

The Voluntary Carbon Market **Explained**

Chapter 5



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Chapter 5: What are carbon credits?

A carbon credit is a tradable unit that represents one ton of greenhouse gas (GHG) emission reductions or removals. Carbon credits in the voluntary carbon market (VCM) are generated by mitigation activities that are certified by [carbon standards](#). The credits are purchased by companies, individuals, and other entities to offset GHG emissions or otherwise contribute to GHG emissions abatement. The prices of carbon credits are determined by the types and [quality](#) of VCM activities and the demand for credits from those activities.

What does a VCM carbon credit represent?

Each carbon credit that is generated in the VCM represents one ton of GHG emissions that was not emitted to or was removed from the atmosphere. [Carbon standards](#) issue one credit for each metric ton of GHG emissions avoided, reduced, or removed. To enable standardized accounting, GHG emission reductions and removals are measured in carbon dioxide equivalent (CO₂e) units, often expressed in tons (t) of CO₂e, abbreviated as tCO₂e. In this way, carbon standards convert certified GHG emission reductions and removals into tradable carbon credits.

Through carbon credits, the VCM provides incentives to private and public actors to contribute to climate action. Sellers generate voluntary carbon credits to finance activities that reduce the emission of GHGs into the atmosphere or remove GHGs from the atmosphere. Buyers [use VCM carbon credits](#) to offset their GHG emissions to meet a voluntary or compliance emission reduction target, or to contribute to broader corporate or public climate goals without offsetting emissions. The [prices](#) of carbon credits are influenced by the demand from corporate buyers and the perceived quality of the credit.

What is a carbon credit legally?

Carbon credits represent GHG emission reductions or removals verified and issued in accordance with the rules of a [carbon standard](#). Carbon standards are managed by non-government organizations (NGOs), which certify and track credits and the activities that generate them. Carbon standards organizations are private and operate independently from legislation. Carbon credits are sold, transferred, and purchased by private and public actors in the context of voluntary commitments—not because they are complying with regulations.

The concept of carbon rights was developed to determine who can claim a beneficial interest in a GHG emission reduction or removal. **Carbon rights** define the underlying entitlement to benefit from GHG emission reductions or removals associated with an asset (e.g., land or forest) or activity (e.g., a VCM project). Those who hold carbon rights can engage in the generation of carbon credits, transact carbon credits, and claim the proceeds from the sale of carbon credits. Holders of carbon rights also expect to be considered in **benefit sharing agreements**. Host countries can avoid disputes about carbon rights by clarifying land tenure rights, establishing rules for benefit sharing and consultation, and specifying tax and accounting requirements for carbon credits.

How are carbon credits generated?

To generate carbon credits, VCM activity developers design and develop activities that remove or avoid the emission of GHGs according to the requirements set by **carbon standards**. Carbon standards provide methodologies and protocols for how VCM activities can account for emission reductions or removals. Carbon standards have consultation, monitoring, verification, and validation requirements to issue carbon credits. The developer may also need to consult with

governments that have jurisdiction where the activity is taking place and Indigenous Peoples or local communities (**IPs&LCs**) who could be impacted by the activity.

Once an activity is developed, the GHG emission reductions and removals, as well as other social or environmental impacts, need to be monitored and reported by the developer and verified by an independent third party accredited by a carbon standard. The carbon standard will issue carbon credits based on the resulting monitoring, validation, and verification reports. Carbon credits are issued in the GHG registry of the certifying carbon standard.

In all carbon standard methodologies, calculating baselines and demonstrating additionality are fundamental to generating carbon credits.

Baselines

Carbon standards issue carbon credits using baseline-and-credit systems (see Box 5.1 below) that compare actual GHG emissions to baseline emissions. Baseline emissions are the GHGs that would have been emitted to or not removed from the atmosphere had the VCM activity not been implemented. Baselines are expressed in tCO₂e per year for a period of a number of years – the crediting period. GHG emissions, reductions, and removals in a defined results period are compared against the GHG emissions in the crediting period.

This comparison accounts for the differences between actual GHG emissions, reductions, or removals and the counterfactual emissions that would have occurred in absence of the VCM activity.

Carbon standard methodologies and protocols explain how to calculate baselines. Different types of VCM activities have distinct approaches for setting baselines. In the case of energy and landfill-gas activities, baselines may be set based on expected project performance, sampling of fixed parameters, or other monitoring over the crediting period. In the case of land and forest activities, baselines are set based on the difference in GHG emission reductions or removals achieved by the VCM activity relative to a counterfactual business-as-usual reference scenario. In the context of [jurisdictional programs](#) for reducing emissions from deforestation and forest degradation (REDD+), baselines are called ‘forest emissions reference levels’ or just ‘reference levels.’ Jurisdictional reference levels are based on business- as-usual emissions or defined as the historic level of emissions over a defined period.

Additionality

To generate carbon credits, VCM activity developers must demonstrate that the activities supported by carbon finance are additional. An activity is additional if the GHG emission reductions or removals it achieves would not have occurred in the absence of the VCM activity. Carbon standards require that VCM activities pass additionality tests. Additionality tests show that laws, economic trends, or local land use or energy practices would not have led to the same GHG emissions reductions or removals that the VCM activity achieved.

In most cases, additionality is understood as financial additionality. Financial additionality means that emission reductions or removals would not have occurred without the carbon finance provided by a VCM activity. In some cases, a case for technological additionality can be made. Technological additionality means that emission reductions or removals would not have occurred without equipment or infrastructure provided by a VCM activity. In the case of jurisdictional REDD+, additionality must be linked to governance and policy reforms.

Box 5.1: Baseline-and-credit systems vs. cap-and-trade systems

Tradable carbon units are either carbon credits generated through baseline-and-credit systems, or emissions permits allocated under cap-and-trade systems. Most compliance GHG emission trading systems are regulated cap-and-trade systems while the VCM is organized as a baseline-and-credit system. The table below provides an overview of the most important differences between baseline-and-credit and cap-and-trade systems.

Feature/ Mechanism	Baseline-and-credit	Cap-and-trade
Traded commodity	Credits: climate benefits (i.e., GHG emission reductions and removals) that exceed an established baseline.	Allowances: tradable permits to emit GHGs.
Quantity of commodity available	No limit on how many climate benefits can be generated below an established baseline.	Limited and determined by the overall cap, which is set by regulators.
Emission sources covered	Those approved by standards and for which accounting methodologies are available.	Emissions from sources and installations that are identified by law.
Emissions impact	The emissions impact of baseline-and-credit systems depends on the use of carbon credits by corporates, governments, and civil society in the context of credible mitigation strategies. The emissions impact of the trade in credits is neutral when credits are used to offset emissions. Trade in credits may lead to a decrease in overall emissions if the credits are bought for non-offsetting purposes.	The emissions impact of the trade in allowances is neutral when allowances are used as permits to offset emissions. The emissions impact of the entire cap-and-trade system depends on a tightening of the emissions cap over time.

Figure 5.1 | Example of a baseline-and-credit system

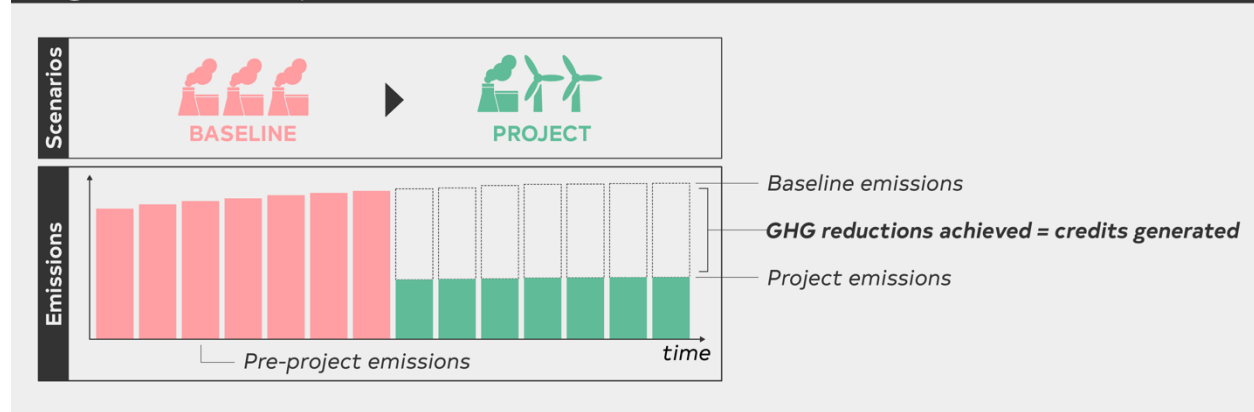


Figure 5.1 shows an example of a project in which transitioning from conventional power plant to wind power generation results in the achievement of emissions reductions relative to the baseline power plant emissions that would have occurred without the project.

How does public policy relate to the generation of carbon credits?

National [policies, laws, and regulations](#) must be taken into account when testing additionality and developing baselines. For example, if regulation requires certain emission reductions—and there is enforcement of those regulations—then VCM activities that seek to provide incentives for those same practices would not be additional, as the regulated emission reductions would have likely taken place in the absence of the VCM activities. In the case of [jurisdictional programs](#), some standards require governments to show that ‘additional’ policies and measures have been adopted to achieve GHG emission reductions

and removals below jurisdictional reference levels.

VCM activities are filling the gap to implement mitigation activities that are not (yet) required by regulation or financially supported by the host country and do not provide competing incentives to private actors. In many countries, a large policy implementation gap exists. Policies may be announced but may not be legally formalized for a long time. Further, countries face significant enforcement challenges, and many legal requirements exist on paper only. It is often challenging to decide whether a particular VCM activity meets the requirement of (regulatory) additionality in this case.

Under the [Paris Agreement](#), all countries have the obligation to develop increasingly

comprehensive and ambitious Nationally Determined Contributions (NDCs) that inform national climate targets and plans. This presents an essential challenge for the VCM because additionality may need to consider the host country's NDC. However, NDCs are often aspirational statements that are not backed by concrete policies and implementation plans. NDCs are also often conditional on additional financing. NDCs that are not being implemented may not need to be considered in VCM baselines or additionality tests.

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