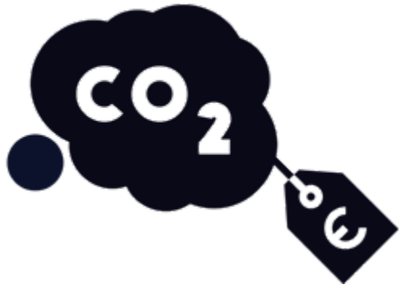

# CARBON MARKETS 101

## The ultimate guide to market-based climate mechanisms

**February 2024**

# Summary

# Introduction




This guide gives an introduction to the current state of international carbon credit markets. It lays out key elements of the newly established markets under the Paris Agreement, and the functioning of the voluntary carbon market, which operates outside of the UN system. It concludes with a discussion of the role of these mechanisms in climate action, and how they should and should not be used.

### Why do countries and companies trade greenhouse gas emissions?

Carbon markets are regarded as a tool to help tackle the climate crisis, which has been caused by the accumulation of human-emitted gases in the atmosphere that make it function rather like a greenhouse. That is why we call them greenhouse gases (GHGs).

Since we only have one atmosphere, it does not matter where polluters emit because these emissions will soon spread around the Earth, creating a global greenhouse effect.

This reality implies that, if the international community agrees to reduce worldwide emissions to a certain amount by adopting a total “carbon budget” for humanity, it does not matter, from the perspective of the atmosphere, how much or where each person or company emits, as long as overall emissions decline by the amount agreed. This means that the distribution of emissions reductions can be guided by numerous factors and principles, including social and economic justice, human rights, or the relative societal and economic value of certain activities.

Since it does not matter where we reduce emissions, the argument behind carbon trading is that the best way to take climate action is to reduce emissions where it is easiest (i.e. least costly) to do so.

To this end, governments around the world have established carbon markets, where emissions (or emissions reductions) can be exchanged. In theory, as long as we control the total amount of emissions traded in the market, it does not matter for the climate who buys or sells. Of course, in practice, establishing a global, or even national, carbon market is a challenging task. There are significant risks that the systems contain loopholes which can result in this policy having little to no impact on reducing emissions.

Some carbon markets have had positive impacts on climate action, in particular those that set a hard cap on emissions, such as the EU Emissions Trading System, but they remain flawed, and other systems have largely failed at reducing global emissions. The practice of offsetting emissions, in particular, has gotten more attention over the past years, and comes with significant risks, especially around misleading advertisement and greenwashing.



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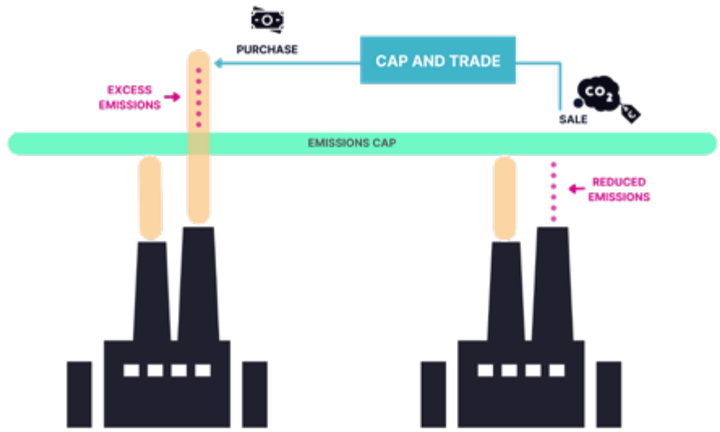



## What's the difference between emission allowances and carbon credits?

In order to understand how different carbon markets function, one needs to ask the following question: how are emissions reductions exchanged between one person, country or company and another?

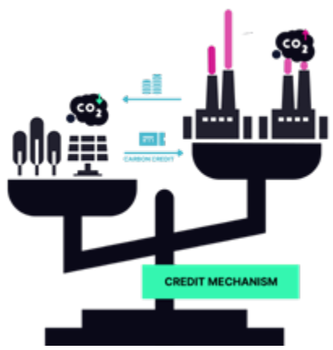
There are two different types of carbon markets: cap-and-trade schemes (or emissions trading systems) and baseline-and-credit mechanisms, which we will call carbon crediting systems (although this is a simplification).

Both types of markets deal in tonnes of carbon dioxide equivalent (CO2e), which means CO2 or other greenhouse gases converted for an equivalent warming effect. That is where the similarities end. These two forms of markets do not work in the same way nor do they share the same objective. The fundamental distinction between the two is in what is being bought and sold on the market. In an ETS, companies trade pollution permits (often called "allowances"), which allow them to emit one tonne of CO2e.

When a company releases one tonne of carbon dioxide equivalent (1tCO2e), it must give one permit back to the government. In a crediting mechanism, in contrast, companies and/or countries purchase carbon credits, i.e. emission reduction units, which must represent a tonne of CO2e which has been reduced or removed from the atmosphere already.

The timing is therefore crucial to distinguish between ETSs and offset mechanisms: in an ETS, companies trade permits to pollute in the future, while in an offsetting mechanism the traded emission reductions have already happened (hence are from the past). From this follows a host of other differences.

Carbon credits are often used to offset or compensate for ongoing emissions on a tonne-for-tonne basis. However, using carbon credits for offsetting purposes leads, at best, doesn't reduce absolute emission levels, because one tonne of CO2e is emitted somewhere and one tonne is reduced somewhere else. Carbon credits used as offsets can also create perverse incentives against internal decarbonisation if companies use carbon credits instead of reducing their own emissions.






The choice of one system over the other leads to significantly different levels of climate ambition. Under an ETS, the government has full control over the amount of emission reductions which will be achieved, because companies taken together cannot emit more than the total number of allowances distributed. Under an offsetting approach, the government might set a theoretical emissions limit, but companies will be free to emit as much as they want, as long as they buy offsets. This means that companies are paying others to reduce emissions, at least theoretically.

Global carbon markets are nearly exclusively carbon crediting mechanisms rather than emissions trading systems. This is why, in this guide, we focus largely on this type of market. Below, we describe some of the main carbon crediting mechanisms in the world, explaining what they are and how they work (or don't work!).

## What is the difference between compliance and voluntary carbon markets?

Carbon markets are often divided in two categories: so-called "compliance" and "voluntary" markets.

A compliance carbon market is one that focuses on obligatory emissions targets, such as a country that wants to meet its climate target under the Paris Agreement (NDC) or a company that must comply with a binding government policy requiring it to purchase a certain number of carbon credits.

The voluntary carbon market is tapped by companies or organisations that decide, of their own accord, to purchase carbon credits, whether it is in anticipation of future obligations or, more often, as part of a corporate social responsibility and/or public relations plan.

In reality, this distinction is not very important, and newcomers to the topic of carbon markets should not be too concerned with it. The frontier between compliance and voluntary markets has become more and more blurry as the number of players participating in these systems has increased. In nearly all cases, a given carbon market can be characterised as both compliance and voluntary depending on how market participants are using it at a particular moment.

An easy example to illustrate this is the case of airlines. Under the UN's Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA), airlines face an obligation, set by a government, to purchase carbon offsets. At the same time, many airlines purchase credits voluntarily, as part of their PR campaigns. For a given credit, the carbon market will be considered "compliance" if the credit is purchased as a way of meeting the CORSIA obligation, but will be considered "voluntary" if it is purchased for other purposes. Yet it would be the same credit, from the same project, purchased by the same airline. This example shows that the distinction is artificial, and not particularly useful or informative.

## How are carbon credits created?

To go from an idea to the sale of carbon credits, a project developer must follow the rules of the carbon market standard under which it is seeking to register its project [1]. While procedures can vary, they all broadly follow the following eight steps:

### 1 Project design:

The project developer puts pen to paper and details their plans for reducing emissions.

### 2 Validation:

An independent auditor - albeit paid and most often selected by the project developer - assesses the conformance of the design to the rules and requirements of the programme or standard under which the developer wants to register its project. These auditors are called validation and verification bodies (VVBs) and must be accepted/accredited by the programme under which the project developer is seeking registration or under another entity that is recognised by the said programme.

### 3 Registration:

The standard carries out its own evaluation and approves registration.

### 4 Project implementation:

The project then starts running. In some cases, project implementation happens in parallel to the registration process. In those cases, the developer takes the risk to start investing without the certainty that the project will be approved.

### 5 Project monitoring:

Throughout the project, the developer will monitor various parameters to be able to measure the project's impact, which are summarised in a monitoring report [2].


1 The main carbon market standards on the voluntary carbon market are: Verra, the Gold Standard, American Carbon Registry, Climate Action Reserve.

2 While monitoring is required during a project's operation, it is not always required to continue after the project has stopped issuing carbon credits. This is a problem since it means the long-term benefits of the mitigation cannot be guaranteed in the long-term: e.g. if trees planted during a project are cut down after the project ends, this may not be detected since no monitoring is being conducted.



### 6 Verification:

The monitoring report, prepared by the developer in step 5, gets verified by an independent auditor, which could be the same or a different one from the one in step 2.

### 7 Credit issuance:

The carbon market standard now issues to the project developer carbon credits corresponding to the estimated climate impact of the project. These are placed in the account of the developer, in the carbon credit registry of the standard.

### 8 Commercialisation

Issued credits can be sold on the market. The developer can sell its credits to companies, individuals or intermediaries. There is no limit on the number of times a credit can be traded, nor is there (in most cases) an expiration date on the credits. This is problematic from the climate perspective because the value of the trades in no way corresponds to the value of the carbon market to the atmosphere.

The last four steps (steps 5 to 8) repeat for as long as the project can issue carbon credits. This is defined as the "crediting period" and varies by project type and standard. Most often, it is somewhere between seven and thirty years, though some projects can run for much longer.

Once a final buyer decides to use a credit, say, to offset some of their emissions or to claim carbon neutrality, or to claim that it is contributing to national climate action in a specific country, then the credit is "retired" or "cancelled", which means it can no longer be traded and no other claims to that credit or its underlying environmental or social attributes can be made.

# United Nations mechanisms

Under the United Nations Framework Convention on Climate Change (UNFCCC), countries have set up different carbon market mechanisms. Theoretically, this makes climate action cheaper, enabling countries to set more ambitious climate targets. However, in practice it is very difficult to establish a clear relationship between the ability to buy cheap carbon credits and a country's willingness to commit to more climate action. Moreover, cheap carbon credits are often of negligible benefit to the climate, although there is no evidence of a direct and consistent link between price and quality.

## What are the Kyoto Protocol mechanisms?

**The Kyoto Protocol established three carbon markets: the Clean Development Mechanism (CDM), International Emissions Trading and Joint Implementation.**

### What is the Clean Development Mechanism?

The best-know of the Kyoto Protocol carbon markets is called the Clean Development Mechanism (CDM), which allowed rich countries to buy emission reductions from developing ones through carbon credits known as Certified Emission Reductions (CERs) [3].

In theory, this should have allowed countries to adopt more ambitious climate targets, but in practice, it even failed at the task of compensating for existing emissions. This is because the vast majority of the emission reductions under the CDM would have happened anyway. For example, some projects which sold emission reductions were mandated by law, and some were profitable even without selling credits. Countries relied on these credits to replace real emission reductions efforts, which meant that in those cases the CDM actually led to more emissions than would have occurred had countries met their targets through other means. Some 85% of CDM would have occurred even without the revenue provided by the mechanism, according to an estimate by the Öko Institute [4].

In addition, some projects registered under the CDM have harmed local communities because the system lacked essential safeguards. For example, its rules on local stakeholder consultations were inadequate and it had no mechanism in place to address grievances raised by local communities.

These elements demonstrate why the CDM largely failed at its task of contributing to the global effort to reduce greenhouse gas emissions and delivering sustainable development benefits. Following COP 26 in November 2021, the CDM was effectively ended (even if de facto the CDM had no longer been operational since the start of 2021) [5].

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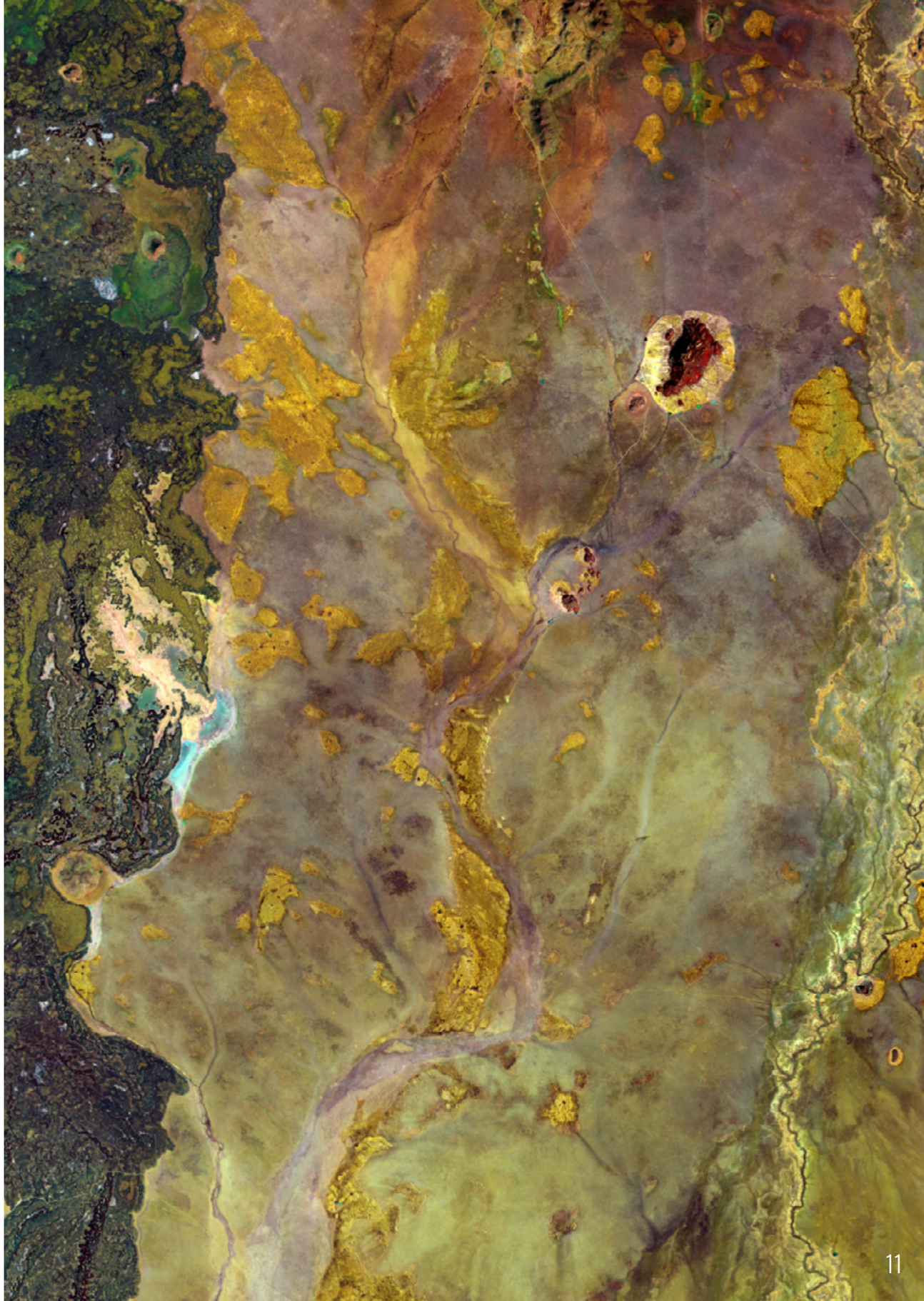
3 Carbon Market Watch focused extensively on the CDM. See, for example, our report from 2018 titled 'CDM: Local impacts of a global system'.

4 Öko Institute (2016), "How additional is the Clean Development Mechanism?"

5 You can find concrete case studies of projects which had harmful local impacts here and here. You can also find our guide on how to conduct effective local stakeholder consultations here. For more case studies, as well as for an assessment of the quality of grievance mechanisms on the voluntary carbon market, see here.





## What are International Emissions Trading and Joint Implementation?

The other two carbon markets established under the Kyoto Protocol are slightly different, and interact with one another.

International Emissions Trading (IET) was an emissions trading system for rich countries. It dealt in units that could be traded between rich countries. However, IET was not effective because too many units were distributed under it, diluting efforts to decarbonise[6].

Joint Implementation is similar to the CDM, but the trade of emission reductions occurred between rich countries, rather than from developing to developed countries.

Understanding the history of UNFCCC market mechanisms is helpful, both because some of these mechanisms are still partially in use - such as the CDM which can still supply credits to voluntary buyers or airlines under the UN's aviation carbon offsetting policy - and because it offers valuable lessons to avoid repeating mistakes from the past.

### Hot air markets: A poisonous mix for the climate

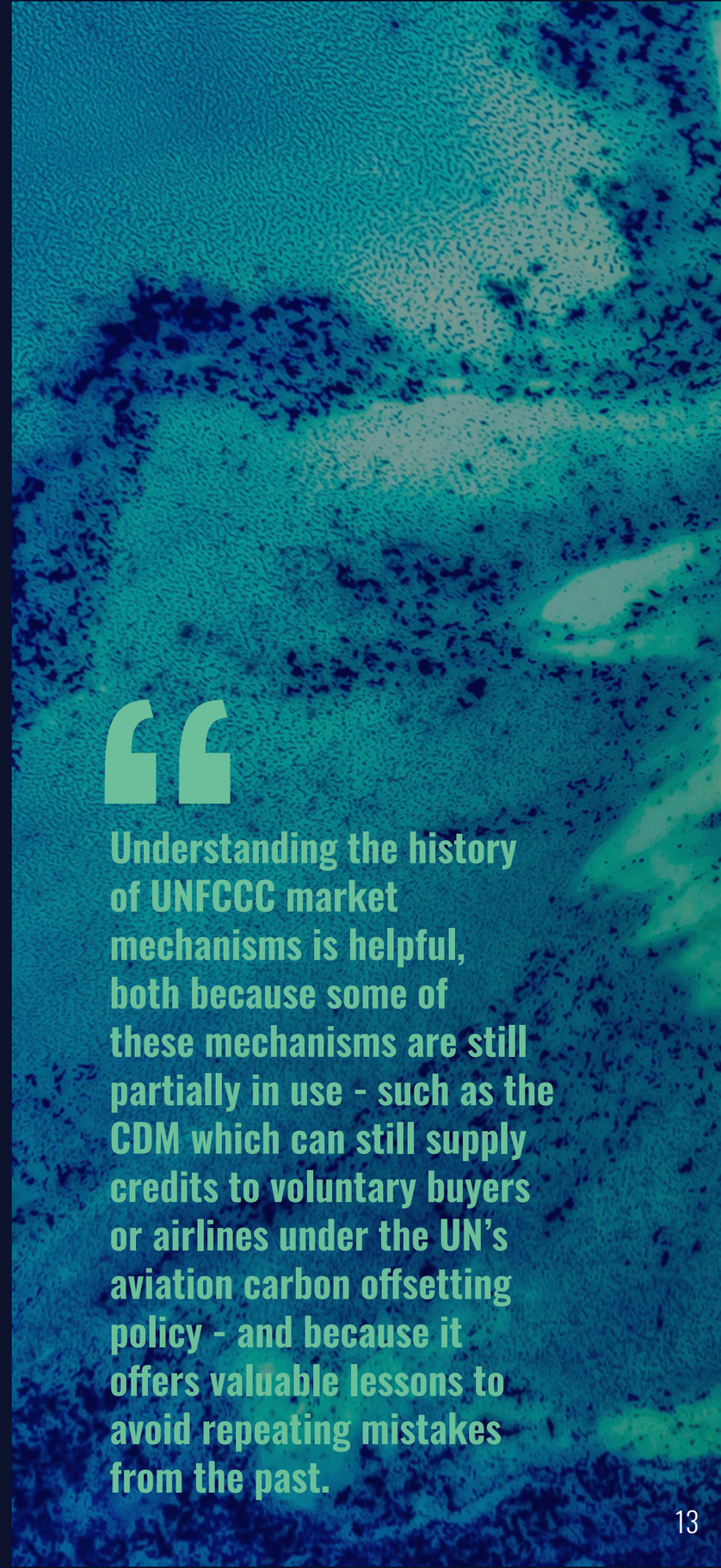
The climate targets set by the Kyoto Protocol were very weak.This meant that several countries over-achieved them without undertaking significant climate action.This was the case, for example, when the Soviet Union collapsed, leading to a significant economic downturn. As a result, emissions in the countries of the bloc plummeted.Compared to the baseline that was fixed at 1990 levels, it appeared as if the former Warsaw Pact countries had carried out significant climate action [7]. As a result, some countries ended up with a lot of unused units from IET, which they were able to sell.

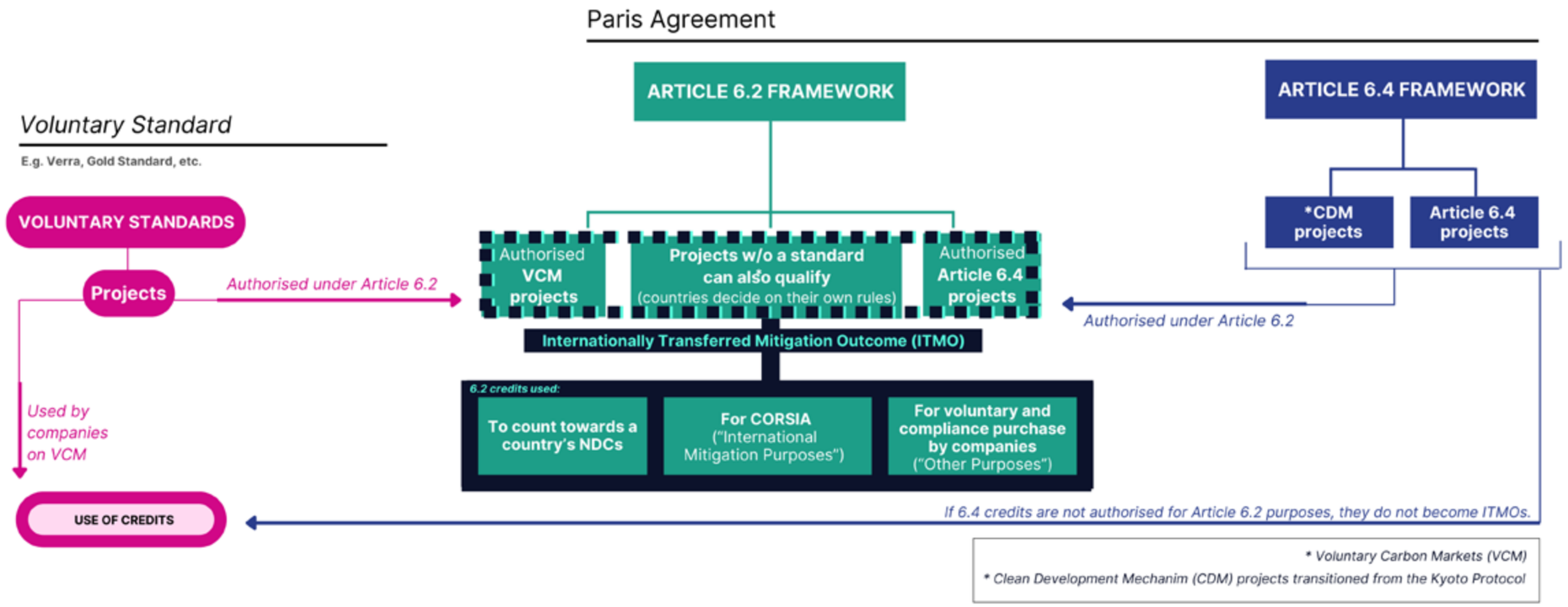
Many countries sold this extra abatement to private companies that used IET units instead of complying with more ambitious regulations, such as the EU's Emissions Trading System, thereby playing a role in crashing the EU ETS for a decade.Technically, companies could not use these credits, because they were meant for countries.So countries sold credits from Joint Implementation to companies, and cancelled their IET units to account for these sales.In theory, this ensured that for every tonne offset by a company, a country had to reduce a tonne of its own emissions, because it had one fewer pollution permit from IET. But in practice, since countries had surplus IET units, having to cancel such units did not make any difference to them.This allowed both companies and countries to continue to pollute with impunity.This issue is often referred to as the "hot air problem" under the Kyoto markets, and remains a major lesson to be learned by the Paris Agreement markets.

6 For more information, see CMW's December 2019 briefing titled 'Empty targets? Preventing the trading of hot air under the Paris Agreement'

7 See for example this report by Point Carbon (2012) 'Carry over of AAUs from CP1 to CP2'








# What are the Paris Agreement market mechanisms?

Under the Paris Agreement, nearly all the countries around the world have set themselves climate targets (under the Kyoto Protocol, developing countries did not have targets). The accord has also established two new carbon markets to replace the three set up under the Kyoto Protocol.

These markets are covered by Article 6 of the agreement, and negotiators have been discussing the detailed rules of these mechanisms since 2016. In October 2021, at COP26 in Glasgow, countries agreed to the overall rulebook for these new mechanisms, with further implementation requirements and design elements to be negotiated later.

Article 6 is split into two different market mechanisms: Article 6.2 and Article 6.4 .

## What is Article 6.2?

Article 6.2 sets up a carbon market which allows countries to buy from or sell to one another any extra emission reductions they have achieved compared to their self-determined climate target, known as nationally determined contributions (NDC) [8].

For example, if a country has committed to reducing its emissions by 10 MtCO2e, but actually reduces 11 MtCO2e, it would be eligible to sell the "extra" 1 MtCO2e to another country which did not manage to meet its own target. These carbon credits are called internationally transferred mitigation outcomes (ITMOs), and the underlying trade agreements are called "cooperative approaches".

In practice, however, determining what goes "beyond" a country's NDC is challenging, and trades under article 6.2 could relate to specific projects that deliver emission reductions, before one knows whether a country has met its NDC or not. This entails a risk of selling emission reductions before a country knows that it will be able to meet its own NDC target.

8 Taken collectively, the NDCs of all countries do not set the world on track to meet the temperature target of the Paris Agreement. See, for example, the UNFCCC's NDC Synthesis Report from October 2022 and Climate Action Tracker (both accessed 30/10/23).



## Is there a minimum bar for quality?

Under Article 6.2, countries can enter into bilateral or multilateral agreements and self-define "environmental integrity", social safeguards, and other core criteria for these ITMOs, such as the conditions to determine whether a climate project would have happened anyway or not ("additionality") [9]. Troublingly, as long as the participating countries can come to agreement and provide relatively basic justifications, a huge range of project types can potentially qualify under Article 6.2, whether from a little-known or major private voluntary carbon market standard, from the Article 6.4 carbon market, or elsewhere.

No independent body closely oversees the Article 6.2 market and only minimal requirements are in place. This means that the quality of the emission reductions or removals transferred will not necessarily be easily measurable or verifiable in some cases.

Problematically, countries are allowed to classify any and all information regarding their bilateral trades as "confidential", in which case key data about such transactions and the underlying mitigation projects would never be made available to the wider public or independent watchdogs[10]. While it is not a given that any countries will actually exploit this transparency loophole, they troublingly have the option to be secretive if they wish. This will give countries that do not wish to be scrutinised for trading credits they may know are poor quality or that fail to uphold human rights free rein to do as they please.

While a review team composed of UN technical experts will analyse countries' ITMO trade agreements, this may only come down to a tick-the-box exercise. This would involve, for example, checking if countries report that environmental and social safeguards are in place but would not extend to actually assessing if these safeguards are robust. Moreover, countries are not required to implement the review team's recommendations and there may be no consequences if they submit inconsistent information to the review team, which they are told to correct, but decide to ignore. In addition, the review team has no meaningful regulatory oversight and a limited scope for what they are permitted to even review and comment on, meaning the only semblance of an external check in Article 6.2 is very weak.

9 The Article 6.2 rulebook sets no guidance for criteria to determine additionality, meaning that different countries and activities will likely use different justifications and rationales. The Article 6.2 rulebook only specifies that ITMOs must be "real, verified and additional", with no further elaboration on what is meant by "additional" (see Decision 2/CMA.3, Annex, Paragraph 1a).

10 No limits are placed on what types of information (or how much) can be deemed confidential, and countries are not even required to justify why they would call information confidential (see Decision 6/CMA.4, Annex II, Paragraph 22).

Some countries could set a high bar and agree to strict rules on the quality of emissions reduction activities in their bilateral agreements, but others risk reaching their targets with creative carbon accounting underpinned by bad projects that will be shielded from any real external scrutiny.

These issues are important since a growing number of countries intend to use Article 6.2, with some potentially relying heavily on ITMOs to reach their NDC, raising concerns this market may undermine climate ambition and give a distorted picture of the level of real global emissions (see box below).

Overall, this market risks repeating the failures of the Kyoto Protocol markets, by trading "hot air" and being poorly regulated. If national emission reduction targets are too weak and if countries agree to poor requirements for carbon credit quality in their bilateral agreements, then the transferred credits will have no value for the climate. Relying on such credits instead of reducing emissions domestically would be the equivalent of reducing emissions on paper but not doing anything in practice.

## Worrying worldwide trend

Over three-quarters of Parties to the Paris Agreement plan to, or may, use "voluntary cooperation" to reach their emission targets, which is an increase from around half compared to previous NDCs, according to the UN [11]. These findings echo previous research indicating that 68 of the 88 countries (77%) who submitted, updated, or revised their NDC between July 2019 and July 2021 expressed either general or strong interest in using Article 6[12].

Countries that most prominently plan to buy Article 6.2 credits include Japan and Switzerland. Japan had already signed agreements to this effect with 27 countries as of October 2023[13]. Japan may use these to offset some 100 million tonnes of emissions [14]. Switzerland, which also plans to use Article 6, had signed agreements with 12 countries as of October 2023, and was the first country with Ghana to officially authorise the trade of ITMOs.

Other countries actively in talks to purchase Article 6.2 credits include Australia, South Korea, Singapore, and Sweden, while countries pursuing options to sell them include Ghana, Peru, Georgia, Senegal, Thailand and Papua New Guinea[15].

If countries rely heavily on purchasing carbon credits to reach their climate targets rather than actually reducing their own emissions, this sends the wrong message and risks undermining climate ambition.

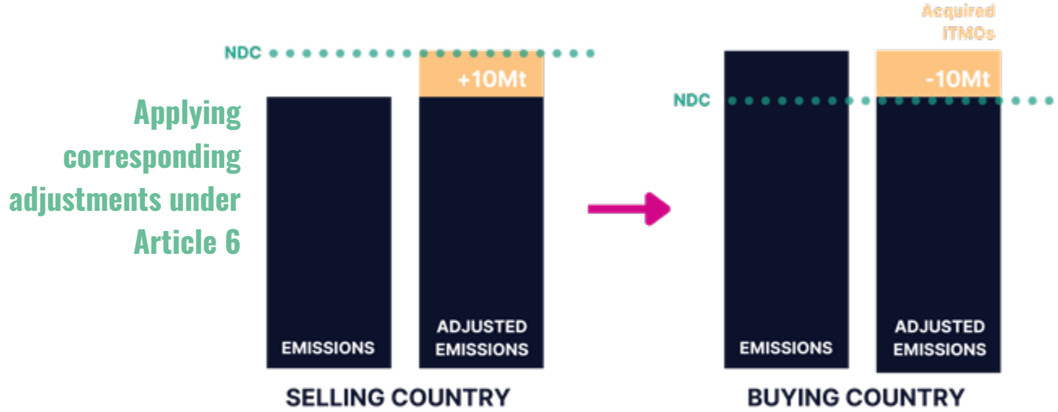
Japan's NDC, for example, sets a 2030 target to reduce 46% of its emissions compared to 2013 levels[16] which implies cutting almost 650 million tonnes. If Japan were to offset 100 million tonnes – as potentially indicated by its NDC – this would mean that carbon credits purchased from abroad would account for a whopping 15% of Japan's "emission reductions". Even if Japan were to use a "lower" range of 50 million ITMOs, carbon credits would still contribute to nearly 8% of Japan's "achievement" of its climate target. Moreover, if the underlying projects were to generate low quality carbon credits that do not truly represent the reductions they are meant to, then this is bad news for the climate.

11 See, for example, the UNFCCC's NDC Synthesis Report from November 2023 and October 2022, and Climate Action Tracker ("voluntary cooperation" includes non-market approaches, but this is mentioned in few NDCs).

12 Michaelowa et al. (2021), 'Database on Article 6 readiness in NDCs' (last revised 23/08/21)

13 Carbonpulse (n.d.), International Carbon Deal Tracker, (behind paywall, accessed 30/10/23); IETA






## What is Article 6.4?

Article 6.4 of the Paris Agreement resembles the Kyoto Protocol's Clean Development Mechanism, except that it will not be restricted to projects implemented in developing countries. Under this market, project developers will reduce or remove emissions through specific actions in one country, and sell these to another country, company or person.

This process requires more "governance" than Article 6.2, since it is overseen by a Supervisory Body, a UN entity tasked with establishing detailed rules and requirements that projects and credits must comply with in order to be eligible. The Supervisory Body also has the final say in registering individual projects, issuing credits, and renewing crediting periods, meaning that it has quite significant oversight on the market.

The Supervisory Body's meetings and planned work have been transparent to date. All sessions are available online, and it circulates documents and calls for public input.

However, improvements can still be made, such as by extending the short time window for providing inputs (1 week). Nevertheless, the openness to engage with the public is a welcome change from many UN processes, and will be important given the complexity of setting up and governing this market.

In the coming years, the Supervisory Body will work on many key issues, including tests to determine to what extent projects result in additional climate benefits; rules to ensure project types and baselines are aligned with the Paris Agreement; whether and how carbon removals would be permitted in Article 6.4; a grievance mechanism that safeguards the rights to redress of local communities and indigenous peoples in case they are negatively affected by a project; a review of carbon crediting methodologies from the CDM and the voluntary carbon market to see which could be eligible or would require updates.

14 It is not entirely clear if Japan will count all 100 million ITMOs towards its NDC, or rather if its bilateral agreements will generate 100 million ITMOs total, of which part will be used towards Japan's NDC and part towards the NDCs of the partner countries. See: Japan (22/10/2021), Japan's First Nationally Determined Contribution (Updated)

15 For a full list of countries actively, or interested in, pursuing Article 6 trades to date, see: Carbonpulse (n.d.), International Carbon Deal Tracker, (behind paywall, accessed 30/10/23); IETA (n.d.), Visualising Article 6 Implementation (accessed 30.10.23)

16 Japan's method of accounting for land-use emissions in its NDC has been questioned, with research indicating that its 46% reduction target actually results in only a 42% reduction. See: Climate Action Tracker (n.d.), Japan Target Overview (version: 31 October 2021 update),

## What is host country authorisation?

Countries where carbon market projects are located – "host countries" – also play a key role in the Article 6.4 market, since they must authorise any prospective project before the subsequent verifications by an independent assessor and the Supervisory Body can take place. If a project is low quality or focuses on easy or inexpensive mitigation options, then the host country can turn it down, since selling carbon credits affects its ability to reach its own climate target.

Deciding which projects to approve or reject is important because emission cuts from projects authorised by a host country must be deducted from the country's overall carbon budget. To ensure that two entities cannot both count the same carbon credit towards their climate targets, countries agreed to a double-entry bookkeeping method under Article 6 that applies what's called a "corresponding adjustment". This means that the host country has to deduct the reductions sold by authorised projects from its greenhouse gas accounts so that the buyer of the credit (another country or a company) can count them towards its own climate target.

Ensuring that no double-counting happens is an important rule, but it means that host countries need to be careful in deciding which projects they authorise, since these decisions can make it harder or more expensive for the country to achieve its own climate targets down the line.

## What are contribution credits?

At COP27, countries agreed to establish a new kind of carbon credit in the Article 6.4 market that has the potential to mark a paradigm shift in how credits are used.

Previously, only a standard carbon credit for offsetting purposes was envisioned under 6.4, which requires a "corresponding adjustment" to avoid double counting. Now, in addition, there will be a "mitigation contribution unit" that still counts towards the host country's climate target after the sale and, so, the purchasing company must not use it for offsetting purposes. This development marks a much-needed shift away from the flawed offsetting approach, and has pushed those involved in the voluntary carbon market to change their thinking (see final section for more information on this). While exploitable loopholes still exist, these contribution units represent an important change and showcase how Article 6.4 can have broader positive influences when it gets things right.

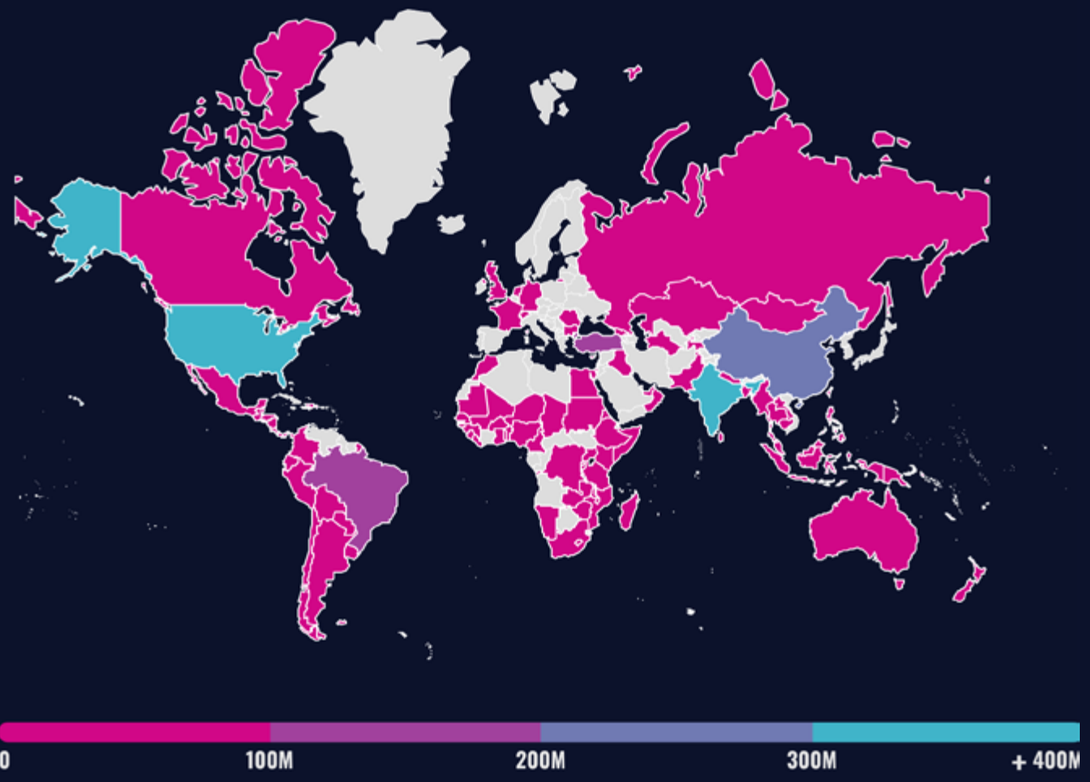
## Is the Article 6.4 market better than the Clean Development Mechanism (CDM)?

It's too early to say if the Article 6.4 market will mark a significant improvement on the CDM and the voluntary carbon market, but the opportunity to set a high bar exists.

The Supervisory Body could set ambitious and rigorous rules governing the quality of carbon credits, clear social safeguards, and full transparency on carbon credit trades and the benefits that accrue to local communities and indigenous peoples, and more. This would channel private finance to useful climate action while avoiding the pitfalls and greenwashing that occurred under the CDM and still occur on the voluntary carbon market.

However, the Supervisory Body could also agree to weak rules and repeat past errors of other market mechanisms, which would water down climate ambition and enable large-scale greenwashing. The opportunity to turn a positive page on carbon markets exists if quality and caution are prioritised in Article 6.4.

## Issued Credits (Voluntary Carbon Market) by Country




Total credits issued as of December 2023 by Verra, the Gold Standard, American Carbon Registry, and Climate Action Reserve

Map data source: Ivy S. So, Barbara K. Haya, Micah Elias (Dec 2023), "Voluntary Registry Offsets Database v9", Berkeley Carbon Trading Project, University of California, Berkeley. Retrieved from: https://gspp.berkeley.edu/research-and-impact/centers/cepp/projects/berkeley-carbon-trading-project/offsets-database

# What is the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA)?

In parallel to the UNFCCC's carbon markets, another UN agency, the International Civil Aviation Organisation (ICAO), has developed its own mechanism: the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA), a carbon market specifically designed for airlines, which countries agreed to in 2016.

The objective of this market is to compensate for the growth in emissions from international flights from 2021. Setting the specific baseline above which emissions should be offset has been the subject of much wrangling at ICAO. While initially set at the average of 2019-2020 emissions, the baseline was raised as a result of the COVID-19 crisis, and following lobbying from the airline industry to lower the quantity of carbon credits they should purchase. For the period 2021-2023, the baseline has been set at 2019 emissions level. In October 2022, the ICAO Council agreed to set the baseline at 85% of 2019 emissions for 2024-2035.

Based on recommendations from an expert group, ICAO member states have decided which offset credits will be eligible for CORSIA. An evolving list of eligible programmes and restrictions is maintained on the ICAO website;

There is currently an oversupply of credits for CORSIA. This is because airlines will likely have no offsetting requirements during the first three years of the scheme, and perhaps beyond that, as their emissions remain below the 2019 baseline due to the impact of the COVID-19 pandemic on air travel.

It should be noted that ICAO has been quite lax in its selection of programme eligibility. All the most established carbon market programmes are eligible under CORSIA, including some with severe loopholes. Being "CORSIA eligible" should not be considered as a sign of credibility or quality for a programme, project, or credit.

## What are the shortcomings of CORSIA?

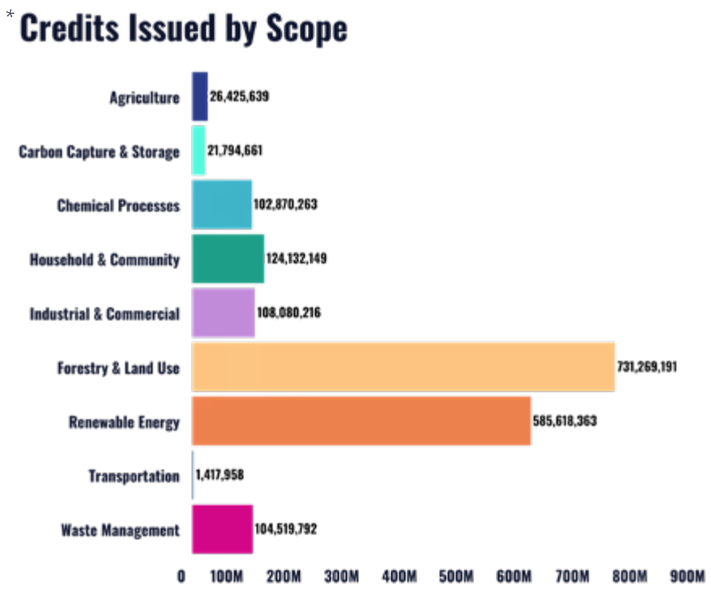
CORSIA suffers from several shortcomings. First, it is based on the flawed concept of offsetting, which is especially inappropriate when used to purportedly compensate for fossil fuel emissions that will remain in the atmosphere for centuries to millennia. Second, CORSIA only covers international flights, not domestic ones, which represent a significant share of global aviation emissions. From the flights that it does cover, only the growth in emissions will be compensated for. Moreover, several countries with large aviation sectors have not signed up to CORSIA. Third, it does not tackle all the greenhouse gas and other emissions but only focuses on CO2. CORSIA does not take into account other effects which air travel has on the climate. These so-called "non-CO2 impacts" can be massive and magnify the impact from CO2 emissions. It is very hard to calculate the exact value of this multiplier, but the European Aviation Safety Agency (EASA) has estimated it to be at around twice the impact of CO2 alone.



# What are the private certification schemes for carbon markets?

Some private initiatives, mostly set up as non-profits, also register projects and issue carbon credits, which are then sold on the so-called voluntary carbon market. These initiatives, commonly referred to as standards, are usually not backed by any government scheme and rely on specific organisations certifying that certain carbon credits are environmentally sound. The entire market rests on buyers trusting the assurances of these certifiers that the carbon credits sold on the market truly contribute to reducing emissions or removing GHGs from the atmosphere.

The main certifiers or standards are Verra, the Gold Standard, American Carbon Registry, and Climate Action Reserve. Verra and Gold Standard account for most of the 1.8 billion credits on the market, having respectively issued 64% and 14% of all credits ever created through May 2023. Verra has issued a total of 1.15 billion credits, mainly from forestry and land use projects (45% of all its credits) and renewable energy projects (41%) [17]. The Gold Standard has issued 257 million credits, mainly from renewable energy projects (44% of all its credits) and household and community device projects, such as those related to improved cookstoves (40%). Each certifier has a public registry containing information about specific projects, as well as the total quantity of credits issued and used.




Similar to the UN mechanisms, this system has shortcomings, including in relation to the environmental impact of many credits, the questionable additional climate benefits some may provide, their misuse for dubious offsetting and greenwashing practices, and the failure of some to adequately consult and involve local communities. Most credits on the voluntary market are from the forestry and land-use sector and renewable energy sector: the former accounts for 731 million credits (43% of all credits across all sectors), mainly from avoided deforestation projects (444 million credits) and improved forest management projects (200 million), while the latter accounts for 585 million credits (32% of all credits), mostly from wind (263 million), hydropower (187 million), and centralised solar (80 million)[18]. Many of these project types entail risks related to accurate baseline-setting and additionality, which makes them particularly unsuited for offsetting[19].

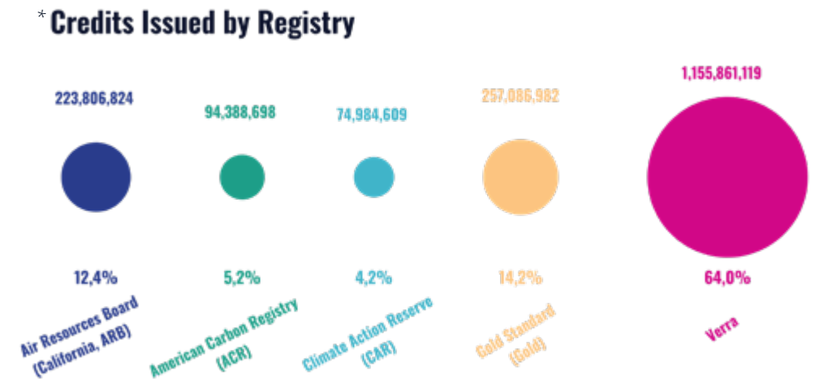
As the reliance of the private sector on carbon credits has grown, so has external scrutiny of these schemes. The continued use of low quality credits to market heavily polluting goods and services as "carbon neutral" has led to an increased realisation that private schemes as they exist today are insufficient. Improvements are needed both in terms of the quality of the credits and how they are used.



Some unregulated initiatives, such as the Voluntary Carbon Market Integrity initiative (VCMI) and the Integrity Council for the Voluntary Carbon Market (ICVCM), have been attempting to tackle these deficiencies. These aim to provide guidance on the quality and use of carbon credits.

Certain governments are also attempting to update their legislative framework around misleading advertising. For example, the EU is in the process of updating existing consumer protection legislation to better protect consumers against greenwashing by banning certain misleading claims such as 'climate neutral' or 'carbon neutral' products and services.

Finally, companies are increasingly being taken to court over their green claims, many of which rely on the use of carbon offsets[20].




A major challenge for the voluntary carbon market is to prevent the double counting of emission reductions, because the benefit to the atmosphere occurs only once. For example, if a company pays to reduce emissions which a country uses for its national climate target, then the company may not have actually provided any additional benefit to the climate. It may have simply financed reductions which the host country had committed to deliver already. While it can be a positive action to support host country climate efforts, especially in least developed countries, it is not accurate for a company to claim that the reductions it financed are "extra" compared to what would have happened anyway. Therefore, these reductions should not be used to compensate for the company's emissions. To solve this challenge, buyers of credits should stop making claims of "carbon neutrality". If companies still make such claims, which they should not, then corresponding adjustments must be applied to ensure that the host country where emissions are reduced will still deliver all the reductions it was planning to deliver.

In the case where host countries cannot count the emission reduction towards their national target, this can raise ethical issues about social justice and equity, because it allows private companies to continue to pollute with impunity while host countries are left to search around for alternative reductions.

This is why it is important that host countries always have the freedom to accept or reject such transactions, and that reductions sold through this system target "high-hanging fruits", i.e. reductions which would be expensive for the host government to finance. In the medium term, private companies should move away from a model based on offsetting and instead support host country climate action while acknowledging their full responsibility for the emissions that the company's activities create.

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17 Ivy S. So, Barbara K. Haya, Micah Elias (May 2023), "Voluntary Registry Offsets Database v8", Berkeley Carbon Trading Project, University of California, Berkeley. Retrieved from: https://gspp.berkeley.edu/faculty-and-impact/centers/cepp/projects/berkeley-carbon-trading-project/offsets-database * *Inforgraphics data from the source: All carbon credits issued by the four biggest voluntary market standards/registries -- American Carbon Registry, Climate Action Reserve, Gold Standard, Verra -- and the California Air Resources Board*

18 Ibid

19 For example: Carbon Market Watch (2023), "Error Log: Exposing the methodological failures of REDD+ forestry projects"; Haya et al. (2023), "Comprehensive review of carbon quantification by improved forest management offset protocols"; Badgley et al. (2021), "Systematic over-crediting in California's forest carbon offsets program"; Bloomberg Green (2022) "This Timber Company Sold Millions of Dollars of Useless Carbon Offsets"; Öko Institute (2016), "How additional is the Clean Development Mechanism?"

20 Fossil fuel companies have been actively engaged in purchasing and trading carbon credits, including by engaging in striking examples of greenwashing, as we have covered in a report. Recent legal actions and complaints filed against companies include Shell, KLM, Austrian Airlines, Easyjet, FIFA, and more.

# What is REDD+?

Reducing emissions from deforestation and forest degradation in developing countries" (REDD+) was initially a framework set up under the UNFCCC to provide results-based finance to activities and programmes that aim to curb deforestation. Building on previous UN decisions, the Warsaw REDD+ framework was established, in 2013, as a way for countries to finance avoided deforestation achieved by other countries. The objective was to provide a way for developing countries to receive finance to protect their primary or old-growth forests. The framework did not allow for the creation of carbon credits.

Since then, REDD+ has been repurposed by some private standards to generate carbon credits from forestry projects for offsetting purposes. At the same time, some countries are increasingly attempting to sell carbon credits using the original UN framework, even though it is not a carbon crediting system (see Box). Selling tradable credits is fundamentally different from the original idea of paying for ecosystem services, in part because the former allows a buyer to use the credits to meet an emission reduction target, while the latter does not.

Issuing carbon offsets from forestry projects, and REDD+ in particular, has been strongly criticised for the exaggerated quantities of credits they generate, their questionable climate impact, as well as their lack of adequate safeguards to prevent adverse impacts on the environment and local communities.


None of the existing carbon crediting schemes currently address this satisfactorily, but the UN REDD+ framework suffers from the additional problem that it is not a carbon crediting programme.

REDD+ credits from private initiatives make up most of the unregulated or "voluntary" carbon market. Private standards like the Voluntary Carbon Standard (VCS), run by Verra, or the The REDD+ Environmental Excellence Standard TREES), run by Architecture for REDD+ Transactions (ART), have developed methodologies for projects or programmes to issue carbon credits. However, these have been critiqued for their lack of integrity, including by Carbon Market Watch[21].

## Why the UN's REDD+ framework does not create carbon credits

An important difference between the UN REDD+ framework and existing carbon markets is that the REDD+ framework does not require a binding audit of the climate benefits achieved by a certified activity. While projects registered under private systems (as well as under UN carbon markets) must be verified and validated by an independent third party, UN-endorsed REDD+ activities are simply subject to a review by UNFCCC-nominated experts. The conclusion of this review is not binding, and there is nothing to prevent a country from massively exaggerating the impacts of its conservation programmes[22].

Moreover, while carbon crediting programmes have (insufficient) measures in place to guarantee the permanent storage of CO2, there are no such provisions under the REDD+ framework. This underscores and underlines the fact that REDD+ was not established to generate carbon credits.

## Will jurisdictional REDD+ solve the issues of project REDD+?

A common distinction is made between project-based REDD+ and jurisdictional REDD+. The former relates to projects that are typically implemented over a small land area that is not bound by any governmental boundaries, while the second describes initiatives implemented over an entire jurisdictional area, such as a country or a region within a country. While jurisdictional REDD+ is often cited as a "solution" to the problems of project-based REDD+, it does not fully address all concerns. In addition, given that these initiatives are typically very large in scale, it will increase the impacts of small quantification mistakes. If an initiative achieves 10 million tonnes of emission reductions over a given year, and its calculations are off by just 1%, that leads to 100,000 carbon credits of no value to the climate entering the market.

21 Carbon Market Watch (2023), "Error Log: Exposing the methodological failures of REDD+ forestry projects"

22 Annex to UNFCCC decision 13/CP19 states that the objective of the review is to "To offer a facilitative, non-intrusive, technical exchange of information on the construction of forest reference emission levels and/or forest reference levels with a view to supporting the capacity of developing country Parties"

> This greenwashing must stop and the carbon market system must evolve towards something better than carbon offsetting on a tonne-for-tonne basis. If using existing carbon markets, companies should buy carbon credits and cancel them without claiming ownership of the emission reductions or making offsetting claims, often referred to as a "climate contribution" approach.



# Why is carbon offsetting problematic?

To minimise the impact of the climate crisis, humanity needs to rapidly reduce greenhouse gas emissions as its number one priority. In the medium to long term, this will need to be supplemented with the removal of CO2 from the atmosphere due to human intervention, leading to net-negative emissions at the global level. This is what is known as global net zero emissions.

As each country or region aims to achieve net zero emissions, there will be little to no "extra" reductions which can be bought by or sold to other countries. Hence, while positive and negative emissions will balance each other out in national accounting, there will be no space for large scale offsetting initiatives.

Despite this, many companies rely on low-quality carbon credits to meet their climate targets, often by offsetting their emissions instead of implementing deep, rapid and sustained emissions cuts. Moreover, many companies approach climate action more as a public relations and marketing exercise rather than a true commitment to the climate. This greenwashing is reflected in the proliferation of outlandish "carbon neutral" and "net zero" claims for a plethora of products and brands[23].

This greenwashing must stop. Meaningful climate action requires companies slash their own emissions, both direct and indirect, and set in motion ambitious internal decarbonisation plans. This is currently lacking, as revealed by the annual Corporate Climate Responsibility Monitor, a joint publication issued by the NewClimate Institute and Carbon Market Watch that assesses the net-zero targets of some of the world's largest companies[24].

## What is the alternative to carbon offsetting?

The carbon market system must evolve towards something better than carbon offsetting on a tonne-for-tonne basis. Its aim should be to accelerate the clean energy and ecological transition, rather than offering companies a cheap greenwashing machine.

One way of achieving this is for companies to use existing carbon markets to disburse climate finance by buying carbon credits and cancelling them, without claiming ownership of the emission reductions or making offsetting claims. This is often referred to as a "climate contribution" approach.

Moreover, this approach should be combined with efforts to boost the quality of carbon credits and to put in place more stringent and comprehensive corporate climate strategies. In addition, the contribution approach still requires those retiring carbon credits to conduct due diligence to ensure that only high quality and transparent projects with strong social safeguards are selected.

Most importantly, we need a shift in mindset, moving away from a focus on greenwashing individual performance, towards bolstering collective action to reach our global climate targets. After all, we all live on the same planet.

23 See for example: Carbon Market Watch (2023): 'Assessing the carbon neutrality claims of products in Belgian supermarkets'; Carbon Market Watch (2021), 'Net-zero pipe dreams: Why fossil fuels cannot be carbon neutral'

24 https://carbonmarketwatch.org/campaigns/ccrm/

CARBON MARKET WATCH

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