

1. What are carbon credits?

Carbon credits originated from international efforts to combat climate change through the guidance of the United Nations Framework Convention on Climate Change. The Kyoto Protocol, established in 1997, set the course for emission reductions of industrialised countries to meet certain reductions in atmospheric pollution. The Kyoto Protocol gave rise to carbon credits, and it was enforced in 2005.

Carbon credits represent a permit for a company or organisation to emit a certain amount of carbon dioxide or other greenhouse gases into the atmosphere. One carbon credit equates to one metric tonne of CO₂.

The idea behind carbon credits is to make emission reductions more economically efficient and encourage green investments globally.

In 2015, the carbon credit system evolved significantly under the Paris agreement. The agreement created opportunities for the voluntary carbon market, Global participation, and stricter oversight.

2. What is carbon sequestration? (How does one store carbon dioxide if it is already in the atmosphere, for example?)

Carbon sequestration is the process of capturing and/or storing carbon dioxide or other greenhouse gases from entering the atmosphere. It can happen naturally through forests, for instance, or through soils storing carbon dioxide. Carbon sequestration can also be done through technology, such as capturing CO₂ from industrial plants and storing it underground.

3. Are carbon credits not the same as carbon offsetting? (What is the difference?)

No, carbon credits and carbon offsetting refer to two different principles.

Carbon credits are tradable certificates that allow the holder to emit one ton of CO₂ or equivalent. They are often used in regulated markets like a cap-and-trade system or the voluntary carbon market.

Carbon offsetting is a physical action or project that reduces or removes CO₂ to compensate for emissions made elsewhere. Offsets generate carbon credits that can be bought and retired.

4. Why are carbon credits important?

Carbon credits are part of a bigger initiative to ensure our transition to a cleaner atmosphere and achieve our net-zero goals.

They put a price on pollution, incentivise emission reductions, fund climate solutions, enable global cooperation, and, most importantly, drive accountability through the tracking of emissions and reductions. In short, they help drive climate commitments.

5. How are these generated and how can they be sold or purchased?

Carbon credits represent one metric ton of CO₂-equivalent emissions either avoided or removed from the atmosphere. They're created by projects that meet certain criteria.

These fall into a few major types:

- Renewable Energy Projects: Wind, solar, hydro – replace fossil fuels.
- Forestry and Land Use: Afforestation, reforestation, and avoided deforestation (REDD+ projects).
- Methane Capture: Landfills, agriculture, or coal mines capture methane.
- Energy Efficiency: Upgrading buildings or factories to use less energy.
- Carbon Removal: Technologies like direct air capture or enhanced weathering.

These projects must be verified by third parties and registered under recognised standards. In South Africa, the carbon tax scheme allows the use of projects recognised by Verra (VCS – Verified Carbon Standard), Gold Standard and Climate Action Reserve. Once verified, the registry issues carbon credits, often called Verified Emission Reductions (VERs) or Certified Emission Reductions (CERs).

Carbon credits are traded (sold and bought) in two distinct categories, the compliance market and the voluntary carbon market (VCM).

Compliance market

- Used by entities legally required to reduce emissions (e.g., under the EU ETS, California's Cap-and-Trade).
- Credits are called allowances or offsets.
- Traded on regulated exchanges or through government auctions.

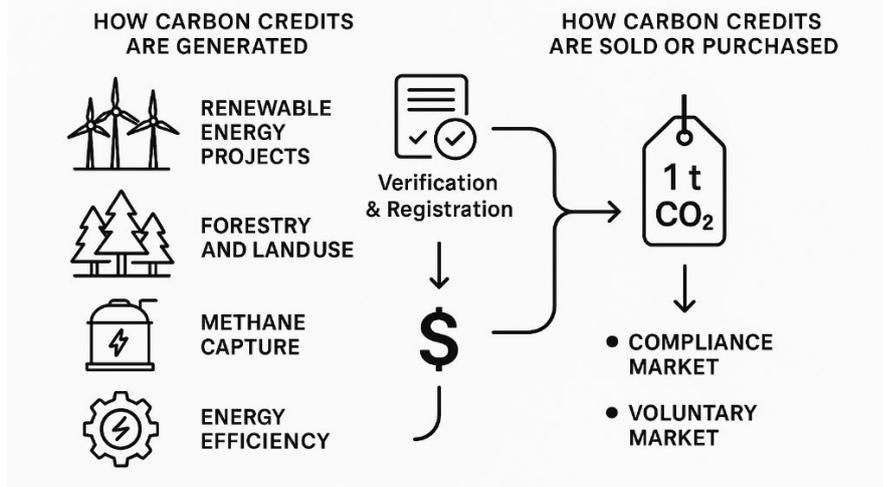
Voluntary market

- Used by companies or individuals who want to offset their emissions voluntarily (e.g., airlines offsetting flight emissions).
- Purchased via:
 - Project developers or brokers
 - Carbon marketplaces (e.g., ClimateTrade, CBL, Xpansiv, AirCarbon Exchange)
 - Retail platforms for consumers (e.g., Cloverly, Ecologi)

Once sold, the credit is usually taken out of circulation so it can't be reused.

In summary, carbon credits are generated through certified and verified projects. They are traded either through a compliance system or voluntary market initiative.

Carbon Credits



6. What are the challenges associated with carbon credits and carbon sequestration?

Carbon credits face several challenges. One of the biggest is the different verification standards and their methodologies, which contribute to inconsistent credit quality, and quantification and claim discrepancies under different standards. In general, the big concerns are a lack of standardisation, double counting of deliverables, additionality concerns in projects achieving expected outcomes, and ensuring the reductions are driven by a non-business-as-usual system.

Market volatility and pricing also undermine investor confidence and are dependent on the origin, type, and region of the product. Greenwash is a public relations move by private investors using credits as a continued offset rather than a reduction in emissions. The permanence of carbon credits is also vulnerable to fires, natural disasters, or land use changes that can impact the stored stocks.

The process of carbon sequestration is not a perfect science. Sequestered carbon can be released back into the atmosphere through natural disturbances, which causes leakage and negatively impacts its permanence. Leakage traditionally happens when emissions are simply displaced; the avoided activity is continuing in a different part of the landscape. An example of this type of leakage is protecting an indigenous forest only to have the neighbouring property allow a new felling operation that would not have occurred if the primary property were involved in sequestration.

Soils and forests are notoriously difficult to calculate carbon stocks and measure and monitor their levels of retention over time. Technological sequestration techniques are currently very expensive and, in many cases, energy-demanding. This is a stumbling block in scaling these initiatives, like direct air capture and biochar. Land use rights and conflicts also contribute to the challenges. Competition between conservation, reforestation, and agriculture creates conflict that impacts sequestration, together with housing and local land rights.

A growing concern is the legal ambiguity created by the release of carbon in the future and determining who would be liable. Carbon credits and sequestration are important

tools, but they're not a quick fix. Their credibility depends on strict verification, honest accounting, and real reductions.

7. How does the sale of carbon credits contribute to carbon sequestration?

Carbon credits create a revenue stream for projects that capture and store carbon from the atmosphere. This includes **forestry projects**: Planting trees or avoiding deforestation. **Soil carbon projects** involve changing farming practices to lock more carbon in the soil. **Blue carbon projects** restore mangroves or seagrasses. **Direct air capture** (DAC) is a technology-driven methodology using machines that remove CO₂ and store it underground. **Converting biomass** into a stable form of carbon through fire using a process called pyrolysis, burying the product called biochar in the soil. Without the ability to sell credits, many of these projects wouldn't be economically viable if no income was generated from the sale of the credits.

Project developers receive payment for credits sold based on how the carbon was sequestered, and, importantly, that they can prove the sequestration through an acknowledged method with robust monitoring and data capture. This income stream encourages landowners and businesses to invest in sequestration methods. The generated sales of credits cover monitoring, verification, and maintenance costs over time, which in turn create a market-driven reason to protect carbon sinks, ensuring permanence.

The sale of carbon credits also redirects capital to climate solutions. Big emitters or sustainability-focused companies buy these credits to offset their emissions. This money creates:

- Flows to carbon removal innovators and nature-based solutions.
- Supports scaling of technologies and land practices that capture carbon.
- Acts as a bridge while industries work to reduce their own emissions directly.

The sale of carbon credits transforms carbon sequestration from a liability to an opportunity. This business opportunity creates a channel for climate finance toward real-world carbon removal.

8. Is there an economic benefit for individuals and/or countries to sell credits? (How, and what is the benefit?)

Yes, both individuals and countries can gain economically.

Individual landowners can generate revenue from land using forests, grasslands and or wetlands. Arable land and animal husbandry are also included in what is termed nature-based solutions. Revenue is realised, ie. through the following:

- Plant trees, improve soil management, or preserve forested areas.
- Earn carbon credits by verifying the amount of CO₂ your land sequesters.
- Sell those credits to buyers (companies, governments, or platforms).
- Credits provide supplemental income on top of crops, timber, or other land uses.
- Makes conservation and climate-friendly practices financially attractive.

Small-scale farmers or smallholders can also through a group project participate in voluntary carbon markets, especially when partnered with aggregators or NGOs that help with certification.

Countries can leverage their natural resources to generate foreign revenue

For Countries

A. Foreign Revenue

- Countries with large forests (e.g. Brazil, Congo, Indonesia) or carbon-rich land can sell credits on global markets.
- This brings in foreign exchange earnings, which can fund local development or conservation.

B. Climate Finance

- Carbon credit revenue helps countries meet climate goals (NDCs) under the Paris Agreement.
- International buyers often fund carbon offset projects in developing countries, improving infrastructure, energy, and conservation.

C. Job Creation

- Developing and managing carbon sequestration projects creates jobs in:
 - Forestry and land management
 - Measurement and verification
 - Local administration and infrastructure

Individuals can monetise sustainable land use, and countries can tap into global climate finance, boosting rural economies and, in return, creating employment opportunities.

9. How does this contribute (in reality) to a decrease in carbon emissions and a greener world? (Is it not an easy way out for the major polluters or a way for individuals to 'ease' their conscience by planting a tree, for example, to offset the pollution from a recent flight?)

Carbon credits can lead to some real-world emission reductions through environmental benefits. Credits help the planet if they are additional, implying they would not have happened in the absence of credit funding. Credit funding enables project developers or land managers to improve or optimise the management of land. Without the capital initiative, embarking on a restoration project would be too costly.

It is also important that carbon is measured and stored for a long time, preferably permanently. Developers or project managers need to track carbon over decades, not just a few years and report accurately on their generated reserves.

The ability to trade in credits should be used as a bridge and not a loophole to circumvent real emission reductions. The sad reality is that many major polluters or individuals opted to use credits to avoid real emission cuts. An example is an oil company buying credits while continuing fossil fuel expansion. The purchase of credits generated through questionable practices or methodologies that do not follow best practice is also part of the challenges faced by ethical carbon credit producers. The

media frequently report on credits that were sold to clients, increasing their emissions, but painting a different social message because they buy carbon credits.

Carbon credits are an effective tool if paired with aggressive emission reductions, tight oversight, and long-term accountability, but they are not a solution.

10. What does it mean to the general population (in terms of climate mitigation and adaptation). I.e. How does it affect the life of the man in the street?

Direct benefits to the man in the street are that it:

- Slows down climate change resulting in fewer extreme climate events.
- Forces producers and supply chains to go greener - more renewables and effective use of energy with less waste
- Capital availability for a just cause - planting of green spaces, energy-efficient consumer goods and conservation support.

Carbon credit funding also supports the following secondary initiatives, including:

- Green sector job creation.
- Community resilience through funds for water, agroforestry and heat-resistant crops.
- Local communities gain empowerment through partnerships with frontline communities.