An introduction to global carbon markets

A guide for agricultural practitioners

Types of global carbon markets

Carbon markets are where carbon credits are traded, and there are many different types and regional sub-markets with corresponding scopes, rules and regulations.

Compliance markets refer to the trade in credits to meet legal compliance obligations, such as the EU ETS (Emissions Trading Scheme) and international agreement under the Kyoto Protocol. In compliance markets, participants are legally required to meet certain emissions targets, and the markets refer to mechanisms to enable them to do so, such as the EU Cap & Trade[1] system. Compliance markets are government regulated and third-party assured. The carbon price in compliance markets tends to be set by supply and demand within the specific carbon market, and/or by the governing body.

Currently, there is much talk about emerging markets for carbon credits from forestry, peatland restoration and agriculture. This refers to credits in the voluntary carbon market (VCM), which supports the trade in credits issued by voluntary organisations (i.e. participation is not required, therefore members opt in to either selling or buying carbon credits). Soil carbon projects generally operate in the VCM. There are many VCMs, regional and international, and no one trading platform for voluntary carbon credits. Voluntary markets are self-regulated through carbon standards (such as VERRA or The Gold Standard), to which projects wishing to sell carbon credits must have projects audited and registered. The carbon price in voluntary markets can be hugely variable, and linked to various factors including quality, assurance, origin, other social or environmental benefits (for CSR/ESG purposes), supply and demand, cost of production etc. VCMs represent a fast-growing market, particularly as sustainability goals become more mainstream via ESG (Environment & Social Governance) of companies, driven by sectoral climate targets, regulation from governments and consumer demand.

Core principles of voluntary carbon markets

The Integrity Council for the Voluntary Carbon Market (ICVCM) is an independent governance body for the voluntary carbon market which was established as an outcome of the Taskforce on

[1] https://climate.ec.europa.eu/eu-action/eu-emissions-trading-system-eu-ets_en

Scaling Voluntary Carbon Markets. In July 2022, the ICVCM launched a consultation on proposed Core Carbon Principles, to which (if agreed), carbon standards would have to comply with, and by default, projects registered through them. The aim of this is to level up quality of carbon credits through carbon registries, standardise the assurance process, and build trust in VCMs.

The proposed Core Carbon Principles[2] are as follows:

- **Additionality:** The greenhouse gas (GHG) emission reductions or removals from the mitigation activity shall be additional, i.e., they would not have occurred in the absence of the incentive created by carbon credit revenues.
- **Mitigation activity information:** The carbon-crediting program shall provide comprehensive and transparent information on all credited mitigation activities. The information shall be publicly available in electronic format, and scrutiny of mitigation activities shall be accessible to non-specialised audiences.
- **No double counting:** The GHG emission reductions or removals from the mitigation activity shall not be double-counted, i.e., they shall only be counted once towards achieving mitigation targets or goals. Double counting covers double issuance, double claiming, and double use.
- **Permanence:** The GHG emission reductions or removals from the mitigation activity shall be permanent, or if they have a risk of reversal, any reversals shall be fully compensated.
- **Program governance:** The carbon-crediting program shall have effective program governance to ensure transparency, accountability and the overall quality of carbon credits.
- **Registry:** The carbon-crediting program shall operate or make use of a registry to uniquely identify, record and track mitigation activities and carbon credits issued to ensure credits can be identified securely and unambiguously.
- **Robust independent third-party validation and verification:** The carbon-crediting program shall have program-level requirements for robust independent third-party validation and verification of mitigation activities.
- **Robust quantification of emission reductions and removals:** The GHG emission reductions or removals from the mitigation activity shall be robustly quantified, based on conservative approaches, completeness and sound scientific methods.
- **Sustainable development impacts and safeguards:** The carbon-crediting program shall have clear guidance, tools and compliance procedures to ensure mitigation activities conform with or go beyond widely established best industry best practices on social and environmental safeguards while delivering on net positive sustainable development impacts.
- **Transition towards net-zero emissions:** The mitigation activity shall avoid locking in levels of emissions, technologies or carbon intensive practices that are incompatible with achieving net zero emissions by mid-century.

Understanding these as fundamental for rigorous and trustworthy carbon credit projects, it is easy to see the level of complexity, processes and costs involved in monitoring, reporting &

[2] https://icvcm.org/wp-content/uploads/2022/07/ICVCM-Public-Consultation-FINAL-Part-2.pdf

verification (MRV), particularly when it comes to relatively small-scale projects implemented, for example, on an average-sized farm in the UK.

Particular challenges include proving additionality of measures implemented, and the relative additionality to, for example, required measures from government, or cost-effectiveness of the measure in the marketplace (i.e. if regulation enforces the measure then it is no longer considered 'additional', and past carbon mitigation projects such as funding of clean cookstoves in developing countries may no longer be considered 'additional' as they a price competitive (e.g. with reduced costs and higher tax on polluting alternatives)).

Comprehensive and transparent information on mitigation activities, as well as robust validation also highlights the level of data collection and third-party checks required for those implementing measures, and the methodological, data and technology implications of this on farm.

Furthermore, the principles outline no double-counting, which links to a common misconception around the production of carbon credits on farm able to be sold to carbon markets, and the ability to use these same credits to reduce the farm's carbon footprint. In short, this should not be allowed, and not doing so raises important questions about the agricultural sector's ability to both profit from carbon farming as well as meet its own sectoral emissions reduction targets.

What influences the carbon price in voluntary carbon markets?

In VCMs, one tonne of CO2e produced in one project may not have the same value in the open market as one tonner of CO2e produced in another project. The reasons for this include:

- The relative cost of implementation
- Transaction costs incurred
- Whether the credits are from carbon removals or carbon reduction (removals tend to be higher value)
- Whether the project is nature-based or technology-based (reductions or removals)
- The wider social and environmental credentials linked to the project e.g. biodiversity, community benefits, provenance etc. As an example, a project linked to both carbon reduction and developing an ecosystem, or supporting livelihoods in a developing country community, will be worth more to a company looking for a marketable story to customers or investors. Other companies, such as non-public facing corporations, may just wish to purchase the offset credits to balance their carbon portfolio, and a cheaper carbon credit without wider benefits will do this job just as well.

As carbon markets and demand for carbon credits evolves, the wider range of categories and credentials of carbon credits makes the marketplace more complex to navigate as a buyer. However, the evolving marketplace also needs a wide range of credentials linked to projects to satisfy the different types of interest and competitive advantage of investors, without making it so complex as to reduce liquidity of ability for buyers to engage.

Reflecting on opportunity for carbon credit creation from a Scottish or UK agriculture perspective, the links to wider credentials and stories of projects, such as biodiversity and the Sustainable Development Goals, as well as the provenance of credits (e.g. UK-based) and the demand for carbon removals (e.g. through soil carbon sequestration) could make UK farming an attractive source of high-quality carbon credits for a growing appetite in the marketplace, in principle. In principle is important, however, as there are wider considerations about economic viability and scalability of agricultural carbon markets (see the article on Carbon credit potential on Scottish farms).

Processes involved in carbon credit creation

As mentioned above, registries and standards underpin the process of carbon credit delivery, verification and trading, with the ICVCM providing recommendations for private sector bodies such as VERRA and the Gold Standard to adhere to for increasing transparency and quality in the carbon credit markets.

These bodies are comprised of several components:

- The standard itself, i.e. – principles, additionality etc., justification. This deals with principles of implementing carbon credits, such as being a real, back-dated credit, (i.e. not forward selling), be measured & audited, and have permanence.
- Accounting methodologies – how you measure and accredit reductions, consistency of data and parameters. New methodologies must go through a complicated and detailed process to be accepted and projects run under then. This involves submitting initial concept notes, development with specialist experts and independent auditors, then submitted and put to public consultation before
- Independent auditing – controls over how projects and methodologies are audited, who can audit, how auditors are selected, training required etc.
- Registry – projects generating carbon credits must be registered publicly, allowing for transparency and liability in the public space, and with the intention of avoiding double counting.

Due to the huge increase in demand for carbon credits in recent years through voluntary carbon markets, and the increasing range of projects supplying them, this is creating growing pressure on standards bodies to oversee this process, and as a result transaction costs are increasing.

The process for registering a carbon credit creation project through one of these standards with the intention of selling into voluntary carbon markets is as follows:

- Develop a project plan and protocol
- Do a baseline carbon measurement
- Submit the project & methodology for verification
- Conduct annual monitoring of carbon from the baseline measurement
- Submit the project and claimed carbon credits to a registry
- Negotiate and sign an agreement with the buyer

While this sounds very exacting, the issue in voluntary carbon markets is not necessarily that standards don't exist, but that there are multiple and differing standards, and the variability in project type, methodologies underpinning, and arguably the process through which these methodologies are approved (see Next steps article for more detail).

On the contrary, historically carbon projects have tried to reduce costs of implementation, which has sacrificed integrity and value. Now it seems VCMs may be going through a paradigm shift to greater robustness on the principle that it is in the sellers' interest to ensure maximum diligence in this process, as well as to expose dealings which do not meet the same exacting standards, and therefore to maintain integrity and therefore high prices within the carbon market.

Conditions required for scalable voluntary carbon markets

Currently, due to bottlenecks in registries and the processes and transaction costs involved in getting a carbon credit project established through recognised standards for sale in VCMs, it is difficult to scale investment via VCMs to meet booming demand. Many suggestions to advance scalability include:

- Strengthening definitions and/or standardising the systems and standards underpinning carbon credit creation projects;
- Creating a consolidated marketplace for trading in carbon credits, that would connect buyers and suppliers, provide pre- and post-trade transparency and proper pricing, and standardise contracts by introducing a taxonomy;
- Enforce verification and validation by a third party (which is not yet required to sell carbon credits);
- Enhance the scope and powers of national market standards authorities holding businesses and advertisers to account on green claims based on defaulting to accredited methodologies & principles;
- Encourage the financial industry to adopt standards as core practice/compliance;
- Advance technologies to increase transparency, immediacy and coherence of information flows, such as blockchain;
- Greater regulation and political will at national levels;
- Harmonisation of international regulation and across industries, to minimise double-counting, carbon leakage and other means of cheating markets to overstate reductions in the private sector;
- Increase the consequences for those not following rules.

It is a positive trend that interest from the private sector is driving innovation, expert knowledge and engagement in this space, which will leapfrog forward solutions faster than in the past and drive down the cost of technologies and systems underpinning market development. As the recent climate change summits have highlighted, restructuring of the economy and institutions will also be needed for significant and fast-tracked further investment into voluntary carbon markets through the private sector, and it is likely that measures to enact this are on the horizon. It is clear that scalable carbon markets will require a high level of credibility, speed, efficiency, quality, and transparency for carbon to become a major commodity.

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