

The Growth of Voluntary Carbon Markets and Challenges for Further Development

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SYNOPSIS

In recent years, the proliferation of carbon credit projects has been apparent, propelled by the escalating demand for the credits to offset hard-to-abate emissions and the surge of corporate social responsibility initiatives. The voluntary carbon markets (VCMs), serving as a complement to the mandatory carbon markets, stand poised for expansion to help companies and countries achieve their climate targets. However, unsolved issues remain, which may damage the integrity of VCMs. This policy brief examines the development trends and potential challenges of VCMs.

KEY POINTS

- VCMs have surged recently due to heightened demand for high-quality carbon credits resulting from an increase in the firms' net-zero pledges and stakeholder pressure for corporate social responsibility.
- As of December 2023, 1,919 MtCO_{2e} of carbon credits have been issued from 8,559 projects. Credits from Agriculture, forestry, and other land-use sector and renewable energy sector account for 41.1% and 32.4%, respectively.
- VCMs face several challenges for further development, including a lack of a unified international framework for carbon credit standards and a growing concern over corporate greenwashing.
- Several international initiatives have been working on setting guidelines to enhance the credibility and environmental integrity of VCMs.

INTRODUCTION

Carbon pricing has emerged as a critical instrument to help countries meet their emission reduction goals. Particularly, the increased implementation of Emissions Trading Systems (ETs) expanded the size of compliance carbon markets (CCMs). Furthermore, the proliferation of net zero pledges of companies and a heavy emphasis on corporate social responsibility necessitated voluntary carbon markets (VCMs) where companies not regulated by mandatory carbon pricing schemes also can trade carbon credits to meet their emissions reduction targets. VCMs are expected to continue growing as more efforts to decarbonise are required for all economic actors. [McKinsey estimates that annual global demand for carbon credits could reach 1,500-2,000 million tonnes of carbon dioxide equivalent \(MtCO_{2e}\) by 2030 and](#)

[7,000-13,000 MtCO_{2e} by 2050, and the size of VCMs in 2030 could be USD 5-50 billion. The BCG's projections also suggest that by 2030, the market is poised to reach between USD 10-40 billion.](#) With this background, this policy brief introduces the expected roles of VCMs and explores their growth trends at the global level. It also discusses some challenges to be addressed for further development of VCMs.

ANALYSIS

What Are VCMs, and What Roles Can They Play?

Carbon markets can be broadly classified into two categories: compliance markets and voluntary markets. Both markets can help countries and companies achieve their greenhouse gas (GHG) emissions reduction targets, but they have different operating mechanisms. CCMs are established and

regulated by mandatory national, regional, or international schemes, such as an ETS and the Clean Development Mechanism. CCMs usually operate under a cap-and-trade system that sets quantity restrictions on GHG emissions for individual liable emitters and allows trading of emissions allowances/permits between the emitters to meet their caps. On the contrary, in VCMs, unregulated by the government, the issuance and trade of carbon credits are done on a voluntary basis. Project developers can issue carbon credits generated from their carbon reduction or removal projects and sell them to retail traders and end buyers. All credits must be verified by an independent third party based on the existing standards in order to ensure their credibility. Although many of the VCM participants are not legally required to achieve the specific emissions reduction targets, they participate in VCMs to meet their net-zero targets by compensating for their carbon footprints, to respond to stakeholder pressure for corporate social responsibility, or to make a profit by selling carbon credits at a high price.

VCMs can complement CCMs by tightening the loopholes and overcoming the limitations of CCMs. First, VCMs, unconstrained by territorial and sectoral boundaries, may allow more fluidity compared to the current CCMs. Not all countries have ETS markets, and the majority of the existing ETSs cover energy-intensive sectors only, such as power generation and industry sectors. By contrast, in VCMs, the project developers (sellers) include private firms and governments around the world, and any actors, even individuals, can become consumers (buyers). Second, VCMs enable companies to offset their hard-to-abate emissions by purchasing carbon credits from external projects. Some companies may have difficulty in achieving their GHG emissions reduction targets since the abatement cost is prohibitive, or some production processes, which are sources of GHG emissions, cannot be eliminated or replaced due to the nonexistence of available technologies. In these cases, the companies could select purchasing carbon credits to offset their remaining emissions. Indeed, many carbon taxes and ETSs allow companies to use a certain amount of carbon offsets purchased from VCMs as a means of complying with their reduction obligations to

relieve the companies' burden. Third, VCMs can mobilise finance towards innovative decarbonisation projects and provide funding opportunities for developing countries to develop nature-based carbon removal projects and pursue low-carbon transition.

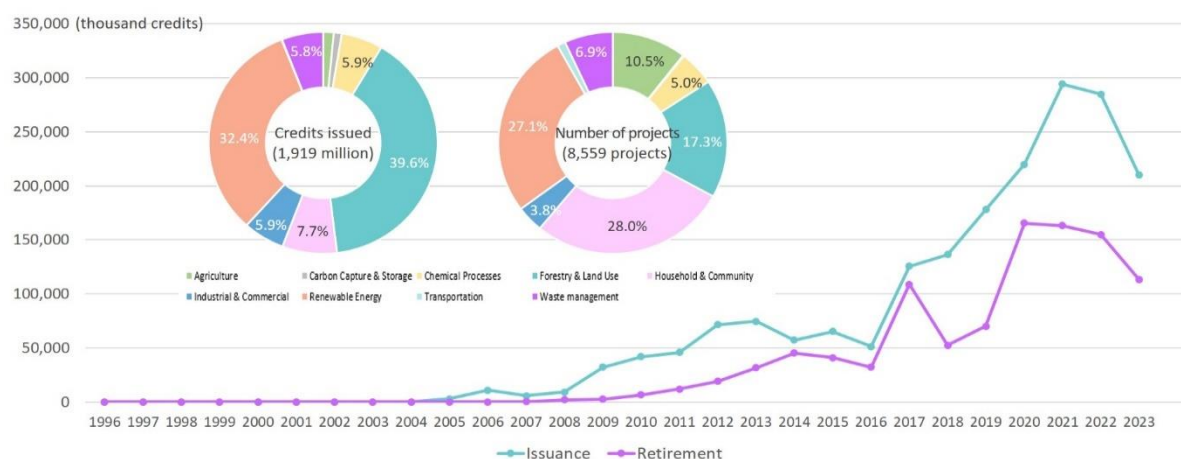
Growth of VCMs at the Global Scale

Global carbon credit markets have grown as carbon pricing has become more prevalent. According to the [Global Market Insight's Carbon Credit Market Report](#), published in October 2023, the carbon credit market was valued at USD 103.8 billion in 2023. CCMs accounted for 97.7% (USD 101.4 billion), and VCMs comprised 2.3% (USD 2.4 billion). Although the size of VCMs is still much smaller than CCMs, VCMs have experienced a remarkable expansion in recent years. The USD 2.4 billion in 2023 was the record high value and almost five times increase from the 2020 levels.

To find more details about the VCM development, we examine the key features of carbon crediting activities based on the [Voluntary Registry Offset Database v9](#), developed by the Berkeley Carbon Trading Project. This database encompasses all carbon offset projects, credit issuances, and credit retirements listed globally by four major voluntary offset registries: American Carbon Registry, Climate Action Reserve, Gold Standard, and Verra. Together, these entities generate nearly all of the world's voluntary market offsets. The issued credits refer to the carbon credits available for trading generated from the project that completed verification processes, and the retired credits mean their benefits have taken place and have been claimed by the buyers.

As presented in Figure 1, both the credits issued and retired exhibit a rising trend over time, characterised by a relatively modest growth rate from 2004 to 2016, followed by a more substantial increase from 2016 onward. The quantity of credits retired reached its peak in 2020 (167 MtCO_{2e}), while the number of credits issued attained its highest point in 2021 (294 MtCO_{2e}). As of December 2023, a total of 8,559 projects resulted in the global carbon credit issuance of about 1,919 MtCO_{2e}. Notably, 41.1% of these credits are attributed

Figure 1. The growth of VCMs and issued credits and the number of projects by sector



Source: Authors' illustration based on [So et al. \(2023\). Voluntary Registry Offsets Database v9.](#)

to the agriculture, forestry, and other land-use (AFOLU) sectors, with renewable energy accounting for 32.4%. Regarding the number of projects, the shares of AFOLU and renewable energy projects are 27.8% and 27.1%, respectively. Other than these sectors, the projects related to household and community (7.7%, e.g., cookstoves and biodigesters), industrial and commercial (5.9%, e.g., mine methane capture and leak detection and repair), chemical processes (5.9%, e.g., ozone-depleting substances recovery and destruction), and waste management (5.8%, e.g., landfill methane capture) contributed to carbon credit issuances. The issued credits can be categorised into three distinct types: impermanent removal, reduction, and mixed. Reduction credits have a longer history, dating back to 2002, and have played a dominant role throughout the whole period. Regarding geographical distribution, North America (23.4%), South Asia (18.1%), and Central and South America (15.4%) emerged as the leading suppliers of carbon credits, with India, the United States, and China standing out as the top countries in terms of the number of carbon projects.

Challenges for the Development of VCMs and New Initiatives to Address Them

Despite the recent dramatic growth, VCMs face several challenges that need to be addressed for further development. First, the lack of a unified international framework for carbon credit standards has been a traditional hurdle for VCMs. This challenge stems from the varied

participation of countries and regions in carbon credit projects under different standards. Such a process demands extensive deliberation and consensus-building to accommodate the needs and nuances of various stakeholders. Although there have been significant efforts to refine the standards, several independent standard organisations that certify the carbon credits in VCMs still use different assessment and verification methodologies. It was expected that the Paris Agreement Article 6 would set specific guidance and rules for international carbon trading mechanisms, but the progress has been slow, as evidenced by the limited advancements at the latest COP28. Consensus has proven elusive on methodological requirements and guidance for carbon removal activities proposed by Article 6.4 Supervisory Body, with concerns raised regarding scientific reliability and integrity.

The absence of a unified framework not only impedes market efficiency but also exacerbates challenges on both the supply and demand sides. The lack of standardised integrity for existing carbon credits diminishes overall market demand. Buyers confront uncertainty regarding the quality and authenticity of traded credits, raising concerns about the prevalence of subpar or fraudulent offerings. This uncertainty undermines market confidence and inhibits the robust growth of VCMs. Concurrently, suppliers encounter the daunting task of aligning their investments with prospective standards for high-quality carbon credits. The absence of clarity

regarding future requirements hampers investment decisions, potentially stalling progress in carbon credit projects.

Second, there is a growing concern over corporate greenwashing — the deceptive portrayal of the environmental credentials of the credit buyers. Carbon offsets particularly from afforestation projects have faced criticism about their environmental integrity. The critics argue that the offset effects of forestry credits are usually exaggerated compared to their actual emissions removal effects. Moreover, [between 2015 and 2022, 81 climate-washing cases were filed against companies, among which 53 cases \(65.4%\) were filed during the last two years \(2021-2022\)](#). Such an increase in lawsuits of greenwashing made companies reluctant to purchase carbon credits in 2023, leading to the sluggish growth of VCMs and a slump in carbon credit prices. Therefore, it is essential to trade high-quality carbon credits, and attention must be directed towards enhancing the credibility and accountability of sellers and buyers to mitigate the risk of greenwashing.

Furthermore, particular emphasis should be placed on the utilisation of generated revenue in developing countries, which serve as major suppliers to the carbon credit markets. Funds must be allocated judiciously to facilitate economic transitions without compromising local ecological systems or abusing human rights. Achieving this delicate balance requires robust governance structures and concerted international cooperation.

A couple of new initiatives were launched in recent years to address these challenges, particularly to enhance the credibility and environmental integrity of VCMs. The Integrity Council for the Voluntary Carbon Market (ICVCM), an independent governance body formed in 2021, released the Core Carbon Principles and Assessment Framework in 2023, setting standards for high-quality carbon credits based on the latest science and best practices. The Voluntary Carbon Markets Integrity Initiative (VCMI), established in 2021, also published a set of recommendations for VCMs, including a demand-side rulebook on the use of carbon credits and a supply-side toolkit for countries. Besides, several environmental NGOs issued guidelines, such as

the Tropical Forest Credit Integrity Guide and Buyer's Guide.

CONCLUSION

The rapid development of carbon credit projects and VCMs underscores their growing importance in global efforts to combat climate change. While forecasts predict further growth, challenges persist in developing uniform frameworks for defining, measuring, and trading high-quality carbon credits. The absence of standardised guidance for international carbon credit markets presents hurdles, yet enhanced international cooperation offers a pathway to establish and implement a well-crafted methodology framework. Addressing challenges ahead requires concerted efforts and robust governance structures. However, with determination and collaboration, the transformative potential of VCMs in advancing sustainability goals and combating climate change can be realised, paving the way for a more resilient and sustainable future.

WHAT TO LOOK OUT FOR

- Evolution of the Article 6 mechanisms and international guidelines for VCMs
- Trends in carbon credit projects and transactions
- Interactions between CCMs and VCMs

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