

COMPENDIUM

Training session 3:

Voluntary Carbon Market: Key Principles

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OUR TRAINING SESSIONS



Training Session

1

Carbon Markets Fundamentals

This card features a purple background with a photograph of wind turbines at sunset. A white hexagon with the number '1' is centered on the image.



Training Session

2

Cap-And-Trade Markets:
All You Need To Know

This card features a blue background with a photograph of an industrial smokestack against a blue sky. A white hexagon with the number '2' is centered on the image.



Training Session

3

Voluntary Carbon Market:
Key Principles

This card features a red background with a photograph of a solar panel array. A white hexagon with the number '3' is centered on the image.



Training Session

4

Voluntary Carbon Market:
A Deeper Dive

This card features a yellow background with a photograph of a jellyfish. A white hexagon with the number '4' is centered on the image.



Training Session

5

The UN and the Role of
International Agreements

This card features a green background with a photograph of colorful feathers. A white hexagon with the number '5' is centered on the image.

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SECTION 1: **An overview of the voluntary carbon market**

The voluntary carbon market is largely geared around projects which reduce, avoid or remove greenhouse gas (GHG) emissions.

These projects generate carbon credits that can be bought and sold in a market and ultimately 'retired' by organisations to help achieve 'net zero' emissions targets, or to demonstrate investment in climate action in a broader sense.



Comparatively few states, countries and regions have established legally binding carbon compliance markets, and those markets that do exist don't necessarily regulate emissions from every sector of the economy.

In light of these carbon regulatory gaps, the voluntary carbon market (VCM) emerged as a way for companies and other organisations to invest in climate projects and to offset their own emissions, or to demonstrate environmental or other sustainability commitments.

Examples of carbon projects include reforestation activities, energy efficiency programs, agriculture or land-use carbon projects, marine or coastal ecosystem carbon sequestration programs, and carbon capture and storage facilities.

These projects exist in a largely unregulated (at least, in terms of governments) market which has grown from the ground up, in a partnership between non-governmental organisations and mostly corporate emitters of GHGs.

This partnership has resulted in several frameworks known as 'carbon standards' which include detailed methodologies setting out the criteria that carbon projects must meet in order to be eligible under each standard.



SECTION 2:

The VCM in the context of global climate action

The 2015 Paris Agreement on climate change has established targets and deadlines for all signatory countries to reduce emissions voluntarily, within the capabilities and restraints of each economy.

This is part of a broader global effort to reduce emissions to net zero by 2050 – a goal which the science says should help avoid dangerous destabilisation of the global climate system.

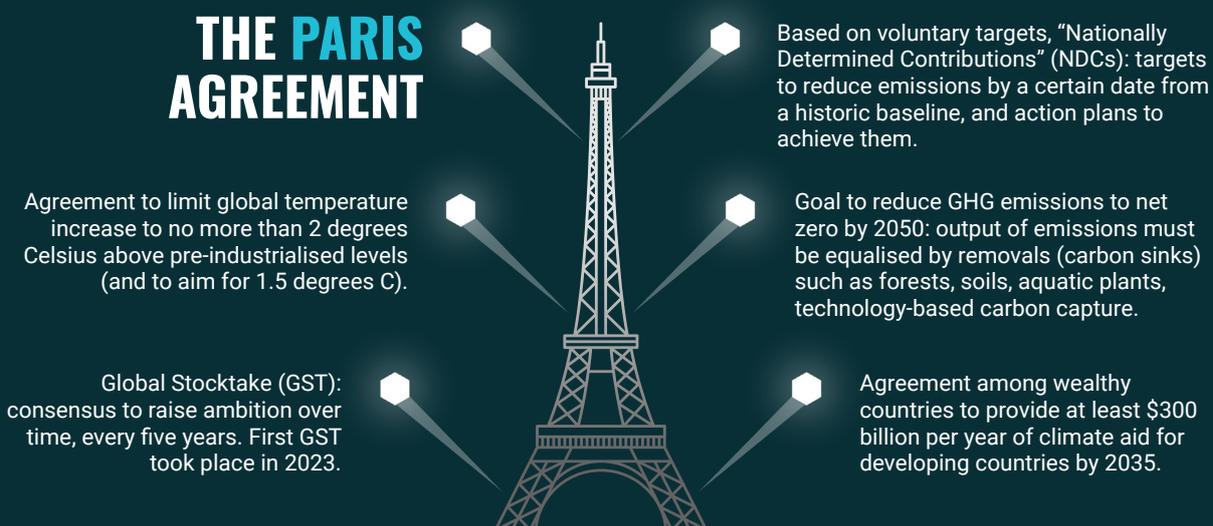
To meet each country's target, governments have a broad range of policy options, including direct regulation, carbon taxes, legally binding carbon markets, incentive programs for clean energy and low carbon industrial processes, among others.

While all these policies have a role to play, some sectors remain outside the scope of legally binding

carbon compliance markets (also known as emissions cap-and-trade systems). This means that many companies are not legally obliged to reduce emissions but want to do so, and need a credible mechanism for reducing or offsetting emissions in a cost-effective way. The VCM emerged to address this gap in the climate policy framework.

The Paris Agreement explicitly recognises and encourages domestic climate policy, including collaboration between nations, and work is also in progress under the treaty to establish a UN-administered global emissions trading system so that governments and corporates can buy and sell emissions reductions to help meet their climate targets.

THE PARIS AGREEMENT



Agreement to limit global temperature increase to no more than 2 degrees Celsius above pre-industrialised levels (and to aim for 1.5 degrees C).

Global Stocktake (GST): consensus to raise ambition over time, every five years. First GST took place in 2023.

Based on voluntary targets, "Nationally Determined Contributions" (NDCs): targets to reduce emissions by a certain date from a historic baseline, and action plans to achieve them.

Goal to reduce GHG emissions to net zero by 2050: output of emissions must be equalised by removals (carbon sinks) such as forests, soils, aquatic plants, technology-based carbon capture.

Agreement among wealthy countries to provide at least \$300 billion per year of climate aid for developing countries by 2035.

SECTION 3:

Key components of the VCM

The voluntary carbon market includes a variety of different organisations, all of which play an important role in the market's functioning.

These include:

Carbon standards:

These are the organisations that create and maintain carbon project methodologies, keep electronic registries of carbon credits and track which organisation has retired each credit. Examples include Verra (Voluntary Carbon Standard), the American Carbon Registry, Climate Action Reserve, The Gold Standard, Plan Vivo and Puro Earth.

Non-governmental organisations:

Some of these organisations have been directly involved in creating the carbon standards, while others act as independent market observers and may play a role in shaping best practice in the VCM, or advise companies or governments.

Corporate emitters:

These can include anyone from a global integrated energy and industrial company through to a small family-run business. All sorts of organisations may wish to buy and retire carbon credits to offset their emissions or to demonstrate a commitment to climate and sustainability goals.

Project developers:

These are the organisations that plan and implement carbon-reducing projects under the VCM, working through the appropriate carbon standards.

Validation and Verification Bodies (VVBs):

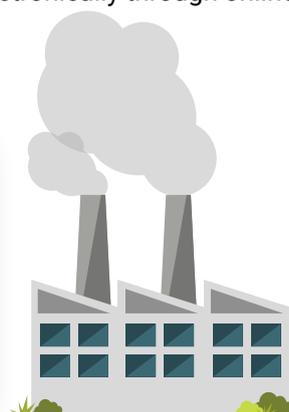
These are the accredited third-party organisations that monitor and verify that projects are adhering to the relevant standards and are making genuine emissions reductions or removals.

Retail traders:

These are the financial companies who trade carbon credits with the aim of turning a profit through buying credits and selling them to end-users. They provide a mechanism to facilitate transfers of credits from producers to consumers.

Brokers and exchanges:

These are the financial companies who provide a means of exchange between counterparties in the VCM. Brokered trade is usually considered part of the over-the-counter market, which is separate from derivatives trading done electronically through online platforms and exchanges.



SECTION 4:

The size, scope and value of the VCM

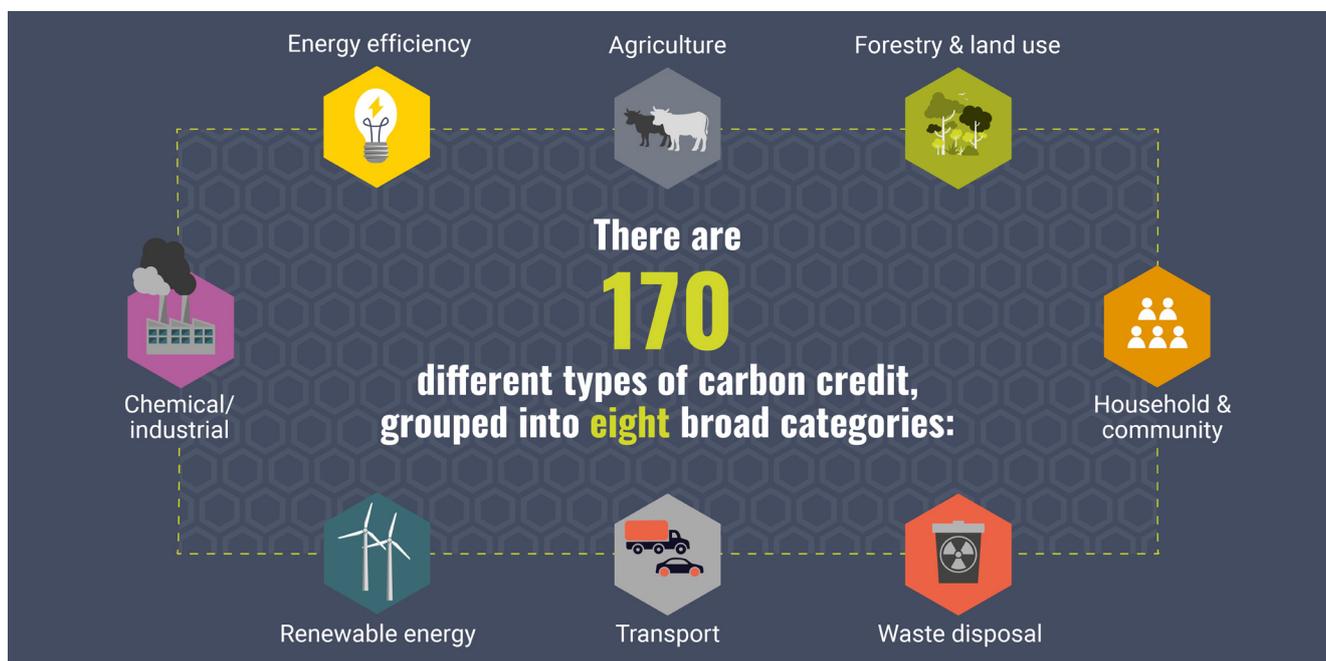
The value of the voluntary carbon market stood at \$535 million in 2024, based on reported transactions, according to the 'State of the Voluntary Carbon Market 2025' report by specialist information provider, Ecosystem Marketplace.

The market's value was sharply down from \$754.5 million 2023, but above its pre-Covid-19 value of \$320 million in 2019.

To put this in perspective, the VCM's value is a fraction of that of the compliance carbon markets worldwide, which were collectively valued at more than \$800 billion in 2024. The VCM's size by annual volume was 84.4 million tonnes of CO₂ equivalent in 2024, down from 112.4 million tonnes in 2023.

In terms of projects, the VCM consists of eight broad categories. These are agriculture, chemical & industrial, energy efficiency, forest & land use, household & community, renewable energy, transport and waste disposal.

Within these eight categories, there are more than 170 different project types, each of which are implemented using specific methodologies that specify projects' attributes such as emissions baselines, technologies or processes, and guidelines on measurement and monitoring and verification.



Some examples of each project category are:



Agriculture:

Livestock methane reduction, grassland management, soil carbon sequestration, and sustainable agriculture projects.



Household and community:

Clean water distribution, lighting efficiency, clean cook stove distribution and community biogas facilities.



Chemical and industrial:

Carbon capture and storage facilities, N₂O (nitrous oxide) destruction projects, and facilities that reduce output of refrigerant gases, for example.



Energy efficiency:

Fuel switching projects and programs that upgrade industrial equipment or processes from older to new, more efficient systems.



Forestry and land use:

Afforestation and reforestation projects, blue carbon, which involves marine and coastal carbon removal projects, and projects which increase carbon absorption in soil.



Waste disposal:

Recycling projects, waste gas recovery systems, waste gas avoidance and municipal waste incineration facilities, landfill gas capture and utilisation projects.



Renewable energy:

Solar, wind, hydroelectric, ocean kinetic energy, geothermal, biomass co-firing and biogas plants, all of which reduce emissions compared with fossil fuel-based energy generation.



Transport:

Projects that reduce emissions from shipping or public transportation systems such as bus networks, or private vehicles. These can include marine or aviation biofuels, wind power for ships, LNG-powered vessels, electric cars, vans, buses, coaches, trucks and trains, and hydrogen-powered vehicles.



SECTION 5:

The lifecycle of a carbon credit

Carbon credits are tradable assets, each representing one tonne of CO₂ equivalent. As we have seen, they are generated by projects that have reduced, avoided or removed greenhouse gases. The following is an overview of the lifecycle of a carbon credit:

Project proposal:

A carbon project starts with a proposal, which must conform to the rules and requirements set out in a particular methodology, which has been approved by a carbon standards organisation. The methodologies in use by the main carbon standards bodies are detailed, rigorous and robust, periodically updated, have been reviewed by experts and have undergone public consultation before they are approved.

Monitoring:

The project owner then monitors the project activity to ensure that emissions are reduced, avoided or removed in line with the methodology's requirements.

Verification:

The project's results are then verified by an independent verification company.

Issuance:

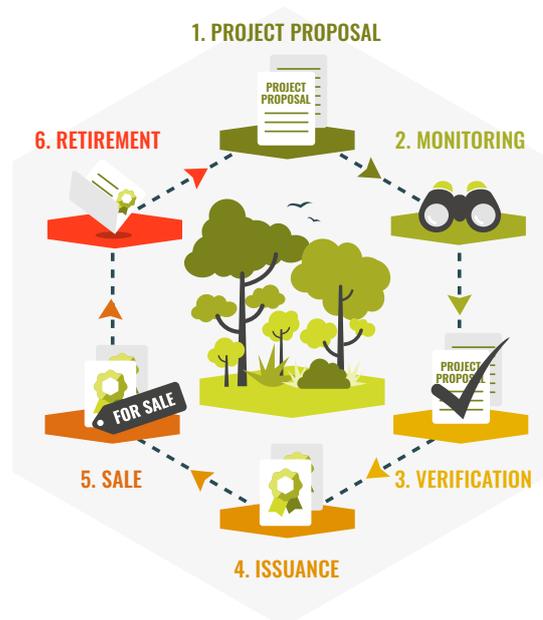
Once the above steps have been taken, the carbon standards organisation can issue carbon credits to the project. This issuance of credits is recorded on the standards' carbon registry – an electronic database that tracks each carbon credit. Each credit has a unique serial number which avoids any of them being counted or claimed more than once.

Sale:

The project owner may use the carbon credits itself or sell them to other companies wishing to use them to make an environmental claim. The carbon credits can be bought and sold through online exchanges as spot contracts for prompt delivery or as forward or futures contracts. Credits can also be bought and sold directly between counterparties or through a broker in the over-the-counter markets.

Retirement:

Finally, the carbon registries track the retirement of each credit by the company making the claim, ensuring that no credit is claimed twice. When a credit is retired, it is taken permanently out of circulation and cannot be re-sold or claimed by anyone else.



SECTION 6:

Who can buy carbon credits and why?

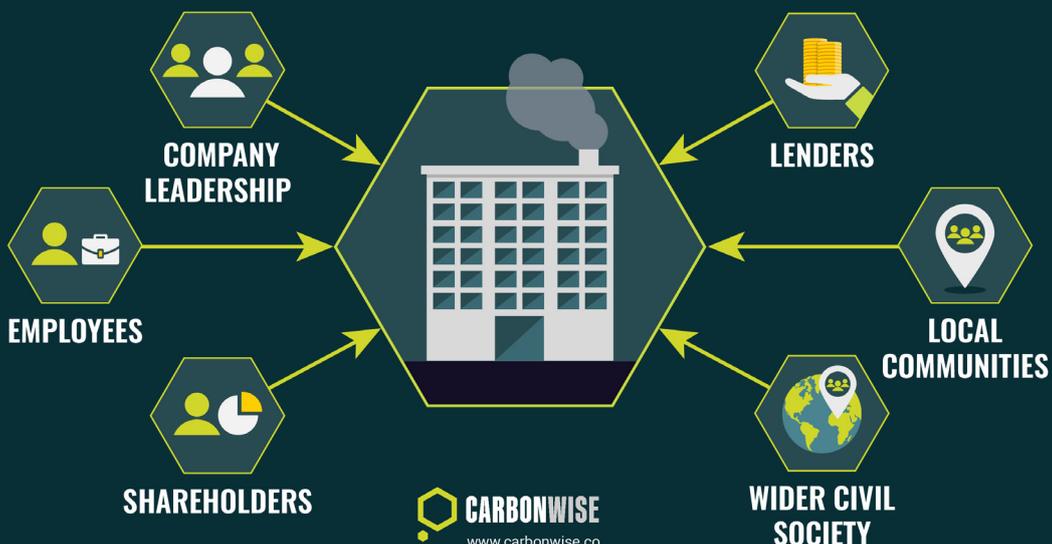
In some countries, companies that emit significant quantities of carbon dioxide or other greenhouse gases (GHGs) are subject to legally binding emissions cap-and-trade systems, also known as compliance carbon markets.

But not all countries have introduced such systems, and those systems that do exist don't necessarily cover all sectors of the economy.

In the absence of mandatory carbon regulations, many companies recognise that their 'social licence to operate' depends on them demonstrating credible efforts to reduce GHG emissions to minimise their contribution to human-induced interference with the climate system.

Pressure to reduce emissions can come from multiple sources. This can include the leadership of a company, its employees, shareholders, investors, lenders, local communities, and civil society.

Pressure to reduce GHG emissions can come from various places...



All this pressure can encourage companies to reduce their own direct emissions, or those in their wider value chain. But where direct emissions reductions are difficult or too expensive, companies can buy carbon credits from projects outside of their value chain.

Buying carbon credits is a way to reduce emissions outside of a company's own operations, by investing in emissions reduction, avoidance or removal projects elsewhere, including in another country.

The buyer can either retire the carbon credits for the purpose of offsetting some of their own emissions, or simply to claim an investment in climate action more broadly.

Organisations that buy credits from these projects include large CO₂-emitting companies such as energy producers, or those in heavy industries such as manufacturers of metals, cement, chemicals, refineries, and transportation companies.

Other large organisations buying offsets include global high-tech information and communications companies, mining companies and global logistics and distribution companies.

But interest in carbon credits is not limited to the big emitters. Companies seeking to offset part or all of their emissions range in size from high street retail companies or restaurants to multinational integrated industrial companies.

Smaller companies tend to lack the sophisticated resources needed to identify, invest in or procure large volumes of carbon credits, and instead may approach brokers or other types of intermediaries to purchase credits on their behalf. Additionally, larger companies may buy credits on wholesale exchanges or use the derivatives market to hedge their positions as part of more complex risk management strategies.

Other organisations that may decide to buy carbon credits include not-for-profit organisations such as schools, colleges and universities, as well as government departments and state-run agencies seeking to demonstrate their contribution to wider efforts to reduce their negative environmental impact.

A further reason to buy carbon credits is where companies are legally required to do so under compliance credit markets such as the International Civil Aviation Organisation's Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA). This system requires airline operators to buy and surrender certain types of carbon credit to match any CO₂ emissions growth above a 2019 baseline.



SECTION 7:

What are the common criticisms of carbon credits?

The voluntary carbon market has come under general attack over a perceived lack of environmental integrity and some projects have been singled out for particular shortcomings.

These criticisms can include the following elements:

Lack of regulation:

One of the main concerns about carbon credits is that the market is unregulated. Unlike the legally binding carbon compliance markets, there is no overarching body that has the legal power to rule out certain kinds of carbon credit. This means the voluntary market is self-policed by corporate emitters and the non-governmental organisations that create the standards that underpin the carbon reduction projects.

The 'wrong' approach:

Some organisations in the energy and climate space have said carbon offsetting is a distraction from more direct approaches that are needed to achieve a clean energy transition at pace and scale.

To be clear, a growing number of stakeholders and international standards bodies have said that companies should reduce their own emissions wherever possible before engaging in the carbon credit market. They underline that buying carbon credits should not be a substitute for internal reductions.

Lack of additionality:

Some critics have argued that carbon offsetting does not reduce overall emissions. However, this is not necessarily accurate. For carbon offsetting to work properly, the reductions must be 'additional' to what would happen under a business-as-usual scenario. This means the project must go beyond what would otherwise have happened, for the credits it generates to represent genuine reductions. Some projects have come under attack over the "business-as-usual" baselines used to measure the emissions reductions or avoidances.

Permanence:

A further criticism levelled at carbon offsetting is that the carbon reductions claimed by some projects are not necessarily permanent. For example, when destroyed by a wildfire, an area of forest ringfenced as a carbon sink project would immediately release the carbon back into the atmosphere, removing its environmental benefit at a stroke.

Double counting:

A further criticism of carbon offsetting is that without appropriate safeguards, emissions reductions could be counted more than once or claimed by more than one entity, undermining the environmental integrity of the underlying projects. The main standards agencies in the voluntary market operate electronic registries that track ownership of credits to ensure that once a credit has been retired, it can no longer be used.



SECTION 8:

What's being done to equip the market for the future?

There are various elements in the voluntary carbon market that have always aimed to ensure environmental integrity and help avoid bad practice.

For example, the carbon standards make their methodologies public, allowing full scrutiny over how projects can qualify to earn carbon credits. As this work has expanded, the methodologies have been revised and improved over time.

Another way to address the lack of regulation is to require that project activities must be verified independently by third parties, adding another safety layer to help ensure projects are being carried out properly.

However, these actions alone have not been sufficient to stave off criticisms, and some projects have attracted negative attention in the media, with accusations including inappropriate project baselines, lack of additionality and in rare cases even suggestions of human rights abuses.

The VCM is expected to expand by more than 15 times by 2030 and potentially much more by 2050, as the need to reach net zero emissions becomes more urgent. With this expansion, the need for high standards on environmental integrity becomes more urgent, and the market collectively has recognised the need for greater oversight.

Recognising the need for better trust and confidence in order for the market to scale, participants came together to bring in professionals from the carbon

markets as well as financial regulators to develop two groups – the Integrity Council for the Voluntary Carbon Market and the Voluntary Carbon Markets Integrity Initiative.

These two independent governance bodies have undertaken several detailed stakeholder consultations in a bid to understand the underlying problems in the VCM and to develop guidelines for best practice.

The ICVCM has focused on environmental integrity in the supply side of the market, by developing a set of Core Carbon Principles which set minimum quality thresholds for projects and the methodologies that govern them.

Meanwhile the VCMI has focused on the demand side, by developing a Claims Code of Practice – effectively a set of guidelines setting out best practice on how corporate emitters can use carbon credits and what they can legitimately claim as a result.

In addition, the carbon standards groups have made strenuous efforts to show that their methodologies are transparent and publicly available for scrutiny, and have undertaken continuous improvement processes to re-assess methodologies whenever needed.

The emergence of these groups is expected to go a long way to ensuring that standards improve in the VCM, and should help the markets attract much larger investment. However, they do not rule out the possibility of further problems as the markets evolve.

Glossary

- Additionality:** Refers to the question of whether a carbon project is reducing or removing emissions compared to what would be expected to happen under a Business As Usual (BAU) scenario.
- Carbon credits:** Refers to the tradable credits generated by projects that reduce, avoid or remove carbon or other greenhouse gas emissions. Carbon credits can be used to meet voluntary climate targets or in some cases are eligible for use in compliance carbon markets.
- Carbon sinks:** A natural or artificial system that absorbs and stores carbon dioxide, thereby reducing CO₂ concentrations in the atmosphere. Natural carbon sinks include forests, oceans, wetlands and soil, while artificial carbon sinks include the use of technologies such as carbon capture and storage, which extracts CO₂ from industrial processes and stores it underground.
- Carbon sources:** A carbon source is anything that releases more carbon into the atmosphere than it absorbs. Examples include energy generation plants, heavy industrial facilities, transportation systems and gas-fired boilers in buildings.
- Compliance carbon markets:** Legally binding emissions cap-and-trade systems which set an annual limit or 'cap' on the total emissions allowed per year and create a volume of allowances that matches the cap, which shrinks over time. The currency of compliance markets is known as carbon 'allowances.'
- CORSIA:** The Carbon Offsetting and Reduction Scheme for International Aviation – a system created under the UN's International Civil Aviation Organisation, which requires participating airlines to surrender eligible carbon credits to offset any growth in emissions above a 2019 baseline. CORSIA is an example of a compliance carbon credit market.
- Greenhouse gas (GHG) emissions:** A group of chemicals that have a warming effect on the Earth's atmosphere. The six GHGs regulated by the Paris Agreement are: carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), perfluorocarbons (PFCs), hydrofluorocarbons (HFCs) and Sulphur hexafluoride (SF₆).
- ICVCM:** The Integrity Council for the Voluntary Carbon Market: a non-profit independent governance group established in 2021 that works on setting and maintaining a global standard for high integrity in the voluntary carbon market. The group is mainly focused on the supply side of the market.

- Paris Agreement:** An international treaty on climate change adopted by 196 governments at the COP21 summit in Paris in 2015 under the United Nations Framework Convention on Climate Change. Signatories agreed to reduce greenhouse gas emissions in order to limit the global average temperature increase to well below 2 degrees Celsius compared with pre-industrial levels, and to pursue a goal of 1.5 degrees C.
- Removal credits:** Credits that come from carbon removal projects. These projects remove carbon dioxide directly from the atmosphere. Examples include forestation programs, degraded land restoration projects and technology-based projects such as Direct Air Carbon Capture (DACC) facilities.
- Retirement:** In the context of carbon markets, retirement refers to the permanent cancellation of a carbon credit when claimed by a single end user. Once retired, a carbon credit ceases to exist and cannot be sold, used or claimed by anyone else. Retirement takes place in an electronic registry operated by a carbon standard.
- VCMI** The Voluntary Carbon Markets Integrity Initiative: a non-profit independent governance group established in 2021 which aims to enable high-integrity carbon markets to contribute to the goals of the Paris Agreement. The group is chiefly focused on the demand side of the market, and sets standards for organisations wishing to make environmental claims through the use of carbon credits.
- Verifiers:** Independent third-party organisations accredited to verify that carbon projects are correctly reducing, avoiding or removing emissions in adherence to the relevant methodology. Most verifiers are well established testing, inspection and certification bodies that operate across multiple sectors of the economy such as energy, transport and industry.
- Vintage:** Refers to the time period in which a carbon credit was generated. This usually takes the form of a calendar year, and represents the year in which the emissions were reduced, avoided or removed from the atmosphere. Most carbon credits are denoted to a specific vintage year.
- VCM:** A market for carbon credits that has grown from the ground up, through collaboration between non-governmental groups, corporate emitters, and other stakeholders, to allow companies to invest in carbon reduction projects outside their own value chains, in order to demonstrate commitments to sustainability. The VCM exists to fill a gap where some organisations are not regulated by the legally binding compliance carbon markets, but want to demonstrate climate action.

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Paris Agreement:

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Voluntary Carbon Markets Integrity Initiative:

[About - VCMI \(Voluntary Carbon Markets Integrity Initiative\) \(vcmintegrity.org\)](#)



www.carbonwise.co