



How can we scale a trusted voluntary carbon market?

Insights from *'Race to Zero: Empowering and Expanding Voluntary Carbon Markets'*. Event organised by KPMG in Singapore on 24 October 2023

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Overview

The significance of carbon markets, especially the voluntary carbon markets (VCM), has never been greater. The VCM helps to effectively price greenhouse gas emissions, directing funds towards climate-friendly initiatives, and promoting investments in new green technologies. While currently unregulated, VCM allows private parties to trade carbon credits, representing actions that prevent, reduce, or remove greenhouse gases emissions.

With numerous companies committing to a low carbon future, the VCM has experienced remarkable growth in recent times, and is projected to grow further, with market capitalisation estimates between USD5 billion to USD25 billion by 2030.

As the demand for carbon credits has grown, concerns have emerged about the integrity of the credits on the VCM. The complex and manual processes in carbon credit verification, and fragmented data in the VCM's current operations create challenges for project developers in accelerating the supply of high-quality credits, accurately pricing them, and proving their potential climate impact and co-benefits.

Key highlights of this report:-

1. Articulates the role of VCM in helping accelerate high-impact climate action, protect nature and driving accelerated path for technology adoption.
2. Identifies the key challenges and risk associated across the VCM value chain, and highlight the need for urgent action to restore trust in carbon markets.
3. Highlights the opportunities for integrating technologies across the life of a carbon credit, effectively addressing associated key risks and issues.
4. Proposes reforms to accelerate the evolution of the voluntary carbon markets, enabling it to reach its potential for channeling climate finance.

This report draws insights from KPMG in Singapore's second instalment of the "Race to Zero" series of discussions, where speakers Jade Feinberg, Director, KPMG ESG at KPMG in Singapore; David Taylor, Professor of Tropical Environmental Change at National University of Singapore; Hannah Oh, Co-founder/ Advisor of IXO; and Tom Enger [former Chief Product Officer at Climate Impact X (CIX)] discussed the topic of Empowering and Expanding Trusted Voluntary Carbon Markets.

The report highlights potential tech-driven approaches to enable the VCM to operate more efficiently, reliably, and accurately on a larger scale through integrating emerging technology solutions such as blockchain, artificial intelligence (AI), and remote sensing. This would help create more robust monitoring, reporting and verification (MRV) systems. The report provides specific recommendations to guide key VCM stakeholders as they navigate the evolving VCM landscape, before concluding with a view to the future of VCM.





Glossary

▶ AI/ML	Artificial Intelligence / Machine Learning
▶ BECCS	Bioenergy with Carbon Capture and Storage
▶ CCM	Compliance Carbon Market
▶ CCUS	Carbon Capture Utilisation and Storage
▶ DACCS	Direct Air Carbon Capture and Storage
▶ FPIC	Free, Prior, and Informed Consent
▶ GHG	Greenhouse Gases
▶ ICVCM	Integrity Council for the Voluntary Carbon Market
▶ IPCC	Intergovernmental Panel on Climate Change
▶ MRA	Monitoring, Reporting & Assurance
▶ MRV / D-MRV	Monitoring, Reporting and Verification / Digitalised–Monitoring, Reporting and Verification
▶ NFT	Non-Fungible Token
▶ PDD	Project Design Document
▶ REDD / REDD+	Reducing Emissions from Deforestation and Forest Degradation / Reducing Emissions from Deforestation and Forest Degradation + programme
▶ SBTI	Science-based Targets Initiative
▶ UNFCCC	United Nations Framework Convention on Climate Change
▶ VCM	Voluntary Carbon Market
▶ VCMI	Voluntary Carbon Market Initiative
▶ VVB	Validation/Verification Body



Carbon credits and their impact

VCM plays a crucial role in our battle against climate change

VCM has emerged as a pivotal tool in addressing climate change through voluntary participation, in contrast to CCM. VCM leverages market mechanisms to incentivise companies, governments, and other organisations to offset their carbon emissions by engaging in environmentally responsible actions, showcasing their commitment to reducing their carbon footprint. Unlike CCMs, which are established and regulated by governments, VCMs operate independently and are unregulated by governments or regulatory bodies.

VCMs are where carbon credits – a financial instrument used to quantify carbon avoided or carbon sequestered – are traded. According to the UNFCCC, a carbon credit, also termed as an “offset”, is a generic term used to assign a value to a reduction, avoidance or capture of GHG emissions achieved by a certified project. It is equivalent to one metric ton of carbon dioxide equivalent (CO₂e) and can be used to compensate a business, organisation or individual’s footprint¹. These credits can be categorised into carbon avoidance credits and carbon removal credits, delivered through nature-based or technology-based projects.

	Nature-based	Technology-based
Avoidance credits Emission reduction or prevention	Forestry and land use (avoided deforestation, agroforestry practices, and land-use optimisation)	Efficient cookstoves, waste management, sustainable aviation fuel, renewable energy (solar, hydroelectric)
Removal credits Capture and storage of existing atmospheric carbon	algae, chemical mineralisation, reforestation, tree planting	DACCS, BECCS, CCUS

Table 1



VCM offers an array of environmental projects, enabling interested investors to contribute to the reduction, removal, or avoidance of carbon dioxide or its equivalent by purchasing these credits. Avoidance credits focus on emission reduction or prevention, and encompass both large-scale initiatives such as deforestation avoidance, as well as smaller-scale, community-level initiatives including providing fuel-efficient cookstoves to remote communities. Conversely, removal credits require capture and storage of carbon from the atmosphere, with projects ranging from community-level reforestation and coastal area restoration to large-scale industrial projects such as DACCS or CCUS to sequester a portion of industrial carbon emissions.

The VCM holds the promise of narrowing the divide between the projected USD4.3 trillion² needed for transition finance by 2030

and the existing financial levels, provided it is effectively scaled and managed. Hence, VCM enables an ecosystem to catalyse critical initiatives, such as nature preservation and advancement of new technologies, by crowding in funding to jurisdictions which in the absence of carbon credits would not have received the support required to decarbonise or uplift communities sustainably.

However, carbon credits are not the panacea in addressing the complex challenges of climate change. Despite positively contributing to emission reductions, carbon credits are just one aspect of a multifaceted approach to combat climate change. Achieving lasting emission reductions necessitates a broader and integrated strategy that encompasses regulatory measures, technological innovation, and sustainable practices across all sectors.

Sources:

¹ [Climate Neutral Now Guidelines for Participation, UNFCC](#)

² [Scaling Voluntary Carbon Markets: A Playbook for Corporate Action, 2023, The World Economic Forum](#)



Lifecycle of a carbon credit

The carbon credit value chain typically comprises six primary stages, commencing with project planning and development, and concluding when the credit is retired. During the stages, an organisation is able to claim the offset as part of their decarbonisation strategy ensuring there is no recirculation and hence preventing double counting of the credit into the market. Exhibit 1 outlines the six stages of a carbon credit.

Exhibit 1

1	▶ Project development Outlining the project within the PDD	Project developers design and implement projects aimed at reducing GHG emissions. Examples of such projects include reforestation, renewable energy installations, methane capture or sustainable agricultural practices to name a few. Each project must adhere to a specific methodology or protocol relevant and aligned to a certain kind of carbon project to quantify the emission reduction potential.
2	▶ Validation and verification Validation of the project design prior to completion of registration, verification of carbon reduction claims of the project	A VVB assesses the project's emission reduction claims, comparing the project emissions to a baseline. Through desktop reviews and site visits, the VVB validates the project's baseline scenarios, monitoring processes, and methodologies for calculating emission reductions. This is to ensure the project meets the requirements of the carbon certification programme.
3	▶ Registration Registration of the project with approved registries	Upon successfully passing the validation and verification process, the project is officially registered with a carbon credit registry. This registration creates a public record of the project's methodology and potential to generate carbon credits, marking the project's entry into the carbon credit system.
4	▶ Issuance Implementation of project as defined by the PDD and issuance of carbon credits upon verification	The project developer then proceeds with implementing the emission reduction activities. Throughout the project's operational phase, emission reductions are continuously monitored. At the end of each monitoring period, an independent verification audit occurs. If the audit confirms that the project has met the reduction targets and adhered to the requirements, carbon credits are issued in accordance with the verified reductions.
5	▶ Trading Trading of carbon credits, through brokers, traders and exchanges, or as direct purchases	Carbon credits enter the carbon market upon issuance, purchased by individuals, investors and businesses looking to offset their emissions. Buyers can purchase these carbon credits on the market either directly from the project developer or indirectly through brokers, traders, and exchanges. The registry then records this change of ownership to avoid double counting.
6	▶ Retirement Claim of carbon credit to offset emissions, with carbon credit removed from circulation and retired from use	When the owner of a carbon credit decides to offset its carbon emissions with the credit, the carbon credit is retired. The registry cancels the carbon credit, being permanently taken out of circulation. Retirement ensures that the emission reduction represented by the credit is not claimed by multiple parties, preventing double counting and maintaining the integrity of the carbon market.



The carbon opportunities

VCM has gained momentum over the past two decades, yet significant growth remains to be unlocked

VCM has grown at an astonishing rate in recent years, where buyers of carbon credit have increased approximately fivefold from 2021 compared to the first three quarters of 2023 – from 3.1 million tonnes to 15.1 million tonnes¹. While the market capitalisation for carbon credits stands at USD2 billion, the volume traded sits at only 500 million carbon credits, or equivalent to 0.5 gigatons of carbon dioxide², piling in comparison to 2022 emissions at 36.6 gigatons³. This discrepancy underscores the enormous growth opportunity within the VCM, and highlights its potential to be a pivotal puzzle piece in the global climate effort.

Conservative estimates that VCM is currently valued at USD5 billion and is expected to grow to 30 billion in 2030. These estimates are anticipated to climb higher to USD50 billion, as established by the ICVCM⁴. These remarkable growth estimates

not only illustrate the growing recognition of environmental responsibility but also the commitments made by companies worldwide to achieve net-zero emissions targets and invest in the decarbonisation ecosystem, particularly for hard-to-abate emissions.

Numerous companies are eager to capitalise on the opportunity while the market is still nascent. Demand for carbon credits is currently driven predominantly by companies, with a sustainability infused corporate strategy as a core driver for these purchases. Purchasing carbon credits may help companies in boosting their competitive edge among customers and asserting their carbon-neutral status. Such companies exhibit stronger climate change behaviours, being 1.8x more likely to decarbonise year-over-year as well as 1.8x and 3.4x more likely to have an approved science-based climate target⁵. In due course, companies will face growing expectations to exhaust all available options in mitigating their emissions before considering the use of carbon credits.



Asia as an oasis for opportunities

At present, most of the available carbon credits are supplied from the Global South. Asia, with its rich biodiversity and growth potential, is uniquely positioned to contribute to the VCM as a major supplier of carbon credits. Notably, Southeast Asia is home to approximately 170 gigatons of carbon storage⁶. This immense reservoir translates into significant untapped potential in the carbon market, estimated to be worth USD2.19 trillion in 2022, with the potential to create approximately USD10 billion in economic opportunities annually by 2030⁷.

Furthermore, the region is witnessing the emergence of new carbon exchanges in response to growing pressures and

attention for more VCM. Within Asia, a prime example is Malaysia, where the country's stock exchange operator, introduced the nation's first VCM in December 2022. Thailand has also launched its first VCM credit exchange in 2022⁸ as part of its sustainability goals to mitigate greenhouse gas emissions. Additionally, Cambodia has joined the fight since 2007 via reducing emissions from deforestation and forest degradation in developing countries (REDD+)⁹ through VCM participation which has sold USD 11.6 million¹⁰ in carbon credits to multinational companies from 2016 to 2020. Currently, Singapore stands as a key player in the Asian VCM landscape, hosting platforms such as Climate Impact X (CIX), positioning the nation as a prominent carbon trading hub.

Sources:

¹ *A look at the 2023 voluntary carbon market, 2023, Carbon Direct*

² *Real Voluntary Carbon Market Value is USD 2 Billion, 2022, Carbon Credits*

³ *Analysis: Global CO2 emissions from fossil fuels hits record high in 2022*

⁴ *Voluntary Carbon Markets: A Critical Piece of the Net Zero Puzzle, 2023, Citi GPS*

⁵ *New research: Carbon credits are associated with businesses decarbonizing faster, 2023, Ecosystem Marketplace*

⁶ *Carbon Offset in Southeast Asia: Assessing Benefits and Opportunities, 2023, Green Network*

⁷ *Tapping potential of South-east Asia's carbon market, 2022, The Straits Times*

⁸ *Thailand tackles sustainability with carbon credits, 2023, Lombard Odier*

⁹ *Cambodia goes all-in on carbon offset sales, 2022, The Phnom Penh Post*

¹⁰ Reducing Emissions from Deforestation and Forest Degradation (REDD+) is a type of avoidance credit that finances activities that focus on the sustainable management and conservation of at-risk mature forests.



Challenges to adoption

Despite the inherent promise and potential opportunities associated with the VCM, fundamental challenges impede further development and adoption of the VCM which occur over the lifecycle of the carbon credit. Throughout the lifespan of the carbon credit, these challenges are illustrated and discussed in greater detail.

1. Project developers face financial barriers to start projects

Inadequate funding for many smallholder land-owners to midsize developers presents a significant challenge on the supply side of carbon credits as it impacts their ability to initiate and sustain the projects.

“Many project developers, including start-ups and small and medium-sized enterprises (SME) promoting green solutions, are not able to tap into the carbon financing today because it is just so expensive to get your project registered. And if you get any financing, maybe you will see the revenue coming in three years down the road,” said Hannah Oh at the “Race to Zero” discussion. This inevitably leaves many projects on the drawing board, preventing delivery of climate and social impact, added Hannah.

2. Local communities are left out

The lack of transparency within the VCM has contributed to revenue leakage within the value chain, with brokerages and intermediaries taking a bulk of the revenue. As a result, significant portions of the financial benefits generated by carbon credit projects may not reach the intended recipients. Nearly 90 percent of intermediaries do not provide transparent information about the fees they charge or the profit margins they make when selling credits on the VCM¹.

“There has to be a better link between the markets and the people who are generating the carbon credits in the first place. About 50 percent to 90 percent of proceeds goes to all the value chain involved and not so much is left for the actual people who are producing the impact,” said Hannah Oh.

Speaking at the “Race to Zero” discussion, David Taylor adds, “Out of all the players within this chain, benefits that are generated by the carbon market must be passed on to local communities in a fair, efficient and transparent way.”



3. Increasing scrutiny on carbon credits has created challenges for buyers and sellers alike

In recent years, there has been a heightened focus on the quality of carbon credits in the market. This scrutiny has coincided with positive developments in methodologies review and redesigns as well as the introduction of new players dedicated to enforcing stricter governance to prevent misuse and abuse of carbon credits by defining the criteria for high-quality credits and regulating buyers' claims. However, the persistence of information asymmetry, stemming from outdated processes and data-related issues, remains a significant challenge in the market. Buyers still grapple with difficulties in verifying the quality of their credits and achieving price transparency, while sellers continue to face obstacles including funding, and long lead times for project development and issuance of credit.

4. Buyer sentiment growing more cautious, leading to subdued demand and investments

Following the increased scrutiny of the quality of credits in recent news reports, many investors and large corporations with substantial, long-term interests in carbon offsets have re-evaluated their carbon offset investment targets². The early months of 2023 saw the value of voluntary carbon credits decline by nearly 50 percent to approximately USD1.7 per metric ton of CO₂ equivalent³.

Due diligence on new carbon initiatives is also becoming much more extensive in the wake of increasing scrutiny on the provenance of carbon credits. In the absence of real-time pressure to buy these credits, many companies are evaluating the most appropriate credits to offset their emissions, while waiting for the market to normalise.



5. Growing need for verifying credit performance and gaining transparency on credit pricing data

"There's demand destruction based on attacks on how carbon credits are measured. One of the things that will most change the situation is an improvement in the standards and definition of measurements," says Tom Enger at the "Race to Zero" discussion.

The market is flooded with low quality legacy credits⁴ and buyers are amassing these credits without being able to verify their quality⁵. Given the continuous development of standards and guidance on carbon credit claims, market actors are now exploring the digitalisation of MRV processes⁶. With digital MRV, many of the manual processes involved in the data collection can be automated and accessed remotely. This will enable streamlining of certification processes and reducing human error which can lead to increased integrity and credibility of the credit whilst increasing the potential price which can be commanded in the market due to transparency.

A robust, digital system still remains a north star for the industry to strive towards with the process of verification and approval remaining difficult and expensive for project developers.

"Today, the traditional registries take two to three years to verify projects, resulting in a slowdown in a progression for high impact projects," said Hannah Oh. Such delays in verification and certification could cost developers up to USD2.6 billion by 2030 and may result in up to 4.8 gigatons worth of carbon credits not being issued⁷. With these projects being unverified for such long periods, this seeming lack of transparency increases the difficulty for organisations to provide funding. The decline in funding has resulted in a lack of innovation. "There are more than 100 types of new carbon credits, and this space is proliferating very broadly and rapidly," Tom Enger shares. The variety of carbon credit projects makes it challenging to establish a common benchmark, resulting in a wide range of prices that may discourage potential buyers⁸.

Additionally, majority of today's carbon transactions are private⁹, hindering buyers in their price comparisons and understanding the percentage of their sale that reaches the project developers¹⁰. The current poor price discovery further subdues efforts to build transparency into the environmental and social performance of carbon credits, further reducing liquidity in the VCM.

Sources:

¹ [Climate profiteering: Are intermediaries exploiting carbon markets for their own ends?_2023](#), Carbon Market Watch

² [Revealed: more than 90% of rainforest carbon offsets by biggest certifier are worthless_2023](#), The Guardian

³ [Shell signals retreat from carbon offsetting_2023](#), The Guardian

⁴ [Carbon credit market confidence ebbs as big names retreat_2023](#), Reuters

⁵ [Fixing Failing Carbon Offset Markets_2021](#), Frontier Economics

⁶ [World's Largest Carbon Program Pilots Digital Measuring of Forest Carbon_2022](#), Verra

⁷ [Verification Delays can cost carbon project developers \\$2.6B](#), Carboncredits.com

⁸ [What's going on with carbon credit prices?_2023](#), Abatable

⁹ [Voluntary carbon markets: how they work, how they're priced and who's involved_2021](#), S&P

¹⁰ [About carbon credits](#), Toucan



Technology as a VCM enabler

Re-establishing market trust is a top priority, requiring efficient technology integration for a well-functioning, dynamic market

A dynamic and trusted VCM needs to be able to price carbon credits fairly and accurately for its quality. The credit's quality is based on both the reliability of the emissions and co-benefits data, as well as the processes to develop, verify, purchase, and claim credits¹, with these two aspects being closely linked. Having granular and updated project performance data will not

move the needle if broader market access to the data remains challenging and costly.

Addressing information asymmetry about a credit's underlying quality and performance is where technologies such as blockchain, AI, and remote sensing come into play. These technologies offer promising solutions that can enhance trust, liquidity, fairness, and reduce transaction costs, ensuring prices accurately reflect available information, as shown in Exhibit 2.

Exhibit 2

Solution/ use case	Promising areas of tech integration	
	Demand	Supply
▶ Data Storage	Blockchain	A tamper-proof and immutable shared record of the complete carbon credit lifecycle
▶ Smart Contracts	Blockchain	Standardisation of legal documents and automation of verification
▶ Traceability	Blockchain	Improved data traceability and transparent transaction and retirement process
▶ NFT/ Marketplace	Blockchain	More inclusive and local data collection for MRV purposes
	AI/ML	
▶ Digital MRV	Blockchain	Frictionless and real time settlement, especially to local communities
	AI/ML	
	Remote Sensing	Better access to price and transaction data, and improved linkage between MRV data and market prices
		Access to real time and accurate reporting and measurement of impact claims
		Accurate and less resource intensive collection of ground level data for baseline modelling and emission reduction monitoring
		Quantification of co-benefits that leads to a more transparent pricing mechanism



Establishing accurate and real-time access to credit data and proof of impact

Blockchain provides a transparent and immutable record of a carbon credit's entire history, linking up individual data systems that were once siloed. This addresses concerns related to ownership disputes and the possibility of counting emission reductions multiple times².

Blockchain also promotes accurate accounting practices, making transaction data accessible and enhancing accountability among parties³. Currently available in the market are blockchain based

platforms that bring carbon credits from traditional registries on-chain and tokenises them as a TCO₂ credit⁴. Each TCO₂ credit contains carbon credit data, such as the name and type of the project, the issuer, and the vintage, allowing them to be purchased and retired transparently. Additionally, blockchain has the potential to enable faster, real-time settlements and introduce verification layers through smart contracts. Smart contracts can aggregate similar credits into carbon pools that can be exchanged for a fungible pool token. This process effectively generates improved price signals for buyers and sellers.

Sources:

¹ [A Path through Carbon Markets Turmoil](#), 2023, RMI

² [Beyond the Buzz: What Can Blockchain Do for Carbon Markets?](#), 2022, RMI

³ [Block Chain solutions are nearing maturity](#), 2022, One Earth

⁴ [About carbon credits - Toucan](#)



Empowering suppliers and project developers through technological solutions

Various initiatives which assist early-stage and smallholder project developers in listing their carbon projects and making forward claims based on the expected impact of their projects are underway. Currently available in the market is an open data platform that allows early-stage developers to access advanced market commitments, as well as a support ecosystem which includes financing, verification, and certification services.

“The advantage of having a real-time D-MRV is that it allows you to presell these carbon credits.” said Hannah Oh, further adding that “[this] way, carbon financing can be directed into the supplier’s working capital and facilitate projects such as water purification and cookstove deployment.”

Conversely, technological tools such as remote monitoring and verification, as well as blockchain can help project developers to reduce project development duration and costs. This will streamline operations, enhance efficiency, and ultimately contribute to a more effective carbon market. Remote monitoring technologies such as satellite imagery and Internet of things (IoT) sensors can reduce the cost and time to conduct physical site visits of the carbon credit projects, improving the efficiency of certification. For example, a nature-based solutions providers use high-resolution satellite imagery for large-scale monitoring of deforestation and forest degradation. Blockchain technology, beyond enabling data transparency for the carbon credits, can also empower project developers by allowing direct transactions of these credits, eliminating transaction intermediaries, and thus improving trade efficiency. Smart contracts can further accelerate the trading process of carbon credits by digitising the negotiation and agreement procedures.



Quantifying the co-benefits of the carbon markets with the aid of technology

Quantifying the co-benefits of carbon markets is essential for a comprehensive understanding of the broader positive impacts associated with environmental and technological carbon credit projects. Beyond climate change, carbon credit projects play an important role in other aspects such as biodiversity conservation and social and community development¹. “A forest is not just a home for animals, plants, microbes, fungi, but it is actually a transportation system where the water goes from the rainforest to neighbouring fields for agriculture. It also is a source of food and fuel and medicine.” Tom Enger shares, adding “If you sum the

value of a rainforest project, you're talking about USD100 to USD150 of value to human beings. If the rainforest project in the market today is worth USD3 to USD5, what you should ask yourself is whether this is priced correctly.”

Furthermore, technology is an important tool for players in the VCM to leverage on and quantify these broader co-benefits, so companies have due comfort when participating in the VCM. For instance, service providers in the market that use technology solutions, including satellite imagery and machine learning, to quantify and monitor the impact of reforestation projects on communities and local wildlife, in addition to carbon monitoring.

Sources:

¹[What's in a carbon credit?, Ecosystem Marketplace](#)



Reforms are necessary for the VCM to remain relevant

Recommendations for corporate buyers

Amidst the challenges with the VCM, it is increasingly important for corporate buyers to conduct thorough due diligence when selecting carbon credits. Companies should evaluate the quality of carbon credits, including adherence to established methodologies. They must also ensure that all key principles, such as additionality, permanence, and co-benefits are followed, thereby representing genuine and real emission reductions. A MRV framework is an important barometer by which carbon credits are judged, with 91 percent of corporate buyers surveyed in 2022 considering its usage as a key criteria for decision-making.¹ Buyers consider a framework with credible third-party verifiers and robust measurement methodology as crucial to mitigate their reputational risks.

Corporate buyers also play a key role in ensuring that carbon credits are leveraged properly, to avoid allegations and accusations of greenwashing. Buyers should always prioritise the abatement and avoidance of their own emissions, including Scope 1, 2, and 3 prior to looking towards the VCM to offsets. The VCMI recently published the Claims Code of Practice² to guide companies seeking to make credible claims of carbon credits. The steps include:

- **Complying with VCMI's foundational criteria.** Buyers are required to disclose their greenhouse gas inventory, set science-based targets and net-zero targets, and track their emission reduction efforts.
- **Selecting a VCMI claim to make.** VCMI has defined three tiers of claims for buyers to demonstrate the purchase and use of carbon credits.
- **Meeting the required carbon credit use and quality thresholds.** Buyers are required to purchase high-quality credits that meet the ICVCM Core Carbon Principles³.
- **Obtaining third-party assurance following the VCMI MRA framework.** Transparent reporting and assurance of information are also key to ensuring the credibility of carbon credit purchases.

The SBTi's upcoming Beyond Value Chain Mitigation⁴ guideline will provide criteria for companies to mitigate emissions beyond their value chain by purchasing high-quality carbon credits. These can include REDD+ and carbon dioxide removal technologies. With these, companies can support carbon mitigation projects to contribute to global efforts towards limiting global warming to 1.5 °C.

Sources:

¹ [Exploring the future of the voluntary carbon market | Shell Global](#)

² [VCMI Claims Code of Practice](#)

³ [ICVCM Core Carbon Principles](#)

⁴ [SBTi Beyond Value Chain Mitigation](#)



Recommendations for project developers

Project developers play a crucial role in upholding the integrity of the carbon market, bearing the ultimate responsibility of ensuring that the carbon project delivers maximum carbon abatement and community benefits. To maintain transparency, developers should keep records of all project-related data, including baseline emissions, methodologies, and verification reports. These records must be readily accessible to verifiers, buyers, and regulators to guarantee the credibility of the project. Enhanced transparency will minimise reputational and litigation risks for both project developers and buyers.

There is also merit in project developers embracing the application of technology, especially in monitoring and verifying the project's carbon impacts. Digital MRV would streamline data collection and processing, utilising technologies such as sensors,

satellites, and drones. Optimising data collection related to environmental and social parameters, will be essential in reducing time, costs, and efforts for project developers. Despite still being relatively expensive, this could pave the way for consistent, high-integrity credits.

Furthermore, developers should foster proactive engagement with stakeholders and local communities. This ensures that the project will align with the community's best interests while addressing any concerns and maximising co-benefits for the local communities. Importantly, project developers must always adopt FPIC principles in socialising both the positive and negative, financial and non-financial impacts on local communities. Any record of public consultations should always be documented in the project developers' stakeholder engagement plan.



Recommendations for regulators

There is no doubt that governments play a pivotal role in ensuring the integrity of the carbon market. By implementing stringent policies, regulatory bodies can enhance market confidence that high-quality, legitimate carbon credits are traded. They should establish clear and enforceable guidelines for project developers and institutional buyers, as well as develop rigorous criteria for the verification and monitoring of carbon projects. There must be sufficient oversight by regulatory bodies to ensure the transparency of reporting and the disclosure of emissions data.

For example, Singapore has recently set out the eligibility criteria for using international carbon credits under Singapore's Carbon Pricing Bill. Under the bill, companies that are subject to the carbon tax can offset up to five percent of their taxable emissions using international carbon credits. The eligibility criteria outlines seven key principles to ensure high environmental integrity of the

carbon credits, such as no double counting, additional, real, quantified and verified, permanent, no net harm and no leakage¹.

Additionally, regulatory authorities are instrumental in combating issues such as greenwashing. Greenwashing occurs where misleading or false claims are made regarding the environmental benefits of a product or activity. Through stringent standards and compliance requirements, the authorities can assist in the prevention of the sale of low-integrity credits and potentially penalise when this occurs. A prominent example is the European Union (EU)'s push to ban misleading environmental or "green" claims², effectively prohibiting the use of unfounded generic terms, such as "eco-friendly" or "green". The proposal aims to bring a higher degree of transparency to the use and reporting of carbon credits potentially requiring companies to disclose detailed information on the offsets purchased.

Sources:

¹ [MSE, Singapore Sets out Eligibility Criteria for International Carbon Credits Under the Carbon Tax Regime](#)

² [EU Parliament, 'Green claims' Directive](#)



Looking Ahead



Speakers at the Race to Zero: Empowering and Expanding Trusted Voluntary Carbon Markets discussion.
[from left to right: Jade Feinberg (KPMG), Tom Enger (former CIX), Hannah Oh (IXO), and David Taylor (NUS)]

The ongoing debate surrounding the current quality of carbon credits fosters a healthy and necessary scepticism, prompting our discussions to re-examine VCM's place in this race to zero. It is important to emphasise that carbon credits should complement, not replace, real emissions reduction efforts. Tom Enger highlights that the VCM represents only two percent of the solution. "Carbon credits cannot substitute for the 98 percent of

the solution, which involves reducing emissions through energy efficiency projects, or switching out fuel to renewables. Following that, you can address your supply chain emissions and invest in protecting natural sinks or promote adoption or maturation of new technologies," says Tom Enger. David Taylor echoes this sentiment and raised the moral hazard of relying solely on carbon markets to accomplish the task of reducing net emissions.



He adds, “Let us not get distracted from the main way of dealing with anthropogenic climate change, and that is to reduce our own emissions.”

In the near future, expect standard setters to continue refining their guidance, striving for a balanced approach that ensures clarity without adding extra costs or delays to project development or MRV process. These refinements are expected to encourage increased participation from small-scale project developers, allowing them to issue and trade their carbon credits at a fraction of today’s cost and lead time. On the demand side, the availability of a rigorous, dynamic and empirical approaches

to carbon credit valuation and monitoring is poised to boost buyer confidence. This demand-side push will stimulate the business case for tech-driven solutions and innovations to address existing VCM issues.

The criticisms surrounding low-credibility carbon credits and failure to deliver genuine climate and social impact may seem inflated, but they serve as catalysts for much-needed market reforms. While the market is still in its relative infancy, it continues to play a vital role in driving corporate action, channelling funds for the green projects and nature loss prevention that would otherwise lack funding.



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