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The Role of Carbon Credits in Financing Global Climate Goals

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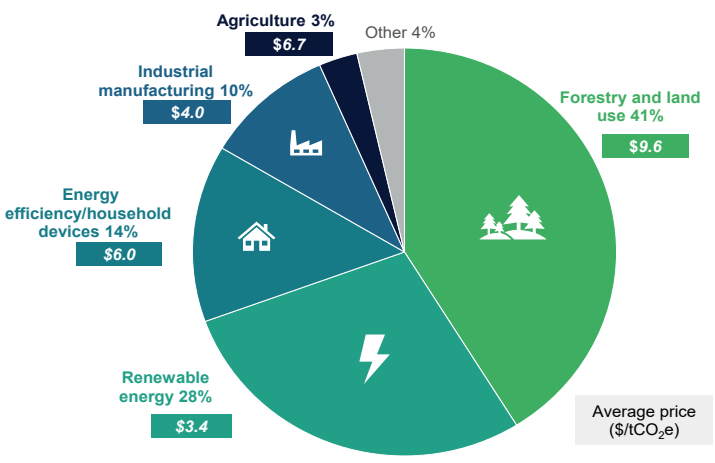
- Carbon credits are financial instruments aimed at supporting greenhouse gas emission reduction or carbon removal projects, especially in developing countries. Businesses use them to offset some of the emissions generated by their operations (offsetting) or to demonstrate their environmental commitment (contribution), for example by funding afforestation projects.

- Carbon credits, which help to raise private-sector funding for climate initiatives, are instruments that can be used alongside, but are distinct from, emission trading schemes such as the European Union Emissions Trading System (EU ETS).

- In 2024, around $500m in credits were traded on carbon credit markets globally. These markets are experiencing a crisis due to supply-side quality issues as well as challenges to the credibility of the principle of offsetting emissions owing to several greenwashing scandals. Several public- and private-sector initiatives are nevertheless seeking to better regulate practices to ensure the market's credibility and real climate benefits. The establishment of an international carbon credit trading scheme is foreseen by the Paris Agreement on climate change, with the aim of providing a firm foundation for the market and fostering climate cooperation between countries.

- EU Member States have adopted a climate target for 2040 that will allow high-quality international carbon credits to be used to contribute up to 5% towards the target, thereby helping to achieve European climate goals cost-efficiently by raising EU funding for projects outside the bloc. In addition, the European Commission has proposed to integrate permanent carbon removal projects, located on European soil, into the EU Emissions Trading System (EU ETS).

Project categories and average prices of carbon credits traded globally in 2023-2024



Source: DG Trésor calculations, Ecosystem Marketplace, State of the Voluntary Carbon Market 2025, 2025.

How to read this Chart: In 2023-2024, 41% of carbon credits traded globally were related to projects in the forestry and land use category, with an average price of $9.6 per metric ton of emissions avoided or removed from the atmosphere, expressed as CO_2 equivalent.

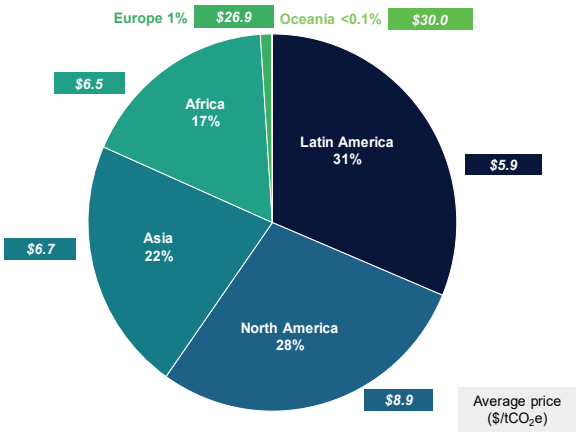
1. Carbon credits are instruments aimed at raising private-sector funding for decarbonisation projects

1.1 Carbon credits provide funding for greenhouse gas reduction or carbon removal projects worldwide and concern a broad range of stakeholders

Carbon credits are financial instruments aimed at supporting decarbonisation projects. A credit represents one metric ton of greenhouse gas emissions, expressed as CO_2 equivalent, that were not released into the atmosphere (emission reduction) or that were removed from it (removal) by a project. Such projects can for example involve afforestation to store carbon in trees (removal) or implementing farming practices that reduce greenhouse gas emissions (reduction). Projects originate from all regions of the globe (see Chart 1), with a significant portion from developing countries.

Carbon credits are mainly traded over the counter (i.e. directly between buyers and sellers, outside of financial markets) (see Diagram 1). Certification bodies assess project quality and keep track of transactions through registries.

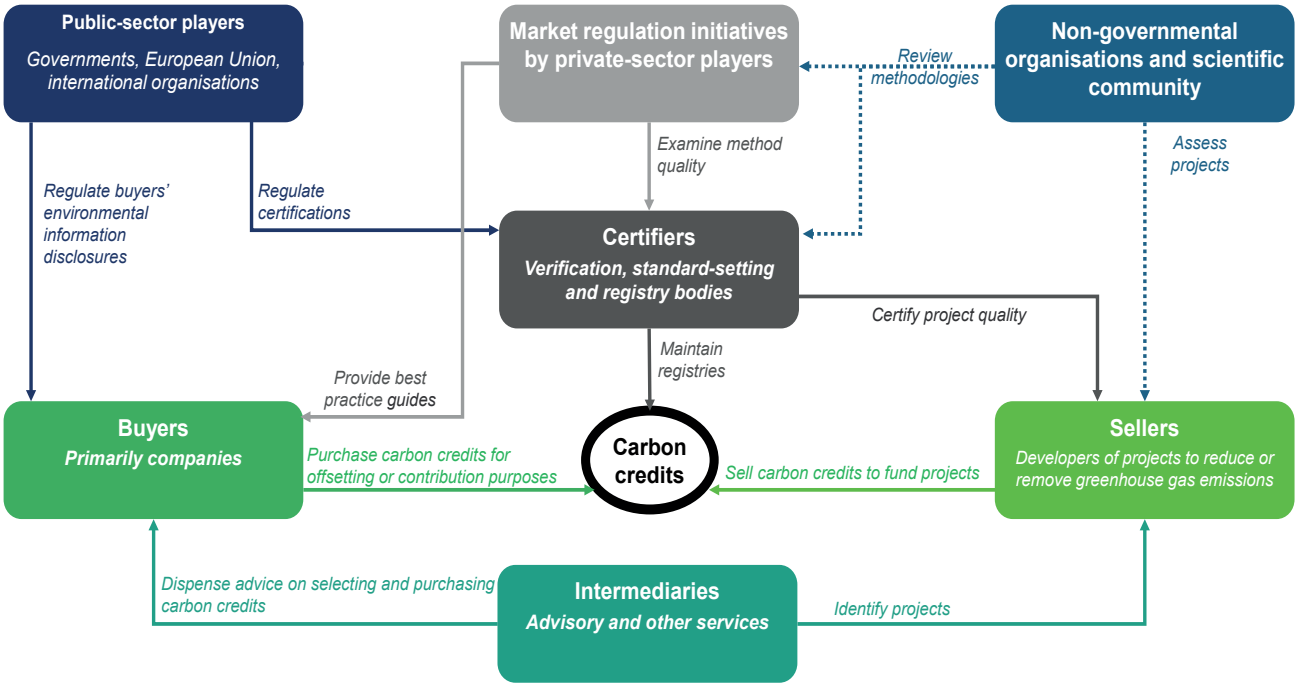
Chart 1: Region of origin and prices of carbon credits traded in 2023-2024



Source: DG Trésor calculations, Ecosystem Marketplace, State of the Voluntary Carbon Market 2025, 2025.

How to read this Chart: In 2023-2024, 31% of carbon credits traded globally were from projects in Latin America with an average price of $5.9 per metric ton of emissions avoided or removed from the atmosphere, expressed as CO_2 equivalent.

Diagram 1: How carbon credit markets work



Source: DG Trésor analysis.

1.2 Carbon credits are instruments that are used alongside emission trading schemes

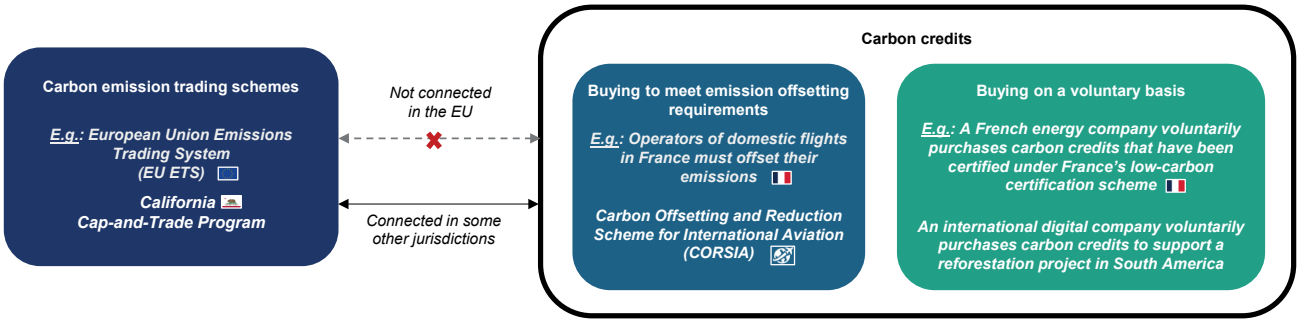
Most carbon credits are purchased voluntarily by businesses and are used to offset greenhouse gas emissions generated by their operations (offsetting) or to provide funding for climate-friendly initiatives (contribution). However, certain companies, for example those operating in the aviation sector, must comply with emission offsetting requirements introduced by regulators (see below).

Emission offsetting requirements differ from emission trading schemes, under which businesses from certain sectors in a given region, such as the steel and cement industries on the EU ETS market, are required to purchase allowances corresponding to their annual emissions. The supply of allowances, capped by the public authorities, decreases over time to reduce total emissions. By contrast, the supply of carbon credits depends on projects being carried out, is not capped and originates from projects in any sector or region.

Carbon emission trading schemes and carbon credits are separate but complementary instruments (see Diagram 2). Some jurisdictions such as California or Singapore allow a limited volume of credits to be used in their emission trading schemes. The EU is currently opting to keep the emission trading and carbon credit markets separate in order to leverage their respective strengths, while mitigating the risks related to the lack of international regulation of carbon credits (see section 2).

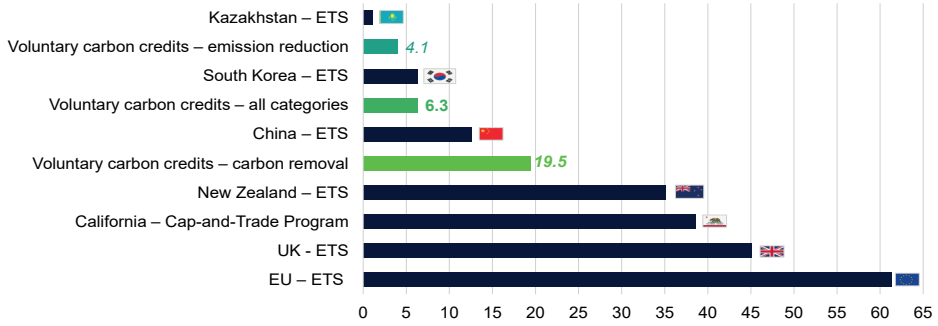
Price heterogeneity of carbon credits and emission allowances reflects the differing costs of decarbonisation measures for a given economy or sector and the varying way each scheme works. In 2024, the average price per metric ton of CO_2 was $61 on the EU ETS market, $39 on California's cap-and-trade market and $13 on China's market, compared to an average of $6 on the voluntary carbon credit market,[1] with most of the latter credits originating from developing economies. The price of carbon credits also varies according to the perceived quality of projects,[2] with the price of removal projects being higher on average than that of emission reduction projects (see Chart 1).

Diagram 2: Classification of carbon markets



Source: DG Trésor analysis.

Chart 2: Average prices per metric ton of CO_2 in 2024 ($/t$CO_2$e)



Source: DG Trésor analysis, Ecosystem Marketplace data (2025), State of the Voluntary Carbon Market 2025; World Bank (2024), State and Trends of Carbon Pricing Dashboard.

How to read this Chart: In 2024, one metric ton of CO_2-equivalent emissions was priced, on average, at $61.3 on the EU ETS and at $6.3 on the voluntary carbon market.

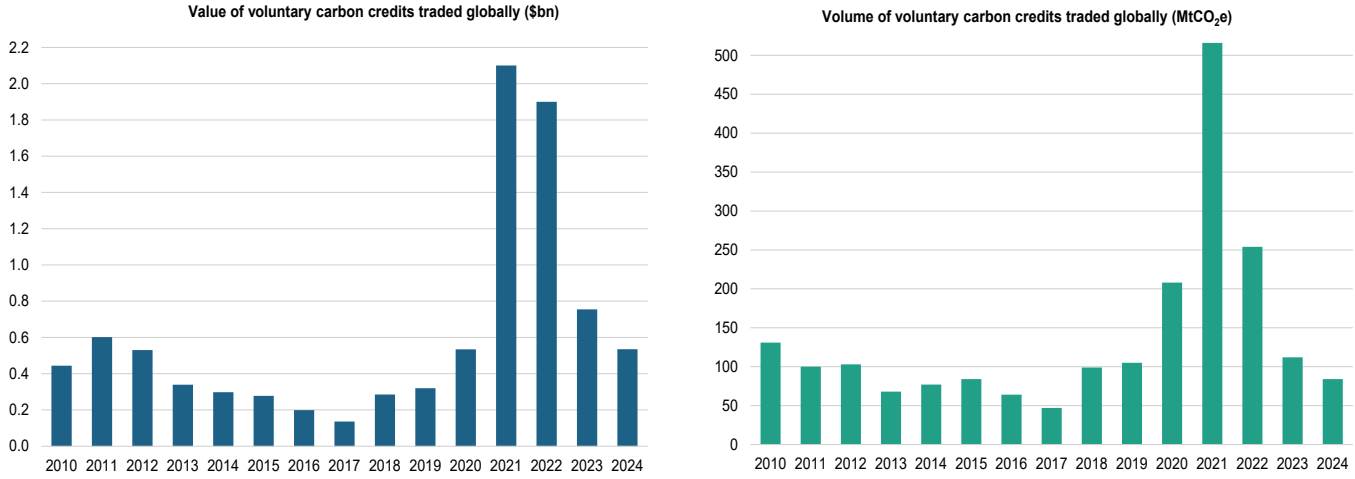
(1) Ecosystem Marketplace (2025), State of the Voluntary Carbon Market 2025; World Bank (2024), State and Trends of Carbon Pricing Dashboard.
(2) Ibid.

1.3 Carbon credit markets began expanding in the 2000s and grew markedly from 2017 to 2021

Carbon credits were first introduced in the 1990s, mainly at the initiative of businesses looking to offset their emissions. The founding of private international certification bodies such as Gold Standard (2003) and Verra (2005) subsequently spurred global trading of carbon credits, accelerated by the implementation of the Clean Development Mechanism under the 1997 Kyoto Protocol. Run by the United Nations (UN), the mechanism allowed industrialised countries to meet part of their greenhouse gas emission reduction targets under the Kyoto Protocol by buying carbon credits originating from developing countries. In addition, the EU allowed businesses subject to the EU ETS to purchase, under certain conditions, international carbon credits certified under the Clean Development Mechanism. Supported by purchases by EU Member States and European companies, the mechanism drove the market's expansion until the early 2010s. Its subsequent separation from the EU ETS (as Clean Development Mechanism credits were depressing prices) reduced demand for carbon credits.

The market experienced an upturn around 2020 (see Chart 3), driven by a sharp rise in the number of businesses adopting carbon neutrality targets, in part by buying carbon credits.[3] Some countries contributed to this trend by introducing emission offsetting requirements in sectors such as international aviation (see 3.2) or by public procurement of carbon credits (see 3.1).

Chart 3: Change in value and volume of voluntary carbon credits traded globally, 2010-2024



Source: DG Trésor analysis, Ecosystem Marketplace, State of the Voluntary Carbon Market 2025, 2025.

How to read this Chart: In 2024, voluntary carbon credits of $0.5bn were traded globally, representing 84 million metric tons of CO_2-equivalent ($MtCO_2e$) emissions avoided or removed from the atmosphere.

2. Initiatives have been implemented to regulate practices and promote carbon credits, although limitations persist

2.1 Carbon credit markets are seeing a downturn in the wake of quality concerns and greenwashing allegations

The expansion of carbon credit markets came to a halt after 2021 (see Chart 3), due to a loss of confidence.

On the supply side, several scientific papers[4] have questioned the permanence of the carbon removals achieved by funded projects and their ability to result in additional emission reductions, i.e. reductions that would not have occurred without the use of carbon credits. For example, carbon credits for forest "conservation" projects have involved areas not at real risk of deforestation. In addition, the scientific community has raised questions about the reliability

(3) World Bank (2022), "State and Trends of Carbon Pricing 2022".
(4) P. Delacote et al. (2024), "Strong Transparency Required for Carbon Credit Mechanisms", *Nature Sustainability*; R. Calel et al. (2025), "Do Carbon Offsets Offset Carbon?", *American Economic Journal: Applied Economics*.

of the methodologies of international certifiers,[5] which have been widely reported by the media.[6]

On the demand side, some businesses have made claims about their environmental performance based on their purchase of carbon credits, without trying to reduce their own emissions, thus fuelling widespread suspicions of greenwashing in their use of such credits.[7] These reputational risks have had the effect of decreasing the appeal of buying carbon credits to offset companies' emissions.

Such quality concerns can stem partly from an adverse selection phenomenon (Akerlof, 1970),[8] as the OECD has highlighted.[9] Where transparency and regulatory environmental oversight are limited, information asymmetries can prevent buyers from distinguishing high-quality projects from low-quality ones, which lowers the average quality of projects on the market. The quality of carbon credits purchased does indeed seem to be low, as illustrated by a paper from Trencher et al. (2024)[10] which estimated that most carbon credits purchased by major companies over the 2020-2023 period pose a high risk of not reducing emissions as claimed.

2.2 On the supply side, voluntary initiatives, as well as a growing regulatory push at EU and international levels, strive to improve quality and build a global market

Several international initiatives have been launched to promote principles and actions to improve market functioning. For example, the "Call to Action for Paris Aligned Carbon Markets" was backed by 31 countries at the end of the Summit for a New Global Financing Pact hosted by France in 2023.[11] In 2024, the International Organization of Securities Commissions (IOSCO) unveiled a set of good practices for financial market regulators.[12] Some initiatives have focused on establishing quality standards for carbon credits, such as the Integrity Council for the Voluntary Carbon Market (ICVCM), which developed an assessment framework to evaluate the level of requirements of certifiers' methodologies, thus serving as a "certifier of certifiers". Nevertheless, the level of standards set for certain certification decisions has been deemed lacking in some instances.[13]

At the same time, several public certification schemes are being developed in order to set quality-related benchmarks. At EU level, quality standards for carbon credits and a registry managed by the European Commission have been progressively rolled out since the 2024 adoption of the Carbon Removals and Carbon Farming (CRCF) Regulation.[14] At international level, the implementation of Article 6.4 of the Paris Agreement includes a certification scheme called the Paris Agreement Crediting Mechanism, under the auspices of the UN.

In France, a low-carbon certification scheme (Label bas-carbone) was introduced by the government in 2018. It provides project quality assurance based on methodologies approved by a scientific board. Nearly 2,000 projects have received this certification, representing potentially seven million metric tons of CO_2 equivalent sequestered or avoided, chiefly through agriculture and forestry projects. The certification scheme facilitates private-sector funding for decarbonisation projects, which also generates co-benefits for biodiversity and climate change adaptation.[15] Its methods are regularly revised to strengthen their integrity, and its regulatory framework now allows for verified carbon credits to be transferred, thus promoting market liquidity.[16] Furthermore, at

(5) T. A. P. West et al. (2024), "Action Needed to Make Carbon Offsets From Forest Conservation Work for Climate Change Mitigation", Science; A. Gill-Wiehl et al. (2024), "Pervasive Over-Crediting From Cookstove Offset Methodologies", *Nature Sustainability*; B. Probst et al. (2024), "Systematic Assessment of the Achieved Emission Reductions of Carbon Crediting Projects", *Nature Communications*.
(6) "Revealed: More Than 90% of Rainforest Carbon Offsets by Biggest Certifier Are Worthless, Analysis Shows", *The Guardian*, 18 January 2023.
(7) D. Trouwloon et al. (2023), "Understanding the Use of Carbon Credits by Companies: A Review of the Defining Elements of Corporate Climate Claims", *Global Challenges*.
(8) G. Akerlof (1970), "The Market for 'Lemons': Quality Uncertainty and the Market Mechanism", *The Quarterly Journal of Economics.*
(9) K. Wetterberg et al. (2024), "The Interplay Between Voluntary and Compliance Carbon Markets: Implications for Environmental Integrity", *OECD Environment Working Papers* no. 244.
(10) G. Trencher et al. (2024), "Demand for Low-Quality Offsets by Major Companies Undermines Climate Integrity of the Voluntary Carbon Market", *Nature Communications*.
(11) "Call to Action for Paris Aligned Carbon Markets", June 2023.
(12) IOSCO (2024), "Voluntary Carbon Markets, Final Report".
(13) Öko-Institut (2024), "Statement on the Withdrawal From the ICVCM Expert Panel".
(14) Regulation (EU) 2024/3012 of the European Parliament and of the Council of 27 November 2024 establishing a Union Certification Framework for Permanent Carbon Removals (Carbon Removals and Carbon Farming (CRCF) Regulation).
(15) French Ministry for the Ecological Transition, press release dated 8 September 2025, "Renforcement du Label bas-carbone pour massifier les financements privés en faveur de la transition écologique" (in French only).
(16) Decree 2025-917 of 5 September 2025 amending the Decree of 28 November 2018 creating a low-carbon certification scheme and the Order of the French Ministry for the Ecological Transition of 5 September 2025 setting out the framework for the low-carbon certification scheme (both documents in French only).

international level, the French Development Agency (AFD) has rolled out a strategy of capacity building to promote the supply of high-quality carbon credits in partner countries.[17]

2.3 On the demand side, many initiatives have been launched to identify a model for the use of voluntary carbon credits that ensures environmental integrity and economic appeal

The main framework for integrity in the use of carbon credits was put forward on the global stage by the Science Based Targets initiative (SBTi), an organisation set up by corporates (including of US origin) and the UN.[18] The SBTi's framework recommends using carbon credits exclusively for offsetting residual emissions, once the decarbonisation pathway has been carried out (often around 2050), so as to prioritise reducing direct emissions. However, the SBTi's framework reduces short-term incentives for businesses to buy carbon credits. The SBTi accordingly announced more flexible recommendations in April 2024,[19] before withdrawing its proposals in response to criticism.[20]

Within the EU, the Corporate Sustainability Reporting Directive (CSRD) has governed the use of carbon credits since 2022, particularly by imposing transparency requirements. The European Commission's 2023 proposal for the Green Claims Directive[21] could also lead to greater regulatory oversight concerning the substantiation and communication of climate-related claims, for example by differentiating between contribution claims and offsetting claims. These instruments draw on the SBTi's approach in that they limit the role of carbon credits.

The smooth operation of markets is also hampered by the lack of a single information system. The simultaneous existence of multiple registries means that carbon credits could be issued for the same project on two different markets. South Africa's G20 Presidency in 2025 identified this issue as a priority[22] and tasked the Climate Data Steering Committee with developing a common carbon credit data model to identify and present information about carbon credits.

3. The relevant use of carbon credits to decarbonise hard-to-abate sectors and to provide support to countries lacking in financial resources is a matter of debate as well as a major item on the agenda at COP30 in Belém

3.1 Discussions are ongoing on how carbon credits can be used to finance negative emissions as part of their limited inclusion in the EU ETS

Achieving climate neutrality in the EU by 2050 will require scaling up carbon removals, also referred to as negative emissions, to offset the impact of hard-to-abate emissions (such as those generated by agriculture and waste).[23] These removals can be delivered through nature-based solutions such as reforestation or through technological means, including direct air capture and geological carbon storage.

Carbon credits make it possible to quantify the additional removal of greenhouse gases and give it commercial value, thus financing negative emissions. In the context of amending the European Climate Law, the European Commission has proposed including permanent removals, located on European soil, in the EU ETS.[24] Under current rules, the capture and storage of CO_2 that an industrial company releases into the atmosphere allows it to decrease the amount of emission allowances it is required to purchase. Under the proposed amendment, companies would be able to buy any carbon credits ensuring permanent carbon removals from other businesses. The mechanism

(17) French Development Agency (AFD) (2024), "AFD Group's Position on Carbon Finance".
(18) "SBTi Corporate Net-Zero Standard, Version 1.3", September 2025.
(19) "Statement From the SBTi Board of Trustees on Use of Environmental Attribute Certificates, Including but Not Limited to Voluntary Carbon Markets, for Abatement Purposes Limited to Scope 3", April 2024.
(20) "Climate Targets Oversight Group Backtracks After Staff Revolt", *Financial Times*, 13 April 2024.
(21) Negotiations are still ongoing regarding this proposed directive.
(22) See the "Chair's Summary" published by the Finance Track, 15-16 October 2025.
(23) According to the 2022 Sixth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC), "[p]athways limiting warming […] require some amount of CDR [carbon dioxide removal] to compensate for residual GHG emissions" (M. Pathak et al. (2022), "Climate Change 2022: Mitigation of Climate Change. Contribution of Working Group III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change, Technical Summary").
(24) European Commission, "2040 Climate Target".

proposed by the Commission would be restricted to carbon credits associated with EU carbon removals and their volume would be limited, in order to avoid a repeat of the situation where carbon credits from the Kyoto Protocol were included in the EU ETS and ended up artificially lowering prices in the 2010s.

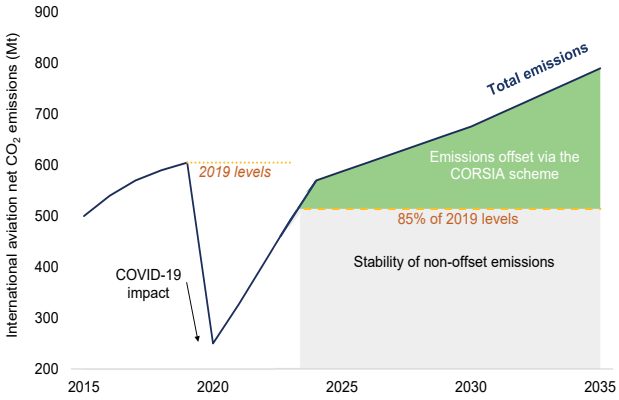
3.2 The appropriate use of carbon credits is key to implementing international decarbonisation agreements in the aviation sector

The aviation sector is one of the most difficult to decarbonise from a technical standpoint,[25] thus making it conducive to the use of carbon credits. Under the Paris Agreement, it is not the countries directly but the International Civil Aviation Organization (ICAO) that is responsible for the decarbonisation of this sector. In 2016 the ICAO adopted the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA). The scheme will require airline operators to offset some of the emissions generated by international flights. Following a pilot phase, it will take full effect in 2027.

However, the CORSIA scheme has significant limitations, such as its exclusion of non-CO_2 emissions (e.g. "contrails") and its limited goal of offsetting emissions growth above 85% of 2019 levels (see Diagram 3). Its environmental benefits will depend on the quality of carbon credits purchased by airlines.[26]

In France, Article 147 of the Climate and Resilience Act of August 2021 introduced a requirement for domestic flights to offset their annual greenhouse gas emissions in a manner that complements the CORSIA scheme, which covers non-European flights.

Diagram 3: How the CORSIA scheme works



Source: DG Trésor analysis, based on the ICAO's (2023) CORSIA Implementation Plan Brochure.

How to read this Chart: As from 2023 onwards, international aviation sector emissions growth above 85% of 2019 levels will be required to be offset by purchasing carbon credits.

3.3 Carbon credits could play a growing role in climate cooperation between countries

Article 6 of the Paris Agreement allows countries to transfer carbon credits, which measure their national mitigation outcomes, to other countries looking to meet their emission reduction targets. Provided that a bilateral cooperation framework is in place, traded carbon credits may be deducted from emission reduction accounting in the selling country to be counted towards that of the buying country. The COP29 summit adopted guidelines on the operational implementation of this mechanism. Many framework agreements have been signed between countries, but few transfers have been carried out.[27] The COP30 summit in Belém is slated to make progress on adopting the technical rules needed for the actual launch of the new system.

(25) M. Sharmina et al. (2021), "Decarbonising the Critical Sectors of Aviation, Shipping, Road Freight and Industry to Limit Warming to 1.5–2°C", *Climate Policy.*

(26) In autumn 2024 the ICAO Council approved a broad list of eligible carbon credits ("emission units") for the first phase (2024-2026) of the scheme. Their quality has faced criticism with regard to additionality (for example, see Carbon Market Watch (2024), "Hot Air Carbon Credits Cannot Offset Polluting Planes").

(27) UNEP (2025), "Article 6 Pipeline".

The EU could use the mechanism in the future, as proposed by the European Commission in the context of amending the European Climate Law.[28] During a meeting of the Environmental Council on 5 November 2025, EU Member States adopted a climate target for 2040 and agreed to a proposal stating that high-quality international carbon credits could make a contribution of up to 5% towards the target. Given that carbon costs are higher in Europe than in other parts of the world,[29] the use of international carbon credits would be aimed at maximising the effectiveness of EU climate funding, provided that they meet environmental integrity standards.

3.4 Biodiversity certificates are currently being developed

Biodiversity certificates are meant to provide funding for ecosystem conservation and restoration projects to combat biodiversity loss. They support voluntary, additional private-sector initiatives that promote biodiversity and contribute to the international goals of the Kunming-Montreal Global Biodiversity Framework.

Although their development is still in its early stages, biodiversity certificates could reach a volume of $2bn a year by 2030, according to the World Economic Forum. Facing the same "integrity" barriers as carbon credits, an increase in their use is hampered by other issues, such as the absence of a single indicator (such as metric tons of CO_2) to measure the health of biodiversity. These aspects explain why such certificates are traded over the counter. The relevance of trading them on a secondary market is also under discussion. In 2022, the Franco-British International Advisory Panel on Biodiversity Credits (IAPB) was set up to facilitate the creation and growth of biodiversity credit markets. The panel put forward a framework and a set of recommendations during the COP16 summit in Cali in 2024.[30]

(28) The proposed amendments to Regulation (EU) 2021/119 presented by the Commission in July 2025 (2025/0524[COD]) provide for the possible use of credits.
(29) M. Carhart et al. (2022), "Measuring Comprehensive Carbon Prices of National Climate Policies", *Climate Policy.*
(30) IAPB (2024), "Framework for High Integrity Biodiversity Credit Markets".

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