

Voluntary Carbon Markets

Discussion Paper

**The Board
OF THE
INTERNATIONAL ORGANIZATION OF SECURITIES COMMISSIONS**

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Foreword

The Board of the International Organization of Securities Commissions (IOSCO) has published this Discussion Report with the aim of advancing the discussion about what sound and efficient Voluntary Carbon Markets (VCMs) should look like and what role financial regulators may play in promoting integrity in those markets.

This discussion paper seeks feedback on a potential approach that regulatory authorities and market participants could take to foster sound and well-functioning voluntary carbon markets and, as a consequence, scale up these markets to allow them to achieve their environmental objectives.

Our proposed approach has been to outline key regulatory considerations, building on our members' knowledge and oversight of other financial markets – commodities and derivatives markets in particular. Our aim is to generate a discussion about appropriate market infrastructure and existing good practices in relation to the functioning of primary and secondary markets – both spot and derivatives – as well as the activities of participants in these markets.

How to Submit Comments

Comments may be submitted by one of the three following methods **on or before 10 February 2023**. To help us process and review your comments more efficiently, please use only one method.

Important: All comments will be made available publicly, unless anonymity is specifically requested. Comments will be converted to PDF format and posted on the IOSCO website. Personal identifying information will not be edited from submissions.

1. Email

- Send comments to **k.nathanail@iosco.org**
- The subject line of your message must indicate “*Voluntary Carbon Markets – Discussion Report*”
- If you attach a document, indicate the software used (e.g., WordPerfect, Microsoft WORD, ASCII text, etc) to create the attachment.
- Do not submit attachments as HTML, PDF, GIFG, TIFF, PIF, ZIP or EXE files.

2. Facsimile Transmission

Send by facsimile transmission using the following fax number: + 34 (91) 555 93 68.

3. Paper

Send 3 copies of your paper comment letter to:

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Your comment letter should indicate prominently that it is a ‘*Public Comment on Voluntary Carbon Markets – Discussion Report*’

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Executive Summary

Voluntary markets are markets where entities buy carbon credits to offset some or all of their own carbon emissions. These carbon credits are issued in relation to climate change mitigation projects, either through carbon removals and through emissions reductions – for example, by investing in renewable energy or planting trees. Carbon credits may also be issued for projects that prevent GHG emissions from being released in the atmosphere.

The process for the creation of carbon credits begins with the development of an emissions reduction or carbon removal project.¹ To generate carbon credits, these projects will need to be certified by a standard body such as Gold Standard or Verra. Once projects have been certified, the certification standard body will issue credits and add the credits to a registry. Typically, project developers scope out the projects, obtain funding and physically create the project.² The issued credits may be purchased, traded, and sold to buyers, either over the counter (OTC) through brokers or through exchanges, in either primary or secondary markets.

However, voluntary carbon markets have thus far not yet scaled to their full potential in helping to mitigate climate change. To identify and consider the role of financial regulators in mitigating potential vulnerabilities in these markets, IOSCO has undertaken a fact-finding exercise with exchanges, market intermediaries, academics, market participants and standard setters, from different geographies, as well as IOSCO members.

Many of the concerns raised about voluntary carbon markets relate to market integrity, which can be considered through three different lenses:

- (i) concerns at project level, regarding the environmental integrity of the carbon credits;
- (ii) issues relating to the characteristics of the trading environment in which these credits are transferred from one party to another, and the behavior of market participants in doing so.
- (iii) issues regarding the overall communication around the use of carbon credits by buyers as it could be misleading and therefore leading to a risk of greenwashing.

IOSCO has identified a set of potential vulnerabilities that may merit specific attention. On environmental integrity, the main concern is about the quality of carbon credits, the lack of standardized methodologies to measure additionality of projects, leakage of carbon, and risks surrounding the permanence of the reduction or removal of greenhouse gas emissions. There are also concerns about transparency relating to the methodologies used for calculating emissions reductions and about potential conflicts of interest and lack of transparency relating to the remuneration of both project suppliers and others in the ecosystem. This report asks readers for their views as to whether it would be appropriate for IOSCO to work more closely

¹ Leonard, K. *Quality Enhancement in Voluntary Carbon Markets: Opening Up for Mainstream*; Diplomica Verlag: Hamburg Germany, 2009.

² Chen, Si and Marbough, Dounia and Moore, Sherwood and Stern, Kris, *Voluntary Carbon Offsets: An Empirical Market Study* (December 9, 2021). Available at SSRN: <https://ssrn.com/abstract=3981914> or <http://dx.doi.org/10.2139/ssrn.3981914>

with private initiatives such as ICVCM and VCMI, and if so, what type of collaboration this could entail.

With regards to market structures, the trading environment and the activities of market participants, it is worth noting that, at the moment, there is no regulatory oversight (financial services or otherwise) or framework for the issuance and trading of voluntary credits as there may be in IOSCO member jurisdictions, for example, for bonds, initial public offerings of equity, or derivatives. In addition, there are uncertainties about the legal treatment of carbon credits in some jurisdictions and while there is a general tendency to categorize them as a commodity, this uncertainty is creating challenges in the market. IOSCO's analysis suggests the current lack of standardized documentation of carbon credits also creates challenges for scaling voluntary markets as standardization can help create liquidity and depth in financial markets. Finally, data availability appears to be a concern.

Presently, most jurisdictions do not have direct government or regulatory oversight frameworks for VCMs; with the exception of their derivatives or securities in certain circumstances. Yet, with these markets poised to grow, relevant authorities may seek to develop frameworks that foster the soundness and smooth functioning of voluntary carbon markets.

This Discussion Report (Report) explores these attributes and seeks to advance the discussion about what sound and efficient VCMs should look like and what role financial regulators may play in promoting integrity in those markets.

This report therefore seeks feedback on a potential approach that regulatory authorities and market participants could take to foster sound and well-functioning voluntary carbon markets and, as a consequence, help these markets scale to allow them to achieve their environmental objectives. Our proposed approach has been to outline key regulatory considerations, building on our members' knowledge and oversight of other financial markets – commodities and derivatives markets in particular, and existing good practices and principles for well-functioning markets, such as IOSCO's Objectives and Principles of Securities Regulation (including the derivatives markets). Respondents may wish to consider whether these are fit for purpose for voluntary carbon markets and what else, if appropriate, may be required.

IOSCO has put forward a total of eleven key considerations relating to:

1. Open access
2. Market integrity
3. Publicly available data to promote transparency
4. Price discovery
5. Product standardization/Environmental integrity
6. Interoperability
7. Financial integrity of transactions, including settlement and delivery certainty
8. Legal certainty
9. Governance
10. Conflicts of interest
11. Enterprise risk management

Underpinning these key considerations are toolkits with suggested ways to address each of the key considerations.

The Report is structured around four chapters. Chapter 1 provides a general overview on carbon markets. Chapter 2 describes the current practices of VCMs, both in primary and secondary markets, while Chapter 3 elaborates on the identified vulnerabilities. Finally, Chapter 4 outlines specific considerations which could be relevant for regulators in promoting market integrity in VCMs and help overcome some of the present limits in these markets.

Chapter 1 – Introduction

Market-based mechanisms to support climate change mitigation action find their origins in the 1997 Kyoto Protocol, the first international agreement that sought to operationalise greenhouse gas (GHG) reduction actions. The Kyoto Protocol set a per-country cap for carbon emissions.

Carbon markets aim to reduce GHG emissions by establishing a price on the GHG emissions³ with two types of market-based instruments: (i) emission allowances, which are a tradeable permits to emit one metric ton of carbon dioxide equivalent GHG per allowance, and (ii) carbon credits, which each represent one metric ton of GHGs reduced or removed from the atmosphere. This distinction between these two instruments is important, in part because it affects the type of carbon “marketplace” in which a company may decide to trade. Indeed, there are different types of markets:

- (a) Compliance markets – also called “cap-and-trade” or “Emission Trading Schemes (ETS)” markets, as they are set by “cap-and-trade” regulations at regional, national and state levels. In these markets, carbon allowances are issued by regional, national and international governmental organizations and then are traded in a secondary market. These markets are designed to assist climate policy in promoting emission reductions.
- (b) Voluntary markets – where entities buy carbon credits to offset some or all of their own carbon emissions. These carbon credits are issued in relation to climate change mitigation projects, either through carbon removals and through emissions reductions – for example, by investing in renewable energy or planting trees. Carbon credits may also be issued for projects that prevent GHG emissions from being released in the atmosphere. These markets are largely unregulated at present.
- (c) There is a third type of market, which can be defined as compliance offset market. These are markets falling under Article 6.4 of the Paris Agreement; with the United Nations acting as the supervisory authority. The Clean Development Mechanism under the Kyoto Agreement would previously have fallen into this category.

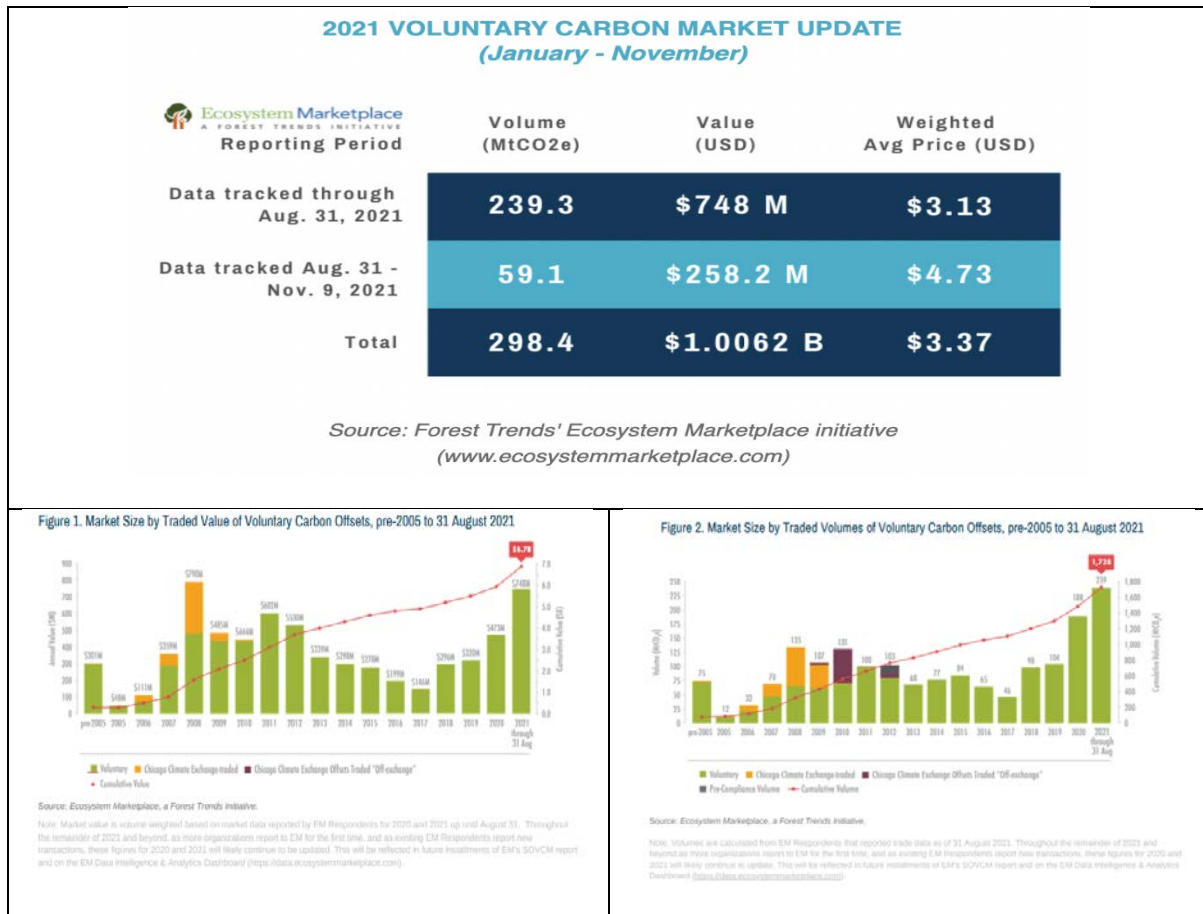
A key difference between compliance and voluntary markets is that compliance markets exist as mandatory schemes, with companies within scope being obliged to redeem emissions allowances to cover their GHG emissions and to participate in the scheme to “pay” for their allowed quota of emissions. On the other hand, voluntary markets allow companies, governments and others to purchase carbon credits on a voluntary basis, typically with the aim of meeting corporate social responsibility goals, or, in some jurisdictions, satisfying a percentage of their compliance obligation under an ETS or under carbon tax regimes. Voluntary markets are also a possible means to offset emissions-producing activities that cannot yet be eliminated or significantly curtailed.

Whilst the compliance market remains the larger of the two, the Taskforce on Scaling Voluntary Carbon Markets (TSVCM) estimated that demand for carbon credits could increase

³ References carbon markets encompass market-based mechanisms related to emissions of all greenhouse gases (GHGs) and not just carbon dioxide (CO₂).

by a factor of 15 or more by 2030 and by a factor of up to 100 by 2050.⁴ Overall, TSVCM said that the market for carbon credits could be worth upward of \$50 billion in 2030 from \$1 billion today, driven in large part by firms' public commitments to net zero emissions.

Chart: growth of the private voluntary markets up to 2021



The voluntary carbon market, as can be seen on the chart above, has fluctuated in size, in part due to international-level negotiations. While a reduction in market size is noticeable after the Paris Agreement was signed in 2015, the value of the Voluntary Carbon Markets (VCMs) has more recently been on an upward trend and reached the \$US 1 billion mark in 2021, with market size, in terms of trading volumes, increasing five-fold since 2017 as long-term net zero commitments increase on the demand side.⁵

Against this backdrop, this report seeks to advance the debate about what sound and efficient voluntary carbon markets should look like and what role financial regulators could play in promoting integrity in those markets.

In addition, it seeks to identify key regulatory considerations stemming from other financial markets – commodities markets in particular – to generate a discussion about appropriate market infrastructure and existing good practices in relation to the functioning of primary and

⁴ “Taskforce on Scaling Voluntary Carbon markets (TSVCM)”. Institute of International Finance, January 2021. https://www.iif.com/Portals/1/Files/TSVCM_Report.pdf

⁵ Ecosystem Marketplace, “State of the Voluntary Carbon Market: 2021 Report”.

secondary markets – both spot and derivatives – as well as the activities of market participants within these markets.

1.1. Other publications

There are significant links between voluntary carbon markets and both compliance emission trading schemes and compliance offset credit markets as a result of Article 6 of the Paris Agreement. As such, the paper should be read in conjunction with the IOSCO Consultation Report on compliance carbon markets, which sets out proposed recommendations for the good functioning of compliance markets.

Chapter 2 – Voluntary carbon markets – current characteristics

2.1. Defining carbon credits

A carbon credit in voluntary markets is a transferable instrument, typically issued by an independent registry, and represents an emission reduction of one ton of CO₂. The holders of this credit can “retire” the credit (i.e., make it unavailable for trading) and, in doing so, can either claim the underlying reduction towards their own net GHG emission reduction goals or claim contribution to climate change mitigation.

In voluntary carbon markets, purchasers will offset their emissions by purchasing the reductions stemming from a third-party climate change mitigation project. Carbon offsets based on projects designed in one place to compensate emissions elsewhere. Carbon credit issuance projects can be very different in nature, from reforestation and conservation to renewable energy, and many others.

These carbon credits – and the projects underpinning them – are typically grouped in two categories:

- a) Reductions or avoidance – whereby the projects underpinning the credit either aim to limit the loss of natural resources by preventing the release of GHG emissions into the atmosphere and/or help reduce the amount of GHG in the atmosphere to stay within carbon targets, fund the transition to renewable energies and ultimately mitigate climate change.
- b) Removal and sequestration – whereby the projects underpinning the credit use natural resources or technology to sequester carbon (e.g., reforestation projects) or to remove it (e.g., by investing in technology that filters CO₂ out of the atmosphere).

On the basis of these characteristics, offsetting can therefore be defined as: “...*The compensation for an entity’s greenhouse gas emissions within its scope by achieving an equivalent amount of emission reductions or removals outside the boundary or value chain of that entity*”.⁶ In addition, a carbon credit is defined by the ICVCM as “*a tradable financial instrument that is issued by a carbon-crediting program. A carbon credit represents a greenhouse gas emission reduction to, or removal from, the atmosphere equivalent to one metric tonne of carbon dioxide equivalent, calculated as the difference in emissions from a baseline scenario to a project scenario. Carbon credits are uniquely serialized, issued, tracked and retired or administratively cancelled by means of an electronic registry operated by an administrative body, such as a carbon-crediting program*”.⁷

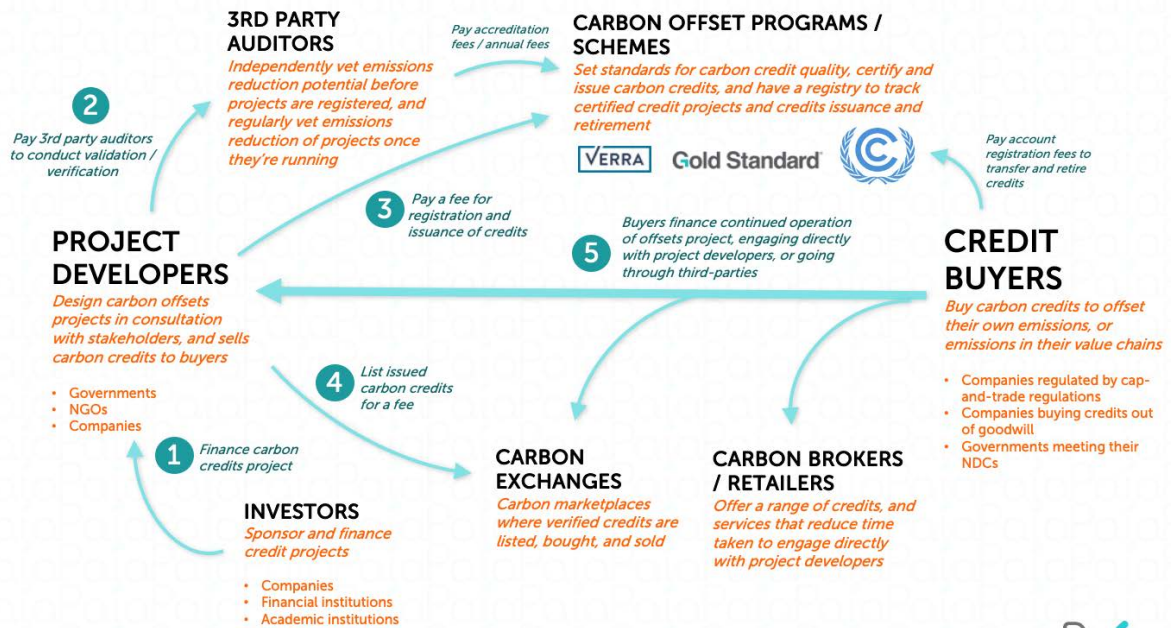
2.2. The process for issuing a carbon credit and key market participants

The chart below provides an overview of the functioning of VCMs and the interlinkages between the various market participants in the market:

⁶ <https://icvcm.org/wp-content/uploads/2022/07/ICVCM-Public-Consultation-FINAL-Part-5.pdf>

⁷ <https://icvcm.org/wp-content/uploads/2022/07/ICVCM-Public-Consultation-FINAL-Part-5.pdf>

The Carbon Credits Ecosystem



Paia

Source: Paia Consulting⁸

As can be seen from the chart, the process for the creation of carbon credits begins with the development of an emissions reduction or carbon removal project.⁹ Typically, project developers scope out the projects, obtain funding and physically create the project.¹⁰ Stakeholders such as auditors or label organization can certify the reliability and robustness of the projects.

To receive carbon credits, these projects will need to receive certification through a certification standard body such as Gold Standard or Verra. Certification fees are typically paid by the project developers. To receive certification, the project will need to meet certain specifications dependent upon the methodology used by the certification body. In many circumstances, the project will need to demonstrate qualities such as additionality, permanence, and independent auditing, to name but a few.

Each credit has a specific vintage year, which is the year in which the emission reduction occurred, and a specific issuance date, which is when the credit will be available on the market. Given the length of the certification and verification processes, offsets may be issued years after the carbon reduction took place. Beyond their primary objective, they may also contribute to other aspects of the UN's Sustainable Development Goals (SDGs). For example, they may

⁸ <https://paiaconsulting.com.sg/carbon-offsets-and-credits-explained/>

⁹ Leonard, K. Quality Enhancement in Voluntary Carbon Markets: Opening Up for Mainstream; Diplomica Verlag: Hamburg Germany, 2009.

¹⁰ Chen, Si and Marbough, Dounia and Moore, Sherwood and Stern, Kris, Voluntary Carbon Offsets: An Empirical Market Study (December 9, 2021). Available at SSRN: <https://ssrn.com/abstract=3981914> or <http://dx.doi.org/10.2139/ssrn.3981914>

contribute to improve welfare for the local population, better water quality, the reduction of economic inequality, or help channel climate investment towards developing economies.

Once projects have been certified, the certification standard body will issue credits. It will then add carbon credits to a registry of the projects they have certified. The aim of such registry systems is to provide transparency to the market on the credits issued and to record transactions to mitigate the risk of double counting of carbon credits.

At this point, the issued credits may be purchased, traded, and sold to buyers, either over the counter (OTC) through brokers or through exchanges, in either primary or secondary markets.

Given the difficulty in assessing projects, certification companies have also emerged as a key player. These certification companies¹¹ are typically different from those that currently issue ESG ratings, noting that rating providers also exist for offset projects.¹² These companies will certify voluntary carbon credits based on their review of the underlying project. They provide further insights into the mitigation projects' integrity and adherence to specific standards and can ease market participants' concern over carbon credit quality. They will typically consider criteria such as performance of the project and reporting compliance, additionality, permanence (they will use for example satellite data to confirm areas of forestry preservation or reforestation), co-benefits of the projects, etc. A good practice is also to continue auditing the project throughout its lifecycle to check its robustness and impact.

A carbon credit purchaser can decide to retire the credit as it uses it to offset its own emissions or to promote one's contribution to climate change mitigation efforts. After a carbon credit has been retired, it cannot be traded again¹³ - including on the secondary market. Final buyers or end-users are typically private companies or NGOs that purchase carbon credits to offset their GHG emissions or to make a contribution to climate change mitigation efforts. Efforts by private companies to offset emissions are often driven, at least in part, by commitments they have made to achieve objectives such as "net-zero" or "carbon neutral". When the final buyer declares that the carbon credit has been retired to offset their GHG emissions, this must be recorded in the registry of the certification standards organization that initially approved the issuance. It is worth noting that Article 6 of the Paris Agreement makes it possible for governments to buy voluntary carbon credits as long as Article 6 rules are respected – further announcements are expected from the United Nations on the practical aspects of such implementation and will likely impact the functioning of the voluntary markets over time.

Issuances, which have outpaced retirements every year, have begun to dramatically outstrip them, resulting in an increasingly high surplus of voluntary credits. This may be because they are unsold, held by traders or held by end users for future use. One of the major drivers behind this is perhaps the assumption that the global carbon price will converge toward the range of \$US50 to \$US100 per tonne of carbon dioxide by 2030.¹⁴ This is the price range estimated as necessary to achieve the Paris Agreement's goal of limiting global warming to 2 degrees. The absence of retirement of carbon credits by corporates could create issues over time with regards

¹¹ One example of such a company is SustainCert which was founded in 2018 by the Gold Standard Foundation.

¹² These include companies such as Sylvera or Calyx Global.

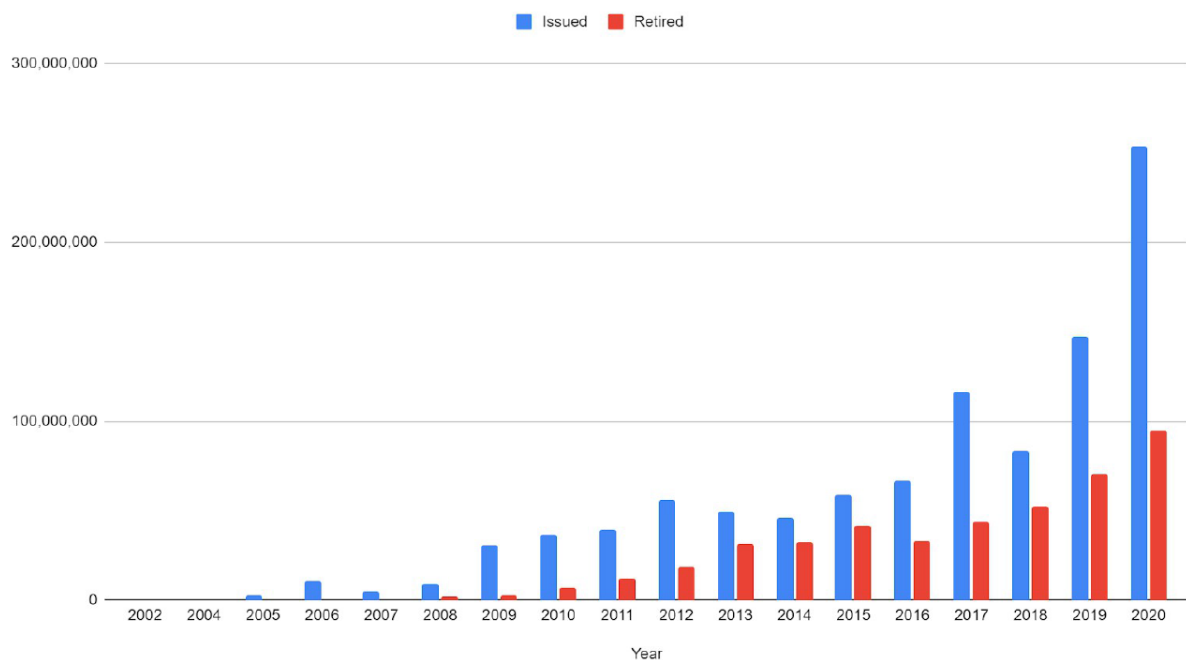
¹³ Chen, Si and Marbough, Dounia and Moore, Sherwood and Stern, Kris, Voluntary Carbon Offsets: An Empirical Market Study (December 9, 2021). Available at SSRN: <https://ssrn.com/abstract=3981914> or <http://dx.doi.org/10.2139/ssrn.3981914>

¹⁴ <https://www.ecosystemmarketplace.com/publications/state-of-the-voluntary-carbon-markets-2021/>

to the pricing of carbon credits as it could lead to oversupply if credits are not retired. Should the supply side be greater than the demand side, the price of the carbon credits could drop as happened in the EU compliance market in 2008-2012. The differential between the spot price of \$4.08 and the forward price of \$3.57 in 2021 suggests this could happen.¹⁵

Consultation Questions:

Question 1: Is our description of the issuance of carbon credits accurate? Have we properly reflected all key market participants?



Source: Chen, Si and Marbough, Dounia and Moore, Sherwood and Stern, Kris, *Voluntary Carbon Offsets: An Empirical Market Study* (December 9, 2021).

2.3. Secondary market trading

As noted above, once a credit has been issued, it can either be retired by its initial buyer or brought to the secondary market. Most trading of carbon credits is currently executed via OTC markets with little public pricing information available. While the relatively small size of the

market in part might explain the high share of OTC trading, the lack of standardization in the credits is also an important component. (See Chapter 3)

For this reason, financial intermediaries play an important role in facilitating trades between buyers and sellers. Intermediaries can pool different orders to facilitate trading activity, provide

¹⁵ https://static1.squarespace.com/static/54ff9c5ce4b0a53deccfb4c/t/59b7f2409f8dce5316811916/1505227332748/CarbonPricing_FullReport.pdf

clients with market information not readily accessible to many participants, and provide liquidity by bridging the gap between bids and offers.

Financial intermediaries are brokers that will typically charge a commission for their services in similar ways as they do in other financial markets. They are traditionally investment banks, although other market participants include investment funds, and speculators that purchase and sell emission reductions to take advantage of market-price distortions and arbitrage possibilities.¹⁶

Nonetheless, with the growth in derivatives products linked to carbon credits, a number of exchanges have started to become more active as platforms for these products, both spot instruments and their derivatives. U.S.-based exchange Xpansiv CBL claims to be the largest VCM exchange in terms of volume, noting they also have a large Australian presence in addition to the US market, while others such as AirCarbon Exchange and Climate Impact X have significant operations in Singapore.

Derivatives exchanges both in the United States and elsewhere have announced plans to scale up their activities. For example, the CME and Nodal Exchange, CFTC-registered derivatives exchanges listed voluntary carbon offset derivatives contracts on June 17, 2022,¹⁷ while in Europe, EEX has announced plans to launch a VCM trading platform in 2022 and the LSE has recently launched a Voluntary Carbon Market designation for eligible issuers admitted to trading on the main market or AIM. ICE Futures Europe has also launched futures contracts based on carbon credits.

In jurisdictions where voluntary carbon markets are less established, noteworthy developments include (i) a trial project for the establishment of a carbon credit exchange in Japan, (ii) a memorandum of understanding (MoU) between Hong Kong Exchanges and Clearing Limited (HKEX) and the Guangzhou-based China Emissions Exchange (CEEX) to explore the development of a voluntary carbon emission reduction programme in the Guangdong-Hong Kong-Macao Greater Bay Area with the aim of supporting China's efforts to peak emissions by 2030 and reach carbon neutrality by 2060,¹⁸ (iii) the attempt to develop spot and derivatives markets in Abu Dhabi, where AirCarbon has filed an application to launch its Recognised Investment Exchange and Recognized Clearing House operations, for voluntary carbon markets and (iv) Malaysia's commitment to establish a voluntary carbon market operated by Bursa Malaysia Berhad, an integrated exchange operator regulated by SC Malaysia.

Chapter 3 – Potential vulnerabilities

Some vulnerabilities in voluntary carbon markets have thus far prevented these markets from scaling to their full potential, while others can be of concern for regulators in their efforts to

¹⁶ Chen, Si and Marbough, Dounia and Moore, Sherwood and Stern, Kris, Voluntary Carbon Offsets: An Empirical Market Study (December 9, 2021). Available at SSRN: <https://ssrn.com/abstract=3981914> or <http://dx.doi.org/10.2139/ssrn.3981914>

¹⁷ The contracts cover a range of offset standards and project types. The product group includes: Voluntary Emission Reduction (VER) CORSIA-eligible Futures and Options; Verified Emission Reduction Nature-based (Base and Vintage) Futures and Options; Carbon Removal Futures, and Global Emission Reduction (GER) Futures contracts, which Nodal Exchange launched in cooperation with NetZero Markets.

¹⁸ https://www.hkex.com.hk/News/News-Release/2022/220324news?sc_lang=en

counter the risk of *greenwashing*. Many of the concerns raised about voluntary carbon markets relate to market integrity, which can be considered through three different lenses:

- (i) concerns at project level, regarding the environmental integrity of the carbon credits;
- (ii) issues relating to the characteristics of the trading environment in which these credits are transferred from one party to another, and the behavior of market participants in doing so;
- (iii) issues regarding the overall communication around the use of carbon credits by buyers as it could be misleading and therefore leading to a risk of greenwashing

3.1. Carbon credit integrity concerns at issuance

3.1.1. Carbon credit quality

At present, there is no uniform definition of a “high quality carbon credit” which contributes to the perception of lack of integrity in VCMs. Some factors that are generally used to determine carbon credit quality are: additionality, avoidance of double counting, avoidance of carbon leakage, permanency, verification, co-benefits¹⁹ and transparency.²⁰

Some of these concerns linked to carbon credit quality are discussed in greater detail below, noting that these aspects are currently being considered by private initiatives on the supply side. The Integrity Council for the Voluntary Carbon Market (ICVCM) has recently consulted on a proposal for core carbon principles and an assessment framework that will establish threshold quality criteria for a verified ton of carbon, aligning credits to the highest levels of environmental and market integrity.²¹

3.1.1.1. Additionality and lack of standardized methodology to calculate the baseline scenarios
The so-called “baseline scenario” is the level of emissions that would have occurred absent the reduction programs. Without a standardized methodology to calculate these baseline scenarios, assessing the additionality of an offset project is complicated and arbitrary, which consequently can challenge its precision, faithfulness and validity.

3.1.1.2. Permanency and risk of reversal

In terms of temporality, reducing emissions elsewhere rather than at home is indeed equivalent if the project financed leads to an immediate reduction in emissions. But this is not true, for example, when the carbon credit comes from a forestry project: the sequestration of CO₂ takes place over decades of tree growth, and not on the date of purchase of the credit. Moreover, it is never guaranteed that the stored carbon will remain in place (i.e., in the tree) for a sufficiently long period of time, as forests are never safe from climatic hazards (fires, violent winds...), diseases or deforestation linked to human activity.

Hence, permanence of GHG reductions or removals is a necessary requirement for offset projects to serve their ultimate goals. Carbon offsets must represent the sequestration of carbon kept out of the atmosphere essentially on a permanent basis. As a significant amount of carbon

¹⁹ According to McKinsey’s, such projects can have additional benefits (co-benefits) such as biodiversity protection, pollution prevention, public-health improvements, and job creation.
<https://www.mckinsey.com/business-functions/sustainability/our-insights/a-blueprint-for-scaling-voluntary-carbon-markets-to-meet-the-climate-challenge>

²⁰ Leonard, K. Quality Enhancement in Voluntary Carbon Markets: Opening Up for Mainstream; Diplomica Verlag: Hamburg Germany, 2009.

²¹ <https://icvcm.org/public-consultation/#key-resources>

offsets are sourced from agriculture, forestry, and other land use projects, there are concerns that these offsets may only last for a certain period of time, instead of indefinitely. For example, with the increased frequency of wildfires, there is a concern that regulators need to account for the possibility that these offsets may not be permanent. Although difficult to implement, there is general agreement that higher levels of permanence or long-term efficacy contribute to enhance the integrity of VCMs.

3.1.1.3. Collateral effects and risk of leakage of GHG emissions

Carbon offset projects may entail collateral effects such as a shift in pollution. For example, forest conservation projects can incentivize agriculture displacement into other regions which can neutralize the effects of the offset project.

3.1.2. Double counting and absence of centralized registries

Voluntary carbon credits are recorded on different registries depending on the certification standard body which has issued the credit.

This can lead to issues such as double counting²² as the projects may be recorded on several registries that do not speak to one another. In addition, there are still questions about how and whether a credit can be used by a corporate and simultaneously claimed against a country's national determined contributions (NDC).²³ This is an important factor as a carbon credit is only meaningful if counted once. The development of meta-registries and rules surrounding GHG accounting could mitigate this lack of robust infrastructure in the medium term, as will clarification about the operationalization and application scope of corresponding adjustments under Article 6 of the Paris Agreement.

3.1.2.1. Sale of carbon credits that either do not exist or belong to someone else

While centralized carbon registries can help prevent double counting, the intangible nature of carbon credits carries an additional risk of fraudulent transactions—e.g., the selling of carbon credits that do not exist or do not belong to the seller.²⁴

This type of fraudulent activity is possible because there is no physical indication of the holder of the carbon rights other than a record maintained in a registry; therefore, someone can use forged documents to account for carbon credits that do not exist because the offset project has not been developed to that extent or to claim ownership of a credit that belongs to someone else.

The use of cross-border transactions makes it more challenging to detect or prevent fraudulent behaviours. Therefore, the existence of a global centralized registry that enables better

²² Double counting occurs when two parties claim the same carbon removal or emission reduction. Commonly, the two parties claiming are an organisation offsetting its emissions and the host country of the offset project to reach its national determined contribution (NDC) under the Paris Agreement.

²³ The United Nations defines NDCs as: " NDCs are where countries set targets for mitigating the greenhouse gas emissions that cause climate change and for adapting to climate impacts. The plans define how to reach the targets, and elaborate systems to monitor and verify progress so it stays on track. Since climate finance is key to implementing the plans, NDCs ideally also detail a financing strategy." Available at <https://www.un.org/en/climatechange/all-about-ndcs>

²⁴ Guide to carbon trading crime - Interpol (2013)

monitoring of international transactions can help to reduce these risks and contribute to enhance market integrity.

3.1.3. Transparency and accuracy of emissions reduction's calculation

There are different methodologies to quantify the carbon avoided or reduced, with little agreement on which methodology is most appropriate even within specific project types. This poses risks for greenwashing and creates difficulties for potential buyers in assessing which carbon credits to purchase. Greater transparency on methodologies could assist potential buyers, as it would give them the tools necessary to make their own decisions about the validity of the carbon credit.

3.1.4. Verification and oversight

VCM credits are issued by non-governmental carbon certification standard bodies. Each carbon standard has a unique methodology that projects must follow in order to be certified.

At this time, there is no specific regulatory framework nor guidance on the issuance of credits as there may be, for example, for the issuance of bonds or for initial public offerings of equity.²⁵ Standardized verification methodologies in VCMs and/or the development of labels²⁶ could therefore increase credibility and transparency. Such verification should be implemented *ex ante* as well as *ex post*.

3.1.5. Transparency and conflict of interest

There may be a lack of transparency in the remuneration of both offset project suppliers; how much money ends up financing the reduction project and the remuneration mechanisms of the certification bodies.²⁷ As such, a good practice could be to produce regular and accurate reporting on the deployment and real impact of the projects that lead to the delivery of carbon credits.

In addition, there may be conflicts of interest between traders and investors, which could lead to traders manipulating carbon credits prices by, for example, issuing buy/sell recommendations to their customers, while doing the opposite with their own carbon credits. Another way to manipulate carbon credit prices is through the adjustment of commodity indexes. Finally, derivatives traders can also be responsible for generating carbon credits through offset projects which can imply a conflict of interest as they will have an additional incentive to increase carbon credit demand by issuing buy recommendations.²⁸

These practices can constitute securities fraud. According to the Interpol Guide to Carbon Trading Crime, “*securities fraud involves deceptive practices in the carbon market in violation of securities laws that induce investors to make decisions to purchase or sell credits on the basis of false information, frequently resulting in losses*”.

²⁵ *ibid*

²⁶ See for example the French low carbon label that defines rules and conditions for a project to be environmentally robust.

²⁷ Leonard, K. *Quality Enhancement in Voluntary Carbon Markets: Opening Up for Mainstream*; Diplomica Verlag: Hamburg Germany, 2009.

²⁸ Guide to carbon trading crime - Interpol (2013)

3.1.6. *Interaction with private initiatives*

Voluntary carbon markets have thus far been endeavors led by private market participants. As a result, market-led initiatives have been created to promote the growth of voluntary carbon markets in a bid to accelerate a transition to 1.5 degree Celsius.

Many of these initiatives address aspects of environmental integrity and have focussed on seeking to mitigate current perceptions of poor quality for the carbon credit, intending to set threshold standards for carbon credit quality. In addition, these initiatives seek to enhance standardization of carbon credits and therefore, move towards the commoditization or financialization of these assets to build credible financial instruments.

While IOSCO is focused on market infrastructure and the behavior of market participants in seeking to promote integrity of voluntary carbon markets, this is only one part of the overall change needed in voluntary carbon markets to ensure sound and well-functioning markets in which investors can trust.

Consultation Questions:

Question 2: Has the consultation identified the relevant vulnerabilities? Are there any others that should be considered? Please explain.

During IOSCO's roundtables, key stakeholders and industry participants, expressed some concerns with respect to the lack of coordination between environmental regulators and securities markets regulators, highlighting the need for better coordination of industry-specific organizations and global standards.

Question 3: What kind of role could IOSCO play in coordinating the actions of industry-specific organizations and public authorities?

Question 4: How do you think IOSCO should achieve these objectives?

Question 5: Should IOSCO seek to collaborate more closely with these private initiatives? How might such a collaboration function?

3.2. Issues relating to carbon credit market structure and participant behaviour.

3.2.1 *The lack of legal clarity*

There is no common understanding on the nature of carbon credits as traded instruments (e.g., in the US these are considered commodities, whereas in the Japanese framework it is not yet clear). The general tendency is to categorize carbon credits as a commodity, but the uncertainty about the applicable regulatory framework and the competent authorities will depend on the legal nature of the credits. For example, carbon credits would not be qualified as financial instruments under EU legislation while emission allowances are. As such, the legal qualification of carbon credit will determine whether the financial market regulators will be competent at regulating and supervising the spot market of such credits. Derivatives on such underlyings would however fall within the remit of financial regulators.

Similarly, there may be merit in seeking to harmonize the definition or scope across jurisdictions as this will be an important enabler for scaling voluntary carbon markets at global level.

Consultation Questions:

Question 6: What, in your view, is the legal nature of an offset credit? Should IOSCO recommend a specific approach to relevant authorities?

3.2.2 The lack of standardization for carbon credits

A familiar concept in financial markets is that standardization helps create liquidity and depth, thereby allowing for scale and accelerating growth. This feature is currently lacking in carbon credit markets. While projects vary based on their environmental impact as well as on the methodology used to certify them, carbon credit buyers also may have bespoke requirements. This adds complexity to the process and makes standardization particularly challenging.

In that same context, the pricing of carbon credits varies widely according to the type of project (e.g. renewable energy vs. forestry). Several other variables also contribute to how a carbon credit is priced for primary market issuance, including: (i) size of the project; (ii) location of the project; (iii) vintage year;²⁹ and (iv) which certification standard body has certified the project.

Standardising at least some of the attributes sought by carbon credit purchasers in a common taxonomy could help price these attributes and facilitate transactions between buyers and sellers. Some exchanges have been developing more standardized products, notably in the derivatives market. Xpansiv has, for example, developed the Global Emission Offset (GEO) contract, which is a product whereby a seller must physically deliver a credit underpinned by specific project characteristics, while CME group developed a futures contract based on that GEO product.

As they have done in other markets, the International Swaps and Derivatives Association (ISDA) is currently seeking to develop derivatives documentation templates for secondary market trading in VCMs.³⁰ This could further support standardization.

3.2.3 Data availability

²⁹ Older projects are typically priced lower. Additionally, given the length of the certification and verification processes, offsets may be issued years after the carbon reduction took place. An action happens, carbon is avoided or reduced, and that reduction is verified by a third party, typically at the end of the calendar year. The vintage year is the year when the carbon reduction takes place, the issuance year refers to the year when the carbon offset is actually issued. Some projects will issue offsets every year while others in multi-year increments. See Chen, Si and Marbough, Dounia and Moore, Sherwood and Stern, Kris, Voluntary Carbon Offsets: An Empirical Market Study (December 9, 2021).

³⁰ ISDA Responses to UK's Climate Change Committee Call for Evidence on Carbon Offsets (Mar. 9, 2022).

Data remains a challenge. Given that credit issuance is project-based, there currently exists little high-quality granular data to support pricing and risk assessment for particular carbon credits.

There are several data providers focussing on project registration, with some primary market issuance data. Where data is available, it is limited to high level metrics around volumes and abatement metrics.³¹ On the trading side, some price reporting agencies have begun providing services in offset markets.

The role of new technologies - blockchain and tokenised credits

The use of blockchain and tokenised credits are beginning to be explored for use in voluntary carbon markets. In Europe, there has been an emergence of tokenised carbon credits, featuring bridges (e.g., Toucan), DeFi market places (e.g. KlimaDAO) and underlying DLT (e.g. polygon). In the US, examples of tokenized carbon credits include MCO2 (Moss), TCO2 and BCT (Toucan), Klima (KlimaDao), Regen (Regen Network), and GCO2 and GNT (Flow Carbon not yet trading). In the UK, several financial institutions are building a platform for the settlement of trades in the voluntary carbon market. This platform will operate on distributed ledger technology with the aim to facilitate simple and secure transfer of credits.

This could create more market liquidity, make carbon credits easier to trade, and facilitate price discovery by increasing transparency. At the same time however, there are risks associated with blockchain in this market, including:

- (i) potential exposure of investors (including retail ones) to significant price volatility, while the complexity of the product makes it difficult to understand this risk;
- (ii) carbon credit quality remains an issue which blockchain does not currently mitigate and may even worsen;
- (iii) if not properly constructed, competing tokenization projects may result in double-counting credits;
- (iv) blockchain mining, especially that associated with proof of work schemes, can create its own GHG emissions and environmental impacts.

In addition, the tokenization of carbon credits via a blockchain (especially when it operates under a proof-of-work consensus mechanism which is highly energy-intensive) may seriously undermine the credibility of project developers that issue those carbon credits and certification standards bodies certifying such credits given the drain on the environment such energy-intensive mechanisms can have.

For most projects, participants create a non-fungible token (NFT) by bridging credits from a registry to a token. Participants purchase carbon credits held in a registry, providing the

³¹ Examples of registries are American Carbon Registry, CDM, City Forest Credits, Climate Action Reserve, Climate Forward, Coalition for Rainforest Nations, EcoRegistry, Gold Standard, Plan Vino, ProClima and VERRA.

registry with their retirement account, and specifying that the credits are destined for a given token. The registry provides a specific serial number associated with the retirement. The participant can then lock up the NFT into a generic carbon removal pool. Trading can occur on centralized or decentralized exchanges.

It is notable that Verra has prohibited the tokenization of retired credits on the basis that the act of retirement is widely understood to refer to the consumption of the credit's environmental benefit. It has launched a consultation on a tokenization mechanism that would allow credits to be immobilized instead of retired when shifting the credit to a tokenized platform.³² The tokenization of retired credits is especially of concern to the carbon markets industry. Retiring a credit means that environmental benefits were consumed such that these credits cannot be traded anymore. A valid approach, on the contrary, could be the tokenization of the legal ownership of unretired credits. However, there would be a need to ensure tokenization does not undermine efforts to improve credit quality and transparency would be required on the identity of the end-user of the credits to ensure there is a good understanding of which carbon credits are retired by companies.³³

It should also be noted that, where decentralized technology is used, authorities will also need to ensure they have the appropriate resources and know-how to effectively supervise DLT-based infrastructure.

Consultation Questions:

Question 7: What is the role of blockchain and distributed ledger technology in voluntary carbon markets?

Question 8: What are the benefits and vulnerabilities of using tokenization over relying on more traditional market infrastructure? Do these benefits outweigh how energy-intensive the use of blockchain is?

3.3. Issues regarding the overall communication around the use of carbon credits

As the use of carbon credits is often part of a broader sustainability strategy, it is important that buyers demonstrate transparency on their approach, their emissions and their actions. As the Paris Agreement clearly states that the priority to reach international climate-related objectives is to reduce GHG emissions before compensating them, it is key to differentiate actions that relate to reduction of GHG emissions from actions that aim at compensating them (i.e., carbon credits). Responsible communication around the use of carbon credits should aim to avoid confusion about their true impact and their limits.

More specifically, once a project has been selected, it is also important to be able to track its implementation and effectiveness in light of objectives announced and to detect misleading claims regarding its environmental or financial benefits. A best practice in this field could be

³² Verra Addresses Crypto Instruments and Tokens, May 25, 2022), <https://verra.org/verra-addresses-crypto-instruments-and-tokens/>

³³ [09-2022-Crypto-Assets-and-Climate-Report.pdf](https://www.whitehouse.gov/wp-content/uploads/2022/09/2022-Crypto-Assets-and-Climate-Report.pdf) (whitehouse.gov)

to make available in a clear and accessible way the elements justifying the communications made around the impact of each carbon credit.

Indeed, the risk of unclear and misleading communication is to fall, even involuntarily, into a greenwashing approach that would not help the market to build its credibility.

There are already examples in some jurisdictions of the establishment of Ponzi schemes using misleading advertising campaigns or investment advice.³⁴

Consultation Questions:

Question 9: Should IOSCO recommend good practices regarding transparency on the use and impact of carbon credits by market players?

³⁴ Guide to carbon trading crime - Interpol (2013)

Chapter 4 – Regulatory considerations

With VCMs poised to grow and continue to serve a range of financial and social objectives, relevant authorities may seek to develop frameworks that foster VCMs' soundness and smooth functioning. VCMs, as with any other traded asset market, should be fair and functional, providing appropriate consumer protections, economic soundness as to pricing and information flow, and structural resilience. Existing traded asset markets with deeper histories of operation and activity can offer lessons and insights into features that have been successful in promoting sound markets.

Characteristics that have tended to contribute to well-functioning markets include:

- open and accessible;
- free from abusive, fraudulent, manipulative, evasive, or disruptive activity;
- baseline of quality and integrity of the traded asset;
- appropriately and efficiently reflecting the supply and demand for the traded asset;
- sufficiently liquid; and
- adequate levels of transparency, with appropriate recordkeeping and reporting.

Presently, most jurisdictions do not have direct government or regulatory oversight frameworks for VCMs. Whilst some countries subject voluntary markets to financial services regulation, in most countries only derivative contracts and participants in derivatives markets appear to be subject to regulatory oversight, as derivatives typically fall under the scope of financial markets regulators. However, there may be merit in considering whether similar or analogous considerations, principles, and standards applicable to financial markets should be applicable to these markets. In this context, some of the IOSCO's Objectives and Principles of Securities Regulation³⁵ (understood to include reference to the derivatives markets³⁶) and the IOSCO Principles for the Regulation and Supervision of Commodity Derivatives Markets may be conducive to well-functioning voluntary markets.

Some more specific considerations are listed below, which could be relevant for regulators contemplating frameworks to promote market integrity in VCMs and help overcome some of the present limitations of these markets. These features stem from best practices developed in other, regulated traded markets. Ultimately, they can contribute to frameworks that would promote a fair, efficient, stable, and liquid market for carbon credits, one that accurately reflects supply and demand conditions and provides market participants with sufficient transparency and publicly available data. To encourage the development of sound and efficient VCMs globally, key considerations below are intended to give jurisdictions a starting point and may be considered proportionally at different stages of market evolution.

Key considerations include the following:

(i) Open access

Key consideration 1: A key consideration for VCMs is the degree to which, and how, to allow for open, broad market participation.

³⁵ <https://www.iosco.org/library/pubdocs/pdf/IOSCOPD561.pdf>

³⁶ <https://www.iosco.org/library/pubdocs/pdf/IOSCOPD358.pdf>

Appropriately broad access to a trading market by buyers and sellers tends to promote price efficiency and fairness, liquidity, and transparency, among other things. Operationally, implementing fairness and access rules in over-the-counter (OTC) markets that are more decentralized can be more challenging. By contrast, access and eligibility rules could be more easily applied by centralized trading platforms. A significant degree of trading in carbon credits currently occurs off-exchange, so that only the parties to the transactions know of the transactions' existence and terms. Moving these transactions to centralized trading platforms in VCMs could promote access by participants meeting appropriate suitability criteria, and supply market participants with greater knowledge about the transactions and terms. VCMs may consider incorporating criteria and procedures for membership that are robust, impartial, transparent, and non-discriminatory.

Toolkit: With regards to participant access, the following precepts may apply:

- a. The criteria to access carbon offset spot trading platforms or exchanges offering offset derivatives should be clearly stated, not unduly burdensome, fair, and fairly applied.
- b. Appropriate participation rules, standards, and practices, including minimum financial resource criteria, should be developed and implemented.
- c. Broader participation (including sellers and buyers, intermediaries, FMIs, project developers, offset issuers, certification firms) promotes the development of liquidity and price discovery.
- d. Fees to access a market should be fair, open, and non-discriminatory.
- e. Procedures as to denying, suspending, or permanently barring a market participant's access should be fair and transparent.

(ii) Market Integrity

Key consideration 2: A key consideration for VCMs is how to ensure that the market has sufficient integrity to operate without fraud, manipulation, or disruption.

Key consideration 3: A related key consideration for VCMs is how to provide market participants with sufficient liquidity and price discovery to execute trades on a timely basis with minimal price dislocation.

Orderly markets apply measures aimed at protecting market participants and the public by fostering markets free from manipulative and disruptive conduct. VCMs may benefit from rules and practices that help ensure that legitimate transactions and fundamental supply and demand information are accurately reflected in market prices. Deterrence of improper and abusive conduct promotes confidence in market prices and enables the market to operate more efficiently. Orderly markets tend to demonstrate a regular process of economically-grounded bids and offers and the smooth execution of transactions. Surveillance and enforcement also remain key considerations.

Toolkit: The following measures may be considered as ways to foster fairness and prevent fraud, manipulation, and abusive practices.

- a. Provide market participants with transparent rules, policies and procedures such as:
 - i. Fees including any ancillary services, discounts, rebates and third-party service providers.

- ii. Criteria for issuing offsets.
- iii. Criteria for market participants seeking to connect to trading platform or other VCM infrastructure entity.
- iv. Dispute resolution procedures.
- b. Conduct market surveillance and trade monitoring to identify fraud, manipulation, price distortion, and/or other market disruptions.
- c. Implement rule enforcement programs with disciplinary mechanisms to discourage trading practice violations including fines to deter recidivism.
- d. Ensure that such programs have adequate staffing and resources to detect and investigate rule violations including a chief compliance officer or chief regulatory officer.
- e. Implement rules and systems for relevant reporting, recordkeeping, and audit trail.
- f. Support market participants in meeting compliance requirements, e.g., KYC/AML.
- g. Implement risk controls for trading.

(iii) Publicly Available Data to Promote Transparency

Key consideration 4: A key consideration for VCMs is how to promote transparency by ensuring that market participants have sufficient data publicly available.

Open, informed, competitive trading enhances price transparency and market efficiency. Appropriate transparency mitigates risks from informational advantages for some market participants, instead allowing for prices and other transaction terms to be accessible to all market participants who can then compare, assess, accept, or reject them.

Appropriate transparency can increase market liquidity by reducing information asymmetry and providing disclosure of trading interest, as well as improve price discovery by promoting competition among market participants. . A lack of transparency contributes to market frictions, which in turn can translate into higher transaction costs and impact equilibrium prices. Moreover, transparency creates more efficient markets, where market participants may take into account the price at which recent transactions have occurred when determining at what price to display quotes or orders or whether to accept an offer. In addition, appropriate market transparency can provide incentives for new participants to enter the market, increasing competition and reducing concentration.

Toolkit: the following precepts may apply when considering issues related to ensuring appropriate levels of transparency:

- a. VCMs may provide access to fundamental market data relating to the supply of carbon credits in the market.
- b. the appropriate level of confidentiality of carbon credit trading and position information balanced against the amount of data necessary to enable proper market surveillance and pre-trade price discovery could be considered.

Key consideration 5: Another key consideration concerns how relevant VCM participants may disclose their use of carbon credits in their financial reporting.

VCM market participants that rely on carbon credits to offset their emissions to achieve net-zero emissions will either voluntarily disclosure or, when material to their financial statements, would be required to disclose characteristics and financial statement effects of the carbon credits they purchase to achieve their emissions reduction and/or avoidance goals. Standardized disclosure that is accurate, transparent, and complete will assist the stakeholders that rely on these disclosures to understand and contrast or compare the use of carbon credits across individual firms, sectors, regions, and time horizons. Disclosures should provide investors with transparency related to the actual emissions output and how much of that actual output is artificially reduced by carbon credits. This is an important consideration as inadequate disclosure of the use of carbon credits rather than actual emissions reductions to achieve an issuer's net-zero targets could lead to lack of trust and reputational risk for a VCM, including carbon credit purchasers that use carbon credits to offset their emissions to achieve their net-zero initiatives.

Toolkit: If relevant authorities or sustainability reporting standard setters are considering issues related to recognition, measurement, and disclosures by participants of their use of carbon credits, disclosures could address:

- a. Whether and to what extent a participant will rely on credits to achieve climate pledges.
- b. Whether and to what extent a participant will rely on credits that have been issued under the certification of a body authorized to do so under Article 6 of the Paris Agreement.
- c. Whether and to what extent participants will rely on credits that have been issued under certification by an industry body, which body, and whether that body claims to comply with prevailing standard for high-integrity carbon offsets (*ex.*, the Core Carbon Principles to be issued by the Integrity Council for the Voluntary Carbon Market (ICVCM) for the supply side, any other private-sector carbon offset standards body for demand side of the VCM, and/or intergovernmental bodies).
- d. How the market participant assesses the carbon credit(s) to operate having regard to: impact; additionality; permanence; and risk of leakage.
- e. Whether the market participant has used the credit faithfully to offset residual emissions only but not to abuse the use of credits to maintain business as usual.
- f. How participants accounted for existing carbon credits purchased, including standards and assumptions used.

(iv) Price Discovery

Key consideration 6: A key consideration for VCMs is how to facilitate price discovery for carbon credits.

An orderly market can serve as a platform for discovering prices and disseminating pricing information through trading in liquid, fair and financially secure trading facilities. This would provide a competitive, open and efficient market for executing transactions that promotes the price discovery process. Pre-trade transparency refers to making information – including bid and offer prices, quantity available at those prices, and other relevant information – available to the market before the execution of a transaction. Post-trade transparency refers to making pricing and volume information about each transaction available to the market after the

completion of the transaction. Each type of transparency lowers costs, lowers the risks to the economy, and enhances market integrity.

Toolkit: If a VCM is considering how to facilitate price discovery for carbon credits, the following precepts may apply:

- a. Provide pre- and post-trade transparency measures to provide access to timely and accurate information to market participants. Examples include:
 - i. Quotes, bids/asks, transaction records.
 - ii. Inter-market information (e.g., US National Market System).
- b. Strive to ensure that the market accurately reflects supply and demand conditions.
- c. Aim to support the availability and accessibility of relevant product data that supports price differentiation:
 - i. Offset status (e.g., active; impaired; cancelled; retired).
 - ii. Offset provenance (e.g., origin, trading history; current ownership).
 - iii. Accreditation; verification; validation (e.g., dates, responsible orgs/entities).
 - iv. Trade execution facilities that encourage centralized trading such as an order book and limit off- exchange trades to appropriately sized block trades.³⁷

(v) Product Standardization/Environmental Integrity

Key consideration 7: A key consideration for VCMs is how to accord with global, high-quality standards against which the environmental integrity of carbon credits and their underlying methodology can be assessed.

A carbon credit is intended to represent the removal or avoidance of one tonne of carbon dioxide equivalent emitted into the atmosphere. To ensure a robust and liquid market for carbon credits, market participants must be confident that each carbon credit purchased in the VCM accurately represents such emissions reduction or avoidance to meaningfully reduce GHGs. High-quality standards can provide project developers with guidelines to develop carbon credits that are reputable and fungible which will lead to market participants confidence and trust in the VCM.

Key consideration 8: A further key consideration for VCMs is how, to the extent possible, standardize carbon credits in order to promote greater liquidity.

Standardization of traded contracts, when possible, can lead to deeper liquidity pools and greater robustness of the market. Proper design of the terms and conditions of trade contracts also reduces the contracts' susceptibility to manipulation and market abuses, thereby enhancing the contracts' economic utility. For instance, basing the contract's settlement procedure on a

³⁷ Some jurisdictions may have no mandated market structure and may rely on other trading models for offset credits, such as, for example, request-for-quote systems.

reliable indicator that is not readily susceptible to manipulation and is commonly used by market participants can enhance tradability and stability.

It may also be useful to monitor the availability of the instrument to be delivered under a contract, or the reference price, instrument, or index to which the contract is settled. Such monitoring would allow the VCM to take appropriate steps to relieve the potential for market disruptions if participants' ability to make delivery is threatened due to supply shortages. An important consideration here is the information and tools a VCM would need to counter manipulation and disruptions to the settlement process.

Toolkit: If issues related to product standardization and integrity are considered, the following steps may apply:

- a. Develop and implement appropriate product listing standards to ensure only carbon credits that represent measurable and verifiable greenhouse gas emissions reductions or carbon removals are listed.
- b. Promote application of high-quality and globally consistent standards for carbon credits.
- c. Implement rules, procedures, policies designed to ensure contracts are physically or cash settled per the terms of the carbon spot or derivatives product.
- d. List products that are standardized to the extent possible for market participants risk management needs.

(vi) Interoperability

Key consideration 9: A key consideration for VCMs is how to take steps to improve the interoperability of offset registries.

Interoperability between markets can exist in a number of ways. While relatively less common, VCMs can have certain interoperability with compliance carbon markets where carbon credits purchased on VCMs can sometimes be used towards compliance in the jurisdiction with the compliance carbon market or their carbon tax mechanism. In other markets that are linked (for example, where the prices in one market are linked to the prices established in another market), traders may have incentives to disrupt or manipulate prices in the reference market in order to influence the prices in the linked market. Accordingly, where a contract is settled by reference to the price of a contract or instrument traded in another venue, the VCM should consider procedures whereby traders provide the VCM with their positions in the reference market as the contracts approach settlement.

Relatedly, a VCM should consider how it would implement procedures if a coordinated, cross-market intervention is necessary to maintain fair and orderly trading and to prevent or address manipulation or disruptive trading practices. To the extent that similar, if not identical, contracts are traded on more than one venue, the importance of coordinated interventions increases.

Toolkit: If considering how to improve the interoperability of carbon credit registries, the following measure may be developed and implemented:

- a. A global registry, akin to the Climate Warehouse Initiative under current development, would help address the fragmentation risks stemming from

multiple offset issuers maintaining separate registries for their respective programs.

(vii) Financial Integrity of Transactions including Settlement and Delivery Certainty

Key consideration 10: A key consideration for VCMs is that market participants engaging in these markets have sufficient financial integrity to ensure the cash settlement or physical delivery of a carbon credit transaction.

Financial integrity of transactions is the centerpiece of any market. It means that market participants can be confident that transactions will be completed on the specified terms. Accordingly, a VCM should consider procedures for ensuring the financial integrity of transactions on the VCM. These procedures could include minimum financial standards for intermediaries, rules for the protection of customer funds, and risk controls to establish and maintain a program of risk analysis and oversight. Appropriate trade practice and market surveillance programs foster a competitive, open, and efficient market where transactions are executed in accordance with applicable requirements.

One consideration is a minimum level of enforcement resources to promote financial integrity by ensuring sufficient resources to monitor trading and conduct comprehensive trade reconstructions. Trade monitoring should include the capacity to detect abnormal price movements, unusual trading volumes and impairments to market liquidity.

In addition, an audit trail helps to detect and deter customer and market abuse. The elements of an effective audit trail system can include the capture of original source documents to establish accuracy, a transaction history database and electronic analysis capability to identify possible trading abuses, and storage methods that protect the audit trail from unauthorized alteration or accidental erasure. The goal is to be able to promptly reconstruct transactions by tracking orders from the time of receipt through final disposition.

Toolkit: If a VCM is implementing safeguards to ensure financial integrity, the following steps may be taken:

- a. Integrate with a well-developed central clearing and settlement mechanism with appropriately tailored risk management processes.
- b. Require any intermediaries on the market to meet certain minimum financial resource criteria.
- c. Consider examinations of intermediaries by a self-regulatory organization or the relevant regulator.
- d. Require open interest position and counterparty exposure reporting.
- e. Establish customer protection measures with segregation of customer funds and property, skin-in-the game, and default waterfalls.
- f. Implement trading risk controls and margin requirements.
- g. Appoint a chief risk officer.

(viii) Legal Certainty

Key consideration 11: A key consideration is what legal challenges VCM stakeholders may encounter during the lifecycle of an offset.

As described above, carbon allowances and carbon credits may have durations that extend over many years. They may also be based on a variety of different types of underlying projects that implement various methods of carbon reduction or climate mitigation. For these reasons, carbon credits are typically certified by an independent body.

As standard industry practices develop, the promulgation of clear-cut and definite requirements based on those practices can provide greater legal certainty. Establishing a rulebook with specific and transparent procedures for the initial verification, recordkeeping and reporting, and ongoing tracking of certifications could foster greater confidence that the traded contracts are accurate and enforceable. Moreover, due to the long-term nature of many carbon credits, a VCM should also consider financial resource standards to promote the financial stability of the VCM.

VCM stakeholders could benefit from legal certainty as to the bankruptcy treatment for carbon credits, netting provisions between counterparties, conflicts of laws, and forms of legal documentation, among other aspects of these markets.

Toolkit: If a VCM is considering these issues, it may wish to consider:

- a. How carbon credits will be treated in the event of a bankruptcy.
- b. Legal categorization of products (such as the nature of the carbon credits) and implications in that jurisdiction versus home country jurisdictions of other stakeholders participating within the VCM.

(ix) Governance

Key consideration 12: A key consideration for VCMs is how to ensure that key participants and infrastructures have appropriately robust governance frameworks.

Appropriate governance standards can be an effective means for the VCM to improve efficiency in decision-making, increase fair access to the VCM, facilitate transparency and balance opposing views – all of which decrease risk and increase market integrity. Relevant persons and entities in a VCM for which appropriate fitness standards could be developed include members of any governing body of the VCM, executives, and other persons with responsibility manage the trading platform. These fitness standards can promote confidence in the integrity of the VCM.

Toolkit: If a VCM is considering issues related to governance, the following measures may be developed and implemented:

- a. Establish transparent governance arrangements.
- b. Develop approach to audit and accreditation.
- c. Develop governance frameworks ensuring independence of key functions and reflective of range of stakeholders on boards and committees.
- d. Establish fitness standards for directors and officers.

(x) Conflicts of Interest

Key consideration 13: A key consideration for VCMs is how to identify, manage, and resolve conflicts of interest.

Conflicts of interest can lead to decision-making that prioritizes particular commercial interests over objective criteria. These conflicts may have a detrimental effect on price discovery, as prices are best discovered in a market with broad participation and liquidity. For a VCM, conflicts of interests may arise in a variety of decisions, including those relating to which contracts are traded on the market, the levels of access available to various market participants, and the manner in which orders are executed. Conflicts of interest may also arise in balancing the advancement of the VCM's own or its market participants' commercial interests against the fulfilment of self-regulatory responsibilities. Finally, they may arise where, for example, the operator of a trading venue is itself a participant in the VCM in order to offset its own footprint as a corporate entity.

A governing body of the VCM is a logical place to begin to address conflicts. Independent members may be better placed to approach their responsibilities without the conflicting demands faced by insiders. They may have a broader perspective on the needs of the VCM and appreciate the manner in which impartial governance will serve the interests of the VCM, its market participants, and the public at large. In addition, structural governance requirements can mitigate conflicts of interest by introducing a perspective independent of competitive, commercial, or industry considerations.

Toolkit: If a VCM is considering issues related to conflicts of interest, the following measures may be developed and implemented:

- a. Policies, procedures, and/or rules to identify conflicts of interest in the decision-making process of the VCM stakeholder.
- b. Process for avoiding where possible and mitigating where not such conflicts of interest and identify responsible staff such as a chief compliance officer and alternative compliance staff.
- c. Disclosure of such policies to market participants.

(xi) Enterprise Risk Management

Key consideration 14: A key consideration for VCMs is how to ensure that key participants and infrastructures have effective systems of risk management and internal controls.

Appropriate risk management by market participants and infrastructures supports market functioning, integrity, and stability through participants addressing and responding to risks associated with the discharging their responsibilities. Among other things, an effective risk management program typically provides for risk oversight to identify and minimize sources of operational risk through the development of appropriate controls and procedures as well as systems that are reliable, secure, and have adequately scalable. The program may also include emergency procedures, backup facilities, and a plan for disaster recovery that allow for the timely recovery and resumption of operations, as well as periodic tests of backup resources.

Because automated systems play a central and critical role in an electronic financial market, sophisticated computer systems are crucial to a VCM's ability to meet its obligations and responsibilities. The most important systems are those used for order processing and trade matching, price reporting, market surveillance, and maintenance of a comprehensive and accurate audit trail. Designing multiple checks and balances in these systems should help to reduce operational risks (such as human error) inherent in trading. This in turn could reduce overall transaction costs and encourage market participants to trade contracts on VCMs and thus aid in the development of the market.

A VCM's compliance with generally accepted standards and best practices with respect to the development, operation, reliability, security and capacity of its automated systems can reduce the frequency and severity of automated system security breaches or functional failures, and minimize market disruptions. These standards are intended to mitigate risks and ensure market continuity, by promoting the resilience of the VCM's automated systems and its ability to recover and resume trading promptly in the event of a disruption of its operations.

Toolkit: If a VCM is considering how to establish an effective risk management framework, the following measures may be developed and implemented:

- a. Identify an enterprise risk officer with sufficient staffing and support resources.
- b. Establish an enterprise risk management framework for the entity's operations.
- c. Implement a cybersecurity program including system safeguards that are thoroughly developed and routinely reviewed for consistency with industry best practices.
- d. Implement emergency authority policies and procedures including a business continuity disaster recovery plan.

Consultation Questions:

Question 10: Are these the key considerations appropriate for the sound functioning of voluntary carbon markets?

Question 11: What other key considerations may be necessary in order to scale up carbon markets?

Appendix 1- Consultation Questions

Question 1: Is the description of the issuance of carbon credits accurate? Are all key market participants properly reflected?

Question 2: Has the consultation identified the relevant vulnerabilities? Are there any others that should be considered? Please explain.

Question 3: What kind of role could IOSCO play in coordinating the actions of industry-specific organizations and public authorities?

Question 4: How do you think IOSCO should achieve these objectives?

Question 5: Should IOSCO seek to collaborate more closely with these private initiatives? How might such a collaboration function?

Question 6: What, in your view, is the legal nature of an offset credit? Should IOSCO recommend a specific approach to relevant authorities?

Question 7: What is the role of blockchain and distributed ledger technology in voluntary carbon markets?

Question 8: What are the benefits and vulnerabilities of using tokenization over relying on more traditional market infrastructure? Do these benefits outweigh how energy-intensive the use of blockchain is?

Question 9: Should IOSCO recommend good practices regarding transparency on the use and impact of carbon credits by market players?

Question 10: Are these the key considerations appropriate for the sound functioning of voluntary carbon markets?

Question 11: What other key considerations may be necessary in order to scale up carbon markets?