paris Agreement, regardless of where and how the credits are generated and whether these credits are intended for use towards national targets under the Paris Agreement or for other purposes (Ahonen *et al.*, 2023). To safeguard the achievement of their national targets, host countries have an interest to control the nature and extent of carbon credit cooperation implemented within their boundaries.

In the context of carbon crediting, Paris-alignment refers to efforts to align carbon credit cooperation with the goals, principles and requirements of the Paris Agreement, in order to ensure that the cooperation is consistent with and contributes to – and does not undermine – the achievement of the mitigation goals under the global framework. Some dimensions of Paris-alignment relate to the entities that participate in carbon credit cooperation while other dimensions relate to the activities that generate carbon credits and/or to the calculation, use and accounting of credits and communication of carbon credit cooperation. Various sections of the so-called Paris Rulebook – the international decisions that operationalise the Paris Agreement – are relevant for carbon credit cooperation, including the provisions on the global long-term goals, national mitigation targets and policies, and transparency, as well as specific requirements for market-based cooperation under Article 6 of the Paris Agreement. Article 6.2 refers to cooperation involving internationally transferred mitigation outcomes (ITMOs), and Article 6.4 refers to the Paris Agreement Crediting Mechanism (PACM), an international carbon crediting programme for certifying carbon credits, known as Article 6.4 Emission Reductions (A6.4ERs).

This paper explores what Paris-alignment can mean in the context of carbon crediting, and reflects on why and how it matters. Section 2 provides an overview of the elements of Paris-alignment, drawing on existing literature and initiatives. Section 3 presents key insights from a workshop on Paris-alignment across carbon credit markets, co-hosted by the Carbon Market Mechanisms Working Group (CMM-WG) and the Integrity Council for the Voluntary Carbon Market (ICVCM) in May 2026. Section 4 concludes.

2. What does Paris-alignment mean?

This section explores how selected international initiatives interpret Paris-alignment in the context of carbon crediting and provides a structured overview of key elements of Paris-alignment.

2.1. International initiatives on Paris-alignment

Alignment with the Paris Agreement is relevant for a broad range of actions and finance flows, extending beyond international carbon markets. In the context of multilateral development finance, for example, the Multilateral Development Banks have developed a joint assessment framework for Paris-alignment for direct investment operations, covering alignment with mitigation goals; adaptation and climate-resilient operations; accelerated contribution to the transition through climate finance; engagement and policy development support; reporting; and alignment of internal activities. The framework provides guidance to experts for evaluating whether direct investment operations are consistent with the overall goals of the Paris Agreement and countries' national low-emissions, climate-resilient development pathways. (EIB, *et al.*, 2021)

Several international initiatives have considered Paris-alignment for carbon credit markets specifically. Below, selected key initiatives are summarised, namely the G7 high integrity carbon market principles (G7, 2023), the Call to Action for Paris Aligned Carbon Markets (Pact for Prosperity, People and the Planet, 2023), Oxford Principles for Responsible Engagement with Article 6 (Johnstone *et al.*, 2025), the Integrity Council for the Voluntary Carbon Market work programme on Paris-alignment (ICVCM, 2025) and the Gold Standard's work on Paris-alignment (Gold Standard, 2026). Last but not least, views from Germany – an active and long-standing supporter of efforts to align carbon markets with the Paris Agreement – are presented (Federal Ministry for Economic Affairs and Climate Action, Germany, 2024).

The **G7 high integrity carbon market principles** focus on aligning compliance and voluntary carbon markets with the Paris Agreement, including its global mitigation goals and best practices from Article 6. The principles stress the urgent need to increase ambition and implement current NDCs in order to achieve global net-zero emissions by 2050, and note that high-integrity carbon credits can play a valuable role in accelerating the net-zero transition, provided that they are consistent with a pathway towards overall net-zero emissions.

On the **supply side**, the principles call for a robust certification standard for activity design and MRV of emission reductions or removals. Crediting levels should align with emissions pathways consistent with the Paris Agreement temperature goal and global net-zero emissions by 2050; credits should contribute to host country mitigation and avoid lock-in of high-emissions pathways; standards should align with the Article 6 rulebook and criteria under the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA), incorporating best practices from the PACM on baseline-setting, additionality, avoidance of lock-in, leakage, permanence and double counting; governance should be robust and transparent; and sustainable development objectives and environmental and social impacts should be transparently reported and addressed.

On the **demand side**, the use of credits should align with keeping global temperature rise to 1.5°C and achieving net-zero emissions by 2050, and should be supplementary to immediate direct (i.e., internal) mitigation efforts. Credit use should be transparently disclosed and publicly accessible, to enable public accountability.

On **market integrity**, registries should publicly track information relevant for compliance and voluntary market integrity, including authorisation status, corresponding adjustments and purpose of use. Standard-setting bodies and initiatives should cooperate to align standards, clarify roles and continually innovate certification products, in order to reduce market fragmentation and promote a uniform shift to high integrity.

The **Call to Action for Paris Aligned Carbon Markets**, launched at the 2023 Summit for a New Global Financing Pact and supported by 31 countries, outlines how domestic, international and voluntary carbon markets can support the achievement of the Paris Agreement goals by providing much-needed financing for the joint climate and sustainable development challenge.

For the **international carbon market**, the Call to Action emphasises supporting host countries to fully implement the Paris Rulebook, including by ensuring high integrity, ambition-raising, avoidance of lock-in and benefit-sharing; supporting price transparency; and providing capacity building and technical assistance, targeted at enabling host countries to integrate the use of markets with their domestic mitigation strategies and NDCs.

For the **voluntary carbon market**, Paris-alignment applies to both supply and demand sides. Market participants should cooperate to align standards, reduce fragmentation and promote a uniform shift to high integrity anchored in the G7 principles. **Supply-side** activities must drive real mitigation aligned with the Paris temperature goal, meeting the highest levels of social and environmental integrity, including in relation to biodiversity. Standards should progressively align with compliance markets to ensure additionality, permanence, and avoidance of lock-in. On the **demand side**, corporates should use carbon credits to complement – not substitute – substantive reductions in their own value chain emissions, transparently report targets, emissions, action plans and credit use, and consider contributing to adaptation and/or loss and damage.

The **Oxford Principles for Responsible Engagement with Article 6** provide guidance a range of actors engaged in carbon market cooperation under Article 6 of the Paris Agreement, covering supply- and demand-side integrity and transparency.

Principle 1. Paris-aligned use of mitigation outcomes focuses on ensuring that engagement with Article 6 raises climate ambition in line with the Paris Agreement. This includes enhancing ambition and avoiding mitigation deterrence, pursuing sustainable development co-benefits, sharing mitigation outcomes between host countries and buyers, and ensuring contributions to global mitigation and adaptation efforts. Actors should develop and implement responsible engagement strategies and governance arrangements, go beyond unconditional climate mitigation, and ensure transparency.

Principle 2. Generation of high-quality mitigation outcomes covers both climate integrity and environmental and social safeguards. Climate integrity requirements include additionality, avoiding lock-in, robust quantification, addressing reversals, avoiding double counting, preventing use of international climate finance for ITMOs, and rigorous carbon crediting programme governance. Environmental and social safeguards include appropriate stakeholder consultations, identification of negative impacts, safeguards, and attention to mitigation activity design and implementation.

Principle 3. Robust accounting and transparency addresses robust accounting practices for cooperative approaches under Article 6.2, including robust national inventories, a strong NDC foundation, NDC coverage and host country authorisations. Transparency requirements cover both the use and the generation of mitigation outcomes.

The **Integrity Council for the Voluntary Carbon Market** (ICVCM) is an international initiative that assesses carbon crediting programmes and methodologies against its ten Core Carbon Principles (CCPs), with the aim of setting a common integrity threshold for the voluntary carbon market. In its continuous improvement work programme on Paris-alignment, the ICVCM explored the implications of the Paris Agreement for the VCM and opportunities for aligning the CCPs and Assessment Framework with the Paris Agreement. In its first report, the work programme noted that optimal levels of alignment and standardisation between Article 6.2 cooperation, the PACM and privately operated carbon crediting programmes can avoid market fragmentation and enhance transparency, efficiency and trust. The work programme considered the ICVCM requirements for baselines and NDCs, corresponding adjustments, contributions to adaptation and avoidance of locking in global emission levels incompatible with net-zero by mid-century.

On **baselines and NDCs**, the work programme recommended that the ICVCM require project baselines to be aligned with the Paris Agreement goals even if the host country's NDC is not, with net-zero by 2050 as the default minimum ambition. Guidance should address the shape of the downward trajectory (not just the endpoint), provide for regular updates and periodic ratchets, ensure consistency with science-based country and sector pathways, and consider best-available-technology benchmarks. A hybrid approach – combining top-down elements for robustness with bottom-up elements to better respond to country priorities – was recommended. The ICVCM should also provide guidance on when and how crediting programmes should align baselines with the relevant NDC and/or long-term strategy.

On **corresponding adjustments**, the work programme recommended that the ICVCM continue not to require a corresponding adjustment in its Assessment Framework for voluntary purposes, while allowing optional CCP Attribute tagging for credits that are Article 6-authorised. The ICVCM should continue to monitor emerging regulation and host country policy, and pursue further inquiry through a dedicated working group.

On contributions to support **adaptation**, the work programme recommended that the ICVCM continue to support voluntary contributions through a CCP Attribute, with the share set at 5% to match the levy in the Article 6.4 rules, directed to the Adaptation Fund.

On contributions towards net zero emissions and **avoiding lock-in** of incompatible emission levels, the work programme recommended that the ICVCM establishes clear processes for regularly updating the list of activity types deemed incompatible with the net-zero transition, and expand its requirements to ensure that all methodologies require mitigation activity proponents to demonstrate compatibility with a net-zero transition in the relevant host country.

The **Gold Standard** is a privately operated carbon crediting programme that has worked on Paris-alignment since 2021, with support from Germany, to avoid inadvertently undermining the Paris Agreement's goals. The starting point for this work is that countries are now implementing NDCs and buyers and frameworks such as ICVCM, and corporate net-zero standards are increasingly expecting credits to be grounded in national pathways and Paris-aligned ambition.

Gold Standard frames Paris-alignment as delivering four interconnected elements: **alignment with net zero** (methodologies consistent with 1.5°C trajectories and decarbonisation technologies); **increased ambition** (implementing regulatory additionality and a mechanism to ratchet up ambition over time); **robust quantification** (more comprehensive impact monitoring and rigorous accounting standards); and **transition support** (user-friendly tools and guidance for project developers).

In terms of methodological changes, Gold Standard has introduced several key updates. On **additionality**, credits can only be generated for emission reductions that exceed what is already mandated by law and policy (regulatory surplus); projects must provide strong evidence that carbon finance was a decisive factor; methodologies must not support lock-in of high-carbon technologies; and ongoing financial need must be demonstrated at each crediting period renewal. On **baseline setting**, baselines must be set below a business-as-usual scenario, with a mandatory adjustment factor to lower crediting levels; all enforced national policies must be accounted for; and the **suppressed demand** provisions have been expanded to ensure that initiatives providing key basic services can continue to access carbon crediting fairly. Additional updates address **data quality** and **uncertainty** (with conservativeness factors that may reduce credit volumes) and a wider scope for **leakage** analysis, including upstream and downstream emissions.

Gold Standard has also co-published the Article 6.2 Crediting Protocol, with the Government of Singapore and Verra, as a practical framework for **streamlining** and **harmonising** the implementation of Article 6.2 of the Paris Agreement across different countries and carbon crediting programmes (NCCS, Gold Standard and Verra, 2025).

Germany has been an active advocate for Paris-aligned carbon markets and a major long-term funder of carbon market capacity building and Paris-alignment. Germany emphasises the importance of ensuring the environmental and social integrity of international and voluntary carbon markets through **robust** and **harmonised** standards. It strives to have all voluntary carbon market activities registered under the **PACM** to ensure **transparency** and **quality**, strengthen the database for national emissions inventories, and build capacities in host countries for implementing the Article 6 legal framework and, ultimately, developing domestic compliance carbon pricing instruments.

On the **supply side**, Germany is of the view that generated mitigation credits must come from a high-quality certification system, be additional, go beyond the host country's own committed mitigation contributions, and ensure correct accounting, permanence and environmental and social integrity. For the EU procurement of international credits, Germany may propose additional **political criteria**, such as requiring countries to demonstrate that they have integrated an Article 6 strategy into their NDCs. On the **demand side**, the use of the voluntary carbon market should not replace or delay companies' own emission reductions; companies are advised to develop and implement science-based climate action strategies, using carbon credits for compensation primarily of hard-to-abate emissions.

Germany emphasises the importance of providing further **support to developing countries** to build capacity for high-quality carbon credit supply and to raise ambition and transparency in both compliance and voluntary markets. It has supported regional and national Article 6 **capacity building**, including the assessment of NDCs and marginal abatement cost curves to identify potential sectors for ITMO supply. To facilitate demand, Germany is developing an **enabling policy environment** that allows German companies to obtain credits under the PACM.

2.2. Key elements of Paris-alignment for carbon credit markets

The key elements of Paris-alignment can be grouped in various ways.

One option is to consider what Paris-alignment means for participants, credit generation, credit use and communication of carbon credit cooperation, as illustrated in **Figure 2**.

Figure 2. Paris alignment for participants, credits, credit use and communication

Source: Authors, based on the Paris Agreement Rulebook

- For **participants**, Paris-alignment would mean that the mitigation targets and actions of the host countries, activity owners and credit buyers are aligned with the Paris Agreement's global temperature and mitigation goals, including global net zero emissions in the second half of the century. Looking at the remaining carbon budget for 2°C, this global net zero would have to be achieved around 2070 (IPCC, 2022).
- For **credits**, Paris-alignment would mean that environmental and social integrity is ensured, and sustainable development promoted in line with the international Article 6 requirements, when generating credits through mitigation **activities**. Article 6.2 and the PACM share many common requirements, such as demonstrating additionality, setting baselines below business-as-usual (BAU) and avoiding, where possible, negative environmental and social impacts, as well as some specific requirements. **Article 6.2** has further requirements for participating countries on authorisation, tracking, reporting and accounting, while the **PACM** has further requirements on, for example, encouraging ambition over time, adjusting baselines downwards and contributing to the equitable sharing of mitigation benefits between the participating Parties. Key similarities and differences between Article 6.2 and PACM requirements are presented in Figure 4. **Other carbon crediting programmes** can also be Paris aligned if they have integrated the Paris Agreement's goals, principles and requirements into their standards and procedures. The review of international initiatives in section 2.1 below shows that Paris-alignment does not necessarily mean that programmes apply requirements that are identical with those currently applied under Article 6.2 and/or the PACM. Paris-alignment can principally be reached in many different ways and is not by definition achieved by applying the Article 6.2 guidance and Article 6.4 rulebook.
- For **use of carbon credit cooperation**, Paris-alignment would mean that the cooperation is used in a manner that contributes to – and at the very least does not undermine – the Paris Agreement's global temperature goals and the countries' mitigation goals in their NDCs and LT-LEDS. For **host countries**, this would mean identifying the types, conditions and extent of carbon credit cooperation that it considers consistent with its NDC and its SD objectives. It also means establishing approaches to ensure that the cooperation contributes to its NDC and enables higher ambition over time, for example through sharing of benefits via stringent baselines, limited crediting periods, contributions to sustainable development and/or corresponding adjustments fees. For **carbon credit buyers**, Paris-alignment would mean using credits to enable committing to higher mitigation targets in future NDCs and to raise ambition over time. In other words, buyers should not use credits as an excuse to avoid or postpone ambitious mitigation action within their own boundaries and value chains. Paris-aligned use of carbon credit cooperation means applying the Paris Agreement's requirements for tracking and robust accounting, as applicable, including to avoid double counting. This includes using registries that are interoperable with the registries under the Paris Agreement, to ensure a timely flow of the information needed for robust tracking and accounting. Certain carbon credit **use cases**, including international compliance, overall mitigation in global emissions (OMGE) and voluntary ambition-raising, require host countries to apply **corresponding adjustments** for the underlying mitigation outcomes in line with the international Article 6.2 guidance, to prevent double counting. By contrast, some other use cases, such as domestic compliance, climate finance delivery and voluntary contributions, do not require corresponding adjustments by the host country; these use cases do not involve a risk of double counting. For more information about use cases and their role in ambition-raising, see e.g. Ahonen *et al.*, 2023.
- For **communication**, Paris-alignment would mean transparent reporting, covering the participants' own targets, emissions and progress, as well as the generation,

transfers and use of carbon credits, including how environmental and social integrity and transparency are ensured in activities and governance. For countries, this is covered by the Paris Agreement's enhanced transparency framework while, for companies and other non-state actors, this is covered by corporate sustainability reporting and anti-greenwashing regulations and voluntary frameworks for climate reporting and claims.

An alternative way to categorise the key elements of Paris-alignment is to group them into elements relating to the Paris Agreement's global goals, countries' national climate and SD targets, and Article 6 rules (**Figure 3**). The Article 6 rules can be further divided into Article 6.2 and PACM rules and requirements (**Figure 4**). A more detailed overview of this grouping is provided in **Table 1**.

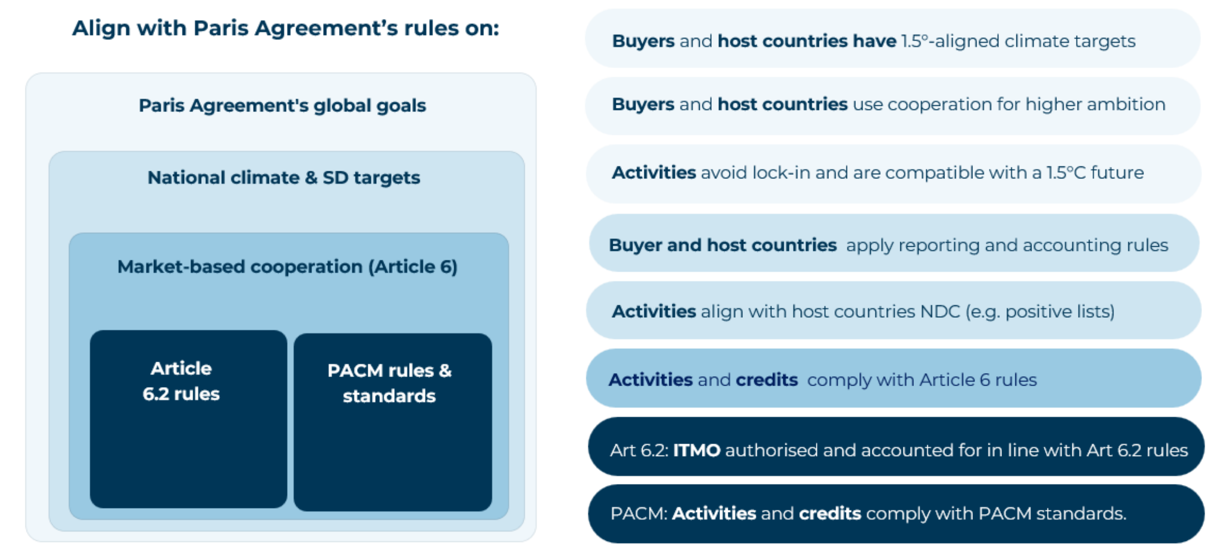

Figure 3: Paris-alignment with global goals, national targets and Article 6 rules. Source: Authors

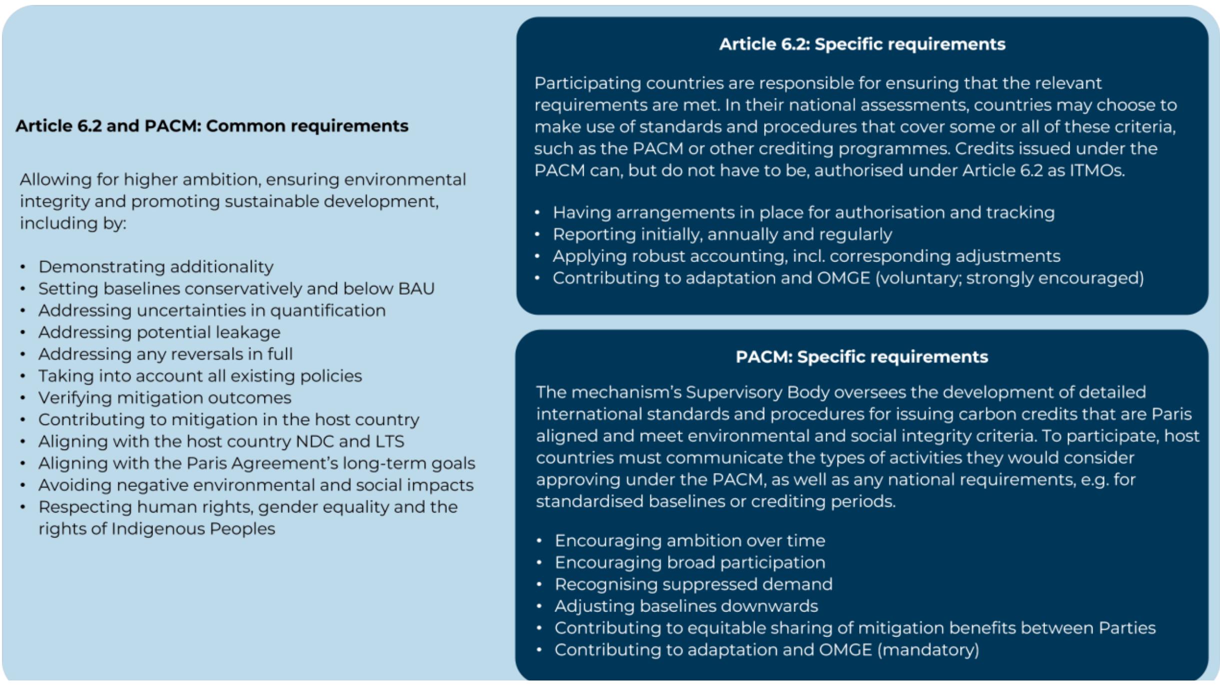

Figure 4: Article 6.2 and PACM requirements. Source: Authors, based on the Paris Agreement Rulebook

Table 1. Paris-alignment elements – What and how

Element	What?	How?
Paris Agreement's global goals	**Participants implement** ambitious internal mitigation action	• Demonstrate ambition in line with a "well below" 2°C pathway on e.g. Climate Action Tracker (countries) and SBTi (companies), incl. mitigation targets, strategies, actions and progress • Demonstrate that carbon credit cooperation does not deter internal mitigation action
	Activities avoid lock-in of emission levels incompatible with global net-zero transition	• Identify universally (in)compatible activity types • Use carbon crediting to complement, not substitute, internal climate action
	Activities contribute to adaptation	• Support adaptation within activity or via other options
	Crediting levels align with global net-zero transition	• Set baselines below BAU, informed by science, BAT and benchmarks, applying regular downward adjustment
Countries' NDCs, LTSs, and SD objectives	**Activities** are compatible with, and contribute to NDCs, LT-LEDS and SD objectives	• Support host country capacity to identify nationally (in)compatible activity types • Support host country capacity to assess alignment with NDCs, LT-LEDS and SD objectives • Demonstrate regulatory additionality, including beyond (unconditional) NDC • Share benefits with host country to contribute to its NDC and SD objectives
	Crediting levels align with NDCs and LT-LEDS	• Take NDCs, LTSs and policies into account in crediting baselines to avoid over-crediting
Article 6 rules	**Participants** use activities and credits to allow for higher ambition	• Use carbon credit cooperation to complement internal action and commit to higher overall ambition • Share mitigation benefits with host country, e.g. via stringent baselines or limited crediting periods • Support host country capacity to develop carbon credit cooperation and benefit-sharing strategies • Contribute to OMGE
	Activities and resulting **credits** have environmental integrity	• Apply robust standards on additionality, quantification and verification, incl. by setting baselines conservatively below BAU and addressing leakage in full • Support host country capacity to assess environmental integrity
	Reversals of carbon stores for which **credits** have been issued (if any) are addressed in full	• Apply robust standards to fully address reversals
	Activities avoid negative environmental and social impacts	• Apply robust standards for environmental and social safeguards, incl. stakeholder engagement and grievance mechanisms, and respect for human rights, gender equality and the rights of Indigenous Peoples • Support host country capacity to assess environmental and social safeguards
	Activities promote SD	• Apply robust standards to design, implement, monitor and verify SD benefits • Support host country capacity to assess SD benefits

	Participants apply robust accounting	• Apply robust tracking and recording of credit issuance, transfer and use, incl. via interoperable registries • Avoid all forms of double counting, incl. by using correspondingly adjusted credits, where relevant (for international compliance, OMGE, voluntary offsetting/ambition-raising) • Support host country capacity to apply robust accounting, incl. assessing alignment between national inventory methodologies and carbon crediting methodologies
	Participants ensure transparency, including in governance	• Disclose information on net emissions, targets, plans, progress and carbon credits, incl. alignment with global net-zero transition; carbon credit information should include complementarity, integrity, environmental and social safeguards, sustainable development benefits, use cases and related claims • Support price transparency

3. Discussion: Implementing Paris-alignment in practice

This section draws on insights from the analysis of selected initiatives presented in Section 2.1, as well as an event on Paris-alignment across carbon credit markets, co-hosted by the Carbon Market Mechanisms Working Group (CMM-WG) and the Integrity Council for the Voluntary Carbon Market (ICVCM) at the Innovate4Climate conference in May 2026. The session explored what Paris-alignment means for high-integrity carbon credit cooperation, how host countries, buyers and carbon crediting programmes are implementing these efforts and what the role of the PACM is, covering the environmental and social integrity of carbon credit generation and use.

3.1. Supply-side implementation of Paris-alignment

On the supply side, Paris-alignment means applying good practice for ensuring the environmental and social integrity of activities that generate carbon credits, aligning with global and national goals and avoiding locking in emission levels that are not compatible with the global and national goals. There is broad agreement that activities generating carbon credits and the credits themselves should meet certain common environmental and social integrity criteria, regardless of their use case, to ensure that they contribute to the global temperature and emissions goals and provide a robust basis for the use cases and related mitigation claims. These common, well-established criteria cover, inter alia, additionality, baseline setting, monitoring, reporting and verification, leakage and non-permanence[1], as well as environmental and social safeguards. Although these criteria are applied across all carbon credit market segments – national and international, compliance and voluntary, Article 6 and beyond – there are differences in how these criteria are implemented in practice.

A key challenge is striking a balance between harmonisation and diversity in interpreting and implementing the carbon credit integrity criteria. In other words, what is a sufficient level of Paris-alignment across carbon credits generated in different countries under different carbon crediting programmes to ensure public trust in environmental and social integrity and provide fungibility to scale up markets? The PACM is one, but not necessarily the only, benchmark for activity-level integrity. There is room for multiple Paris-aligned carbon crediting programmes to co-exist in the carbon credit market. This said, harmonisation across standards can reduce transaction costs and help countries in navigating multiple bilateral Article 6 cooperation frameworks. The task at hand is to establish a common understanding across carbon crediting programmes of what constitutes Paris-alignment in the context of carbon credit generation, while allowing flexibility in how that is implemented. Efforts under international initiatives, the PACM and other carbon crediting programmes are promoting the convergence of environmental and social integrity criteria for carbon credit generation across frameworks, market segments and use cases. While such

[1] Addressing non-permanence differs from other criteria in that it is necessary for carbon credits that are used for offsetting but not for credits that are used for contributions or climate finance. By contrast, the other criteria are necessary for all use cases. For more information, see Ahonen and Kessler(2025).

efforts can reduce market fragmentation and support the efficient functioning of, and public trust in markets, it can be desirable to allow some space for flexibility and diversity, in order to support learning, improvement and innovation. The voluntary carbon market, in particular, can serve as a testing ground for innovation, facilitating the development and adoption of tested and trusted approaches for the compliance market.

A key supply-side implementation challenge is determining what constitutes a sufficiently ambitious, Paris-aligned crediting baseline. The ICVCM's recommendation to use net-zero by 2050 as the default minimum ambition provides a useful anchor; guidance on how to operationalise this – including the shape of the trajectory, not just the endpoint – is needed to implement this recommendation on the ground. The application of stringent crediting baselines will make more mitigation available to the host country but does not necessarily result in higher overall ambition. While it can be expected that a host country would use at least part of the uncredited mitigation to enhance its NDC a host country government may reduce other mitigation efforts accordingly and thus not enhance its ambition.

Ensuring alignment with host country NDCs can be problematic in practice. Where NDCs are not (yet) Paris-aligned themselves, crediting programmes face a dilemma: aligning activity-level crediting baselines with an unambitious NDC risks over-crediting, while setting more ambitious baselines risks misalignment with national policy contexts. Ideally, market actors should cooperate to develop clear and harmonised guidance on how to reconcile this dilemma. In practice, however, this may not be feasible. Assessing NDC ambition is a subjective, politically sensitive and technically challenging exercise that is not addressed in the international Article 6 rules. The ICVCM has recommended to use global net zero by 2050 as a default minimum reference, regardless of the ambition level of the host country NDC. According to the ICVCM, aligning crediting baselines with the host country NDC or LT-LEDS is desirable and feasible when it results in at least equivalent robustness and better responsiveness to host country needs compared with the default approach. At minimum, the approach to considering NDC alignment should be transparently disclosed.

The requirements to align with host country NDCs and avoid lock-in can be implemented, inter alia, through whitelists/blacklists. Many host countries have published whitelists/blacklists of activity types that are eligible/ineligible for carbon credit generation under (and sometimes also outside) Article 6, as part of their national carbon credit frameworks. These represent activity types that the host country considers aligned with its NDC. The international Article 6.2 rules require participating countries to report how their Article 6.2 cooperation contributes to the implementation of their NDCs. The PACM requires participating host countries to identify activity types that they would consider approving under the PACM. The ICVCM has developed a blacklist of activities that are considered to lock in levels of emissions, technologies or carbon-intensive practices that are incompatible with the objective of achieving net zero GHG emissions by mid-century. Regular reviews and updates of this list – with meaningful stakeholder input – are an important next step.

Contributions to adaptation are a concrete way for carbon credit cooperation to align with and contribute to the Paris Agreement's global goals on adaptation and climate

resilience. The international Article 6.2 rules "strongly encourage" and the ICVCM is recommended to "continue to support" voluntary contributions to adaptation in line with the PACM rules, i.e. provide a 5% adaptation levy. These provide a practical reference point for carbon credit buyers.

Transparent reporting is important for promoting public trust in the integrity of carbon credits. Under Article 6.2, participating countries must report how they meet the relevant international requirements, including, for example, how they set baselines conservatively and below BAU. Insights from reporting of early actions, and from the technical expert reviews of these reports, will contribute to implementing Paris-alignment in practice through learning-by-doing and continuous improvement. In the spirit of Paris-alignment, these lessons should be analysed, shared and incorporated across carbon credit markets.

3.2. Demand-side implementation of Paris-alignment

On the demand side, there is broad agreement that Paris-alignment means responsible use of carbon credit cooperation in a manner that complements ambitious own action and enables higher ambition over time, as well as robust and transparent accounting and reporting that avoids all forms of double counting.

A key implementation challenge on the demand side is the lack of a universal approach to determining the sufficient level of ambition. Ideally, countries and non-state actors should reduce their emissions to levels where only 'hard-to-abate' emissions remain for individual countries, sectors or companies and use carbon credits to take responsibility for the remaining emissions. However, there is significant gap between the ideal and actual decarbonisation efforts of countries and companies as shown by the annual emissions gap report (UNEP, 2025). Against this reality, excluding non-Paris-aligned entities from engaging in carbon credit cooperation could effectively eliminate almost all cooperation, resulting in less mitigation action compared to allowing also non-Paris-aligned entities to participate in carbon credit cooperation. This is especially relevant for the voluntary carbon market; as long as companies are not legally required to be Paris-aligned in their internal actions and they do not increase their own emissions as a result of their voluntary purchases of high-integrity carbon credits, these purchases provide much-needed additional contributions to the Paris goals.

Robust accounting and transparency are key for promoting public trust in the responsible use of carbon credit cooperation. This could include encouraging broad participation also by participants whose own actions are not yet Paris-aligned. This includes robust tracking and accounting of carbon credit cooperation, as well as transparent reporting of the participants' own targets and actions, and whether (or not) they align with the Paris Agreement's global goals, and how carbon credit cooperation is used to complement (and not to postpone or substitute) internal decarbonisation efforts and allow for higher ambition while avoiding all forms of double counting. Paris-alignment could be demonstrated by describing how carbon credit cooperation is used to enable higher ambition and fair benefit-sharing. In the voluntary space, transparency also includes ensuring that any claims based on carbon credit use are credible and in line with the relevant anti-greenwashing regulation. To enable robust tracking and accounting, buyers should use interoperable registries. To foster public accountability, relevant information should be publicly available and easily accessible, for compliance and voluntary use cases alike.

Compliance and voluntary carbon markets have different functions and serve different use cases. Compliance markets are designed for supporting the implementation of agreed targets, allowing for their higher ambition initially and over time. Voluntary markets are designed to mobilise complementary and additional finance for climate action, above and beyond what companies are required to do. This voluntary finance may support the implementation of agreed targets or mitigation beyond these targets. A valuable alternative use case for carbon credits is their use to deliver (results-based) climate finance to support host countries in implementing mitigation action and raising ambition (in the host country or globally), instead of using the carbon credits towards the buyer's own mitigation targets. Some differences in Paris-alignment requirements across market segments may therefore be justified, to cater for different functions and use cases.

In the voluntary carbon market, there is a lack of consensus on whether credible voluntary offset use of carbon credits would require correspondingly adjusted credits. There is consensus that the carbon credit use case determines whether there is a need for corresponding adjustments, and that credits used for voluntary contributions do not require corresponding adjustments. There is also broad agreement that correspondingly adjusted credits are suitable also for voluntary use to support mitigation beyond existing levels of NDC ambition and that such credits provide a valid basis for voluntary offset claims, provided these credits are of high integrity. It is also generally accepted that using correspondingly adjusted credits for voluntary offsetting mitigates reputational risks and criticism. The voluntary carbon market remains divided on whether voluntary offsetting claims, including claims to neutralise residual emissions to achieve corporate net zero, are valid and credible also in the case where these claims are based on credits that are not correspondingly adjusted. Opponents emphasise that anti-greenwashing regulation requires voluntary claims to be truthful, accurate and not misleading, and argue that offsetting requires, by definition, a unique claim to the underlying mitigation outcome which can be ensured by using correspondingly adjusted credits. Proponents emphasise the voluntary nature of the claim and argue that avoiding double claiming between two NDCs is sufficient to make the voluntary offset claim credible. With the EU Green Claims Directive currently on hold and the revised SBTi Net-Zero Standard ambiguous on this question, the lack of clarity and consensus is expected to persist for the foreseeable future. This creates risks and uncertainties for voluntary carbon market participants and undermines their interest to support and scale up voluntary climate action. (Ahonen *et al.*, 2023)

3.3. Cross-cutting issues: Benefit-sharing and ambition-raising

Benefit-sharing and ambition-raising can be seen as specific Paris-alignment elements that are distinct from demand- and supply-side integrity. The implementation of demand- and supply-side elements of Paris-alignment can be seen to focus on safeguarding environmental and social integrity, that is, ensuring that carbon credit cooperation is consistent with and does not undermine the global and national mitigation and sustainable development goals. By contrast, ambition-raising aims to increase the ambition of sub-global climate action to the level needed to meet the global goals. This can be achieved by aligning national mitigation targets and actions with the global goals and, if and when national targets fall short, by supporting additional mitigation that goes beyond national targets.

Benefit-sharing can contribute to reaching existing mitigation targets and/or ambition-raising, depending on how participants decide to use and account for their share of the mitigation benefits. In general, mitigation counts towards the host country's NDC to the extent that it is within the NDC scope, visible in the national greenhouse gas inventory and not correspondingly adjusted. Correspondingly adjusted credits contribute either towards existing NDCs, international compliance under CORSIA or, if cancelled, towards ambition-raising. Benefit-sharing can be implemented, for example, through stringent crediting baselines, limited crediting periods, authorising only part of the mitigation outcomes for ITMO use, and charging a fee for corresponding adjustments. Fair benefit-sharing is a means to secure political support for carbon market cooperation in host countries, and a requirement under the PACM.

Benefit-sharing can enable, but does not guarantee, higher levels of ambition by the host and buyer country over time. NDC-aligned benefit-sharing mechanisms and transparent price discovery can help host countries in generating both monetary and mitigation value from their participation. This could enable the host country to raise the level of ambition of its NDC over time. NDC ambition is, however, a political decision that is influenced also by many other factors. Similarly, on the buyer side, carbon credit cooperation could enable higher ambition by enhancing flexibility and cost-effectiveness, but does not guarantee it. The relationship between carbon credit cooperation, benefit-sharing and national mitigation target ambition levels can be challenging to estimate. Practical examples of benefit-sharing mechanisms would be useful, including benefit-sharing models that are explicitly linked with ambition-raising.

3.4. Capacity building

To implement Paris-alignment successfully, participants need sufficient capacity, expertise and resources, as well as clear and broadly accepted guidance. Capacity needs to be built among both public and private entities, in both host and other participating countries.

Host country readiness is a key condition for Paris-aligned carbon credit cooperation, and many host countries need support in building their capacity to assess integrity and NDC alignment and to ensure fair benefit-sharing. Many host countries face significant capacity gaps in developing and implementing Article 6 strategies, legal frameworks and eligibility criteria and assessment. Without addressing these gaps, Paris-alignment risks remaining aspirational rather than operational.

Countries are currently at different stages of Article 6 readiness, with many host countries actively working to develop Article 6 strategies and regulatory frameworks, MRV systems, clear eligibility criteria and fair benefit-sharing mechanisms, with support from countries such as Germany. For host countries, key barriers include lack of awareness among policy-makers, lack of clear legal frameworks, limited capacity to implement operational tools and MRV systems and insufficient local expertise, as well as challenges with navigating multiple bilateral frameworks and standards. These barriers could be overcome with efforts that increase political buy-in, reduce the overselling risk and train a critical mass of local experts and verifiers, including through the development of NDC-aligned benefit-sharing mechanisms, eligibility criteria and monitoring tools, targeted capacity building, and harmonisation across frameworks and standards. It is important to share experiences and exchange knowledge with peer countries, including through regional clusters, so that no country is left behind. Alongside the development of regulatory frameworks, concrete project pipelines should also be developed.

Some developed country governments, such as Germany, are supporting regional and national Article 6 capacity building and knowledge exchange. For example, Germany has supported the examination of host country NDCs and marginal abatement cost curves to identify potential sectors for supplying ITMOs and MCUs. Germany's priorities include ensuring that international credits that are used for compliance purposes meet strong quality thresholds – with PACM as a reference point, and that credit use is very transparent. Germany may propose additional political criteria for the EU procurement of international credits that go beyond project-level integrity, for example, requiring countries to demonstrate that they have integrated an Article 6 strategy in their NDCs.

There is a need for donor countries and multilateral organisations to scale up targeted capacity building for host countries, with a focus on regulatory frameworks, MRV systems, and benefit-sharing mechanisms. Peer learning among host countries – including through regional clusters – should be actively promoted to ensure no country is left behind. Any plans by major buyers and funders to introduce political criteria for international credit procurement (e.g., requiring integration of Article 6 strategies into NDCs) should be accompanied by considerations on how such criteria can designed to support and incentivise host country readiness-building without creating barriers to participation, especially for least developed countries and small island developing states.

4. Conclusions

In the context of carbon crediting, Paris-alignment means alignment with the global and national mitigation goals, as well as Paris Agreement's requirements for environmental and social integrity requirements. It matters for ensuring that all carbon credit cooperation contributes to, and does not undermine, global climate and sustainable development goals. For participants, Paris-alignment means taking ambitious mitigation action in their sphere of operation, using carbon credit cooperation to allow for higher ambition, applying robust accounting and reporting transparently. For activities and credits generated by them, Paris-alignment means, inter alia, demonstrating additionality, applying stringent baselines, addressing non-permanence and leakage, avoiding carbon lock-in and negative environmental and social impacts, avoiding negative impacts and generating sustainable development benefits.

While Paris-alignment is likely to drive further convergence of the compliance and voluntary markets, some differences could – and perhaps even should – remain also in the future, to cater for different frameworks and use cases. It is important that all market segments maintain high integrity, to secure public trust and reduce market fragmentation. The voluntary carbon market continues to have a valuable role in developing and testing innovative approaches and mobilising private finance beyond what NDCs and public finance can achieve. Paris-alignment and transparency are important for also the voluntary carbon market. The voluntary carbon market can make use of the PACM as a quality benchmark and ITMOs as an ambition-raising tool.

Carbon credit cooperation cannot fix the global ambition gap, even if it is Paris aligned. Collectively, and in most countries, NDCs fall critically short of what is needed to achieve the Paris Agreement's long-term temperature goal. In this reality, carbon credit cooperation cannot be expected to align with the ideal level of ambition, let alone fix the general lack of ambition. Ambition-raising ultimately requires governments to adopt ambitious mitigation targets, underpin these with effective mitigation policies and measures that ideally also trigger mitigation action by the private sector. Burdening individual Article 6 activities and credits with the expectation to compensate for lack of global ambition is likely to result in less action, rather than higher ambition. This is due to the voluntary nature of cooperation under Article 6; entities will participate in cooperation only if it offers sufficient incentives and benefits for all participants. For Paris-alignment of carbon credit cooperation, a pragmatic guiding principle could be whether the cooperation leads to an improvement for the global atmosphere, compared with the case without cooperation.

There is a continued need for dialogue between host countries, buyers, carbon crediting programmes and policymakers on how to implement Paris-alignment in practice, drawing on the growing evidence base from Article 6 implementation.

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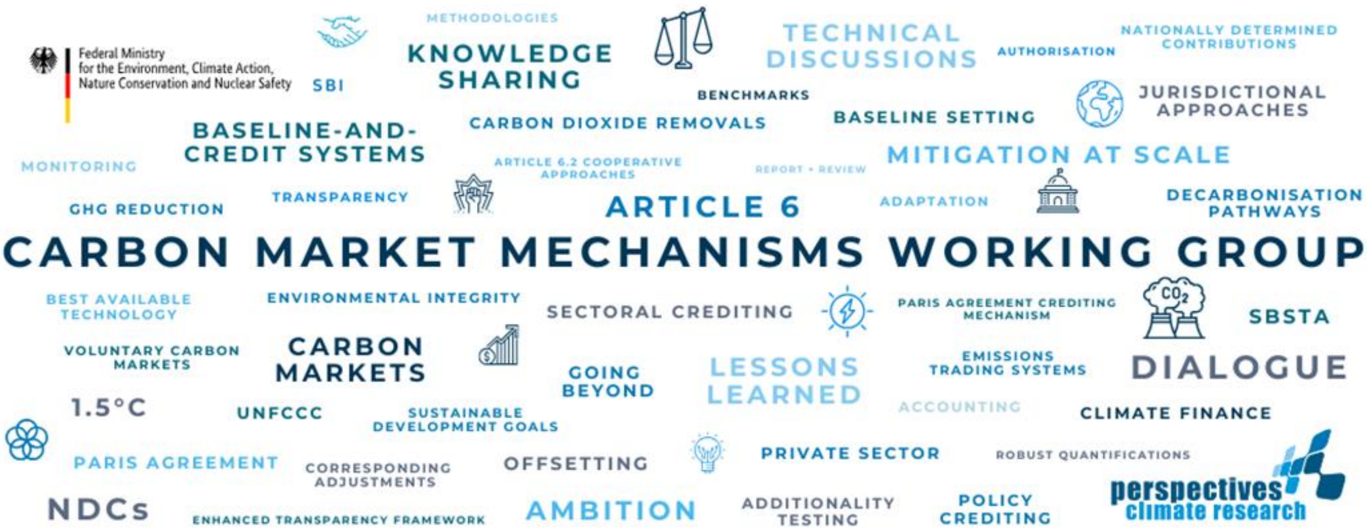

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