HKEX
香港交易所

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Carbon Credits: A Buyer's Guide

Contents

Preface

In the face of escalating climate challenges, corporates are increasingly looking for ways to drive more sustainable practices and adopt emission reduction efforts that the world urgently needs.

It is a mission we support at HKEX by setting an example through our own net-zero journey and enabling our market participants to do the same.

We see sustainability as a necessity for the long-term health and resilience of our business, markets and community. And as Asia's leading financial market infrastructure, HKEX is uniquely positioned to play a significant role as a changemaker for the region – and by extension, the rest of the world.

Carbon credits can complement broader corporate emission reduction efforts, enabling companies to take accountability for their emissions during the transition to net zero.

In 2022, we launched Hong Kong's carbon marketplace, Core Climate, which provides a transparent and efficient platform for market participants to buy and sell carbon credits. To navigate these transactions and participate fully in carbon markets, it is vital that there is a clear understanding of carbon markets and carbon credits and the fundamental factors to consider when purchasing them.

HKEX developed this guide to explain the mechanisms behind carbon credits and share practical insights into how corporates can shortlist carbon projects and ultimately select carbon credits for their needs.

From comparing project types, locations and co-benefits to navigating the intricacies of carbon crediting standards and vintages, *Carbon Credits: A Buyer's Guide* empowers companies to make more informed decisions that align with their corporate values and sustainability objectives.

I would like to take this opportunity to thank members of The Hong Kong International Carbon Market Council (the Council), a hub for leading corporates and financial institutions in Hong Kong, Mainland China and from across the world to explore carbon opportunities.

Several Council members also lent their experiences as use cases in the guide, and we recognise the valuable lessons shared by Carbon Growth Partners, China Energy Conservation and Environmental Protection Group and Tencent, which have been included in these pages.

I hope this guide will support corporates on their net-zero journeys, and in doing so accelerate the climate transition and reinforce Hong Kong's role as a catalyst for scaling sustainable finance.

Paul Chow
Group General Counsel & Group Chief Sustainability Officer
HKEX

About Us

HKEX

Hong Kong Exchanges and Clearing Limited (HKEX) is a publicly-traded company (HKEX Stock Code:388) and one of the world's leading global exchange groups, offering a range of equity, derivative, commodity, fixed income and other financial markets, products and services, including the London Metal Exchange.

As a superconnector and gateway between East and West, HKEX facilitates the two-way flow of capital, ideas and dialogue between China and the rest of world, through its pioneering Connect schemes, increasingly diversified product ecosystem and its deep, liquid and international markets.

HKEX is a purpose-led organisation with sustainability at its core that seeks to connect, promote and progress its markets and the communities it supports for the prosperity of all. As part of this effort, HKEX is building a sustainable finance ecosystem that includes Core Climate, a marketplace that connects capital with climate-related products and opportunities.

Core Climate provides an easy-access, one-stop, integrated carbon marketplace that includes trading, custody and settlement functions for corporates, investors and project owners across the carbon market value chain, contributing to the realisation of global net-zero goals.

The Hong Kong International Carbon Market Council

The Council, launched by HKEX, brings together leading organisations to accelerate the region's net-zero transition. The Council aims to promote the development of efficient and effective markets for carbon credits and other environmental products in Hong Kong, while also supporting corporate sustainability efforts. Drawing on the collective expertise of its members, the Council provides strategic insights not only to HKEX, but also to the broader Hong Kong community.

We recognise the contributions of the following Council members to the development of this guide: (Names in alphabetical order)

- **Bank of China (Hong Kong) Limited**
- **Carbon Growth Partners**
- **Cathay Pacific Airways Limited**
- **China Energy Conservation and Environmental Protection Group**
- **China International Capital Corporation Limited**
- **CLP Holdings Limited**
- **Deloitte Advisory (Hong Kong) Limited**
- **Huatai International Financial Holdings Limited**
- **Industrial and Commercial Bank of China (Asia) Limited**
- **Petrochina International (Hong Kong) Corporation Limited**
- **Sinotrans (Hong Kong) Logistics Limited**
- **SPIC International Finance (Hong Kong) Company Limited**
- **State Grid International Development Limited**
- **Tencent**
- **The Hong Kong and China Gas Company Limited**

Carbon Credits

What are Carbon Credits?

A carbon credit is a transactable unit that represents one tonne of carbon dioxide (CO_2) or carbon dioxide equivalent (CO_2e) avoided or removed from the atmosphere.

CO_2e

CO_2e is a standardised metric used to express the impact of different GHGs in terms of the warming potential of CO_2.

How are Carbon Credits Created?

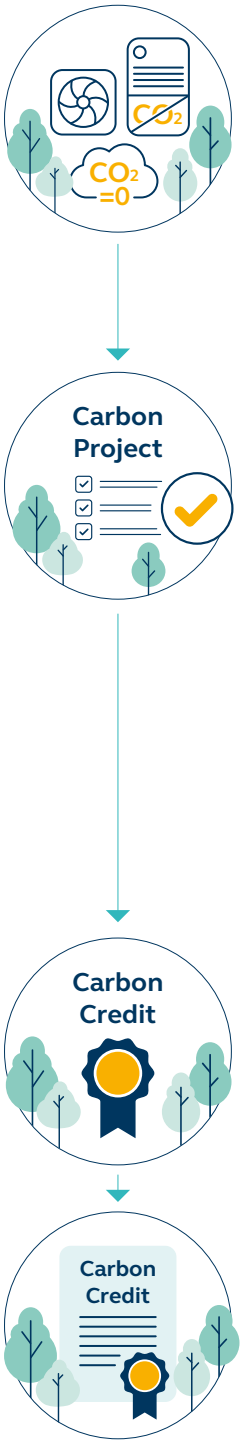
The lifecycle of a carbon credit begins when project proponents conceive and execute a carbon project that avoids or removes greenhouse gas (GHG) emissions. A key determining factor is the amount of capital that will be needed to fund the project and that can be recovered through the sale of carbon credits.

These emission avoidances and removals are quantified and verified by accredited validation and verification bodies (VVBs) under rules set by standards bodies. Once verified, the emission avoidances and removals are issued as carbon credits, each representing one tonne of CO_2e. Issued credits are tracked by registries to ensure transparency and prevent double counting.

The lifecycle continues with ongoing project monitoring and reporting for a number of years depending on the project type. Credits can be traded on markets or bilaterally until ultimately being retired by end-buyers. Retired credits will no longer be tradable.

Transactions can occur directly between buyers or investors and project proponents. They can also be facilitated on marketplaces, such as Core Climate, that act as a network connecting market participants, and by intermediaries. Consultants and non-governmental organisations (NGOs) often support project design, community engagement and impact measurement.

Lifecycle of Carbon Credits



1 | Project Development

The process of designing, implementing and managing projects aimed at avoiding or removing GHG emissions. These projects vary in scope and type, ranging from grassland restoration to the direct capture of CO_2 from the atmosphere.

Carbon projects must satisfy key fundamental principles, including additionality and permanence, as shown from Table 1.

2 | Validation and Verification

Carbon projects have to undergo both validation and verification to generate carbon credits. The key factor is whether the emissions reduced are below the business-as-usual baseline.

- **Validation** is when the project meets all rules and requirements of the carbon crediting standard and can then be submitted for project registration.
- **Verification** is when the outcomes set out in the project documents have been achieved and quantified according to the requirements of the carbon crediting standard. Verification usually occurs periodically before credit issuance depending on several factors, including the type of project and the needs of the financing. It is one of the most expensive parts of the issuance process.

3 | Issuance

Once the carbon crediting standard accepts the relevant documentation and reports, carbon credits are issued and tracked on a registry. Project proponents can then sell the carbon credits and the proceeds generated are returned to them.

4 | Retirement

Carbon credits are retired when their end users claims the associated emission reduction. From that point onwards, the credits are permanently removed from circulation in the market and are no longer available for sale and further circulation.

The Roles of Different Players in the Voluntary Carbon Market

Player	Role
Project proponents	Own one or more carbon projects and are able to appoint others to develop carbon projects.
Validation and verification bodies (VVBs)	Perform validation and verification services for carbon projects and are accredited, independent, third-party auditors under the carbon crediting standard.
Standards bodies	Provide rules, requirements and methodologies that carbon projects must follow in order to issue carbon credits under a specific carbon crediting standard. They can be administered by national governments, NGOs or international organisations established with the authority of national governments, such as United Nations (UN) agencies.[1]
Registries	Identify, record and track issued carbon credits to ensure credits can be identified securely and unambiguously. A registry can be run by the standards body itself or a third party appointed by the standards body.
Marketplaces	Act as a network that connects market participants. They generally recognise the instant, secure, and traceable settlement of carbon credit transactions.[2] This includes carbon marketplaces, such as Core Climate.
Intermediaries	Facilitate the buying and selling of carbon credits by providing services that connect buyers and sellers.
Rating agencies	Assess carbon credit quality at project-level, aiming to distinguish between robust carbon credits and those that do not deliver on their stated benefits.
End-users	Purchase and retire carbon credits.

1 Refer to 2025 State and Trends of Carbon Pricing, World Bank.

2 Refer to Voluntary Carbon Markets, The Board of the International Organization of Securities Commissions.

What are the Core Carbon Principles (CCPs)?

A set of 10 fundamental, science-based principles for identifying high-quality carbon credits that create real, verifiable climate impact. The CCPs were developed by the Integrity Council for the Voluntary Carbon Market (ICVCM), a multi-stakeholder led independent governance body that establishes and maintains the highest standards of ethics, sustainability and transparency for global voluntary carbon markets.

Table 1: CCPs related to project level principles by the ICVCM[3]

CCP	Explanation
Additionality	The GHG emission reductions or removals from the mitigation activity shall be additional, i.e., they would not have occurred in the absence of the incentive created by carbon credit revenues.
Permanence	The GHG emission reductions or removals from the mitigation activity shall be permanent or, where there is a risk of reversal, there shall be measures in place to address those risks and compensate reversals.
Robust quantification of emission reductions and removals	The GHG emission reductions or removals from the mitigation activity shall be robustly quantified, based on conservative approaches, completeness and scientific methods.
No double counting	The GHG emission reductions or removals from the mitigation activity shall not be double counted, i.e., they shall be only counted once towards achieving mitigation targets or goals. Double counting covers double issuance, double claiming, and double use.
Sustainable development benefits and safeguards	The carbon crediting programme shall have clear guidance, tools and compliance procedures to ensure mitigation activities conform with or go beyond widely established industry best practices on social and environmental safeguards while delivering positive sustainable development impacts.
Contribution to the net-zero transition	The mitigation activity shall avoid locking-in levels of GHG emissions, technologies or carbon-intensive practices that are incompatible with the objective of achieving net-zero GHG emissions by mid-century.

3 Refer to Core Carbon Principles, Assessment Framework and Assessment Procedure, ICVCM.

Why do Corporates Buy Carbon Credits?

Most corporates purchase carbon credits to either meet mandatory requirements or as a form of voluntary contribution. We explore these two types of carbon credit use below:

An Alternate Tool to Meet Mandatory Requirements

Carbon credits are used in some regions where governments have implemented mandatory carbon pricing mechanisms. These schemes, including China National Emissions Trading Scheme and Korea Emissions Trading System, allow a certain percentage of compliance obligations to be fulfilled using voluntary carbon credits – providing an alternative way for companies to meet their obligations.

In other cases, corporates may be under industry requirements to purchase carbon credits to offset their emissions. For instance, international airlines that seek to meet their obligations under the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA)[4] will have to purchase carbon credits if their emissions have exceeded the agreed baseline. These industry frameworks typically specify project requirements. For instance, CORSIA maintains a list of approved carbon crediting standards that can be used to meet the obligations.

A Strategic Means to Voluntary Contributions

Corporates also purchase carbon credits for voluntary contributions. Voluntary contributions serve as part of organisations' broader climate strategies, enabling them to take responsibility for their unabated emissions in the short term as they transition to net zero. These contributions can also support mitigation actions that fall outside companies' value chain.

This guide will primarily focus on voluntary contributions, which are increasingly recognised as a strategic tool for corporates during the net-zero transition.

Where can Carbon Credits be Purchased?

Corporates planning to buy carbon credits can do so through various channels, including directly from project proponents or via intermediaries or marketplaces like Core Climate.

Intermediaries facilitate trade between buyers and sellers. They pool different orders to facilitate trading activity and provide clients with market information not readily accessible to many participants. Intermediaries generally source carbon credits based on buyers' requirements, helping to match with suitable projects.

Some marketplaces enable market participants to purchase, settle and retire carbon credits directly on-platform. They help mitigate counterparty risks not only for transactions conducted within the marketplace but also for bilateral over-the-counter agreements through Delivery-vs-Payment settlement mechanisms. This improves transaction efficiency while making the process more secure and convenient, benefiting both buyers and sellers.

CORE CLIMATE

Core Climate is a one-stop, integrated carbon marketplace operated by HKEX that allows corporates and investors to source, purchase, settle and retire carbon credits. Learn more by visiting the Core Climate website.

4 CORSIA is the first global market-based scheme that applies to a sector. It complements other aviation in-sector emissions reductions efforts.

Project Shortlisting and Credit Selection

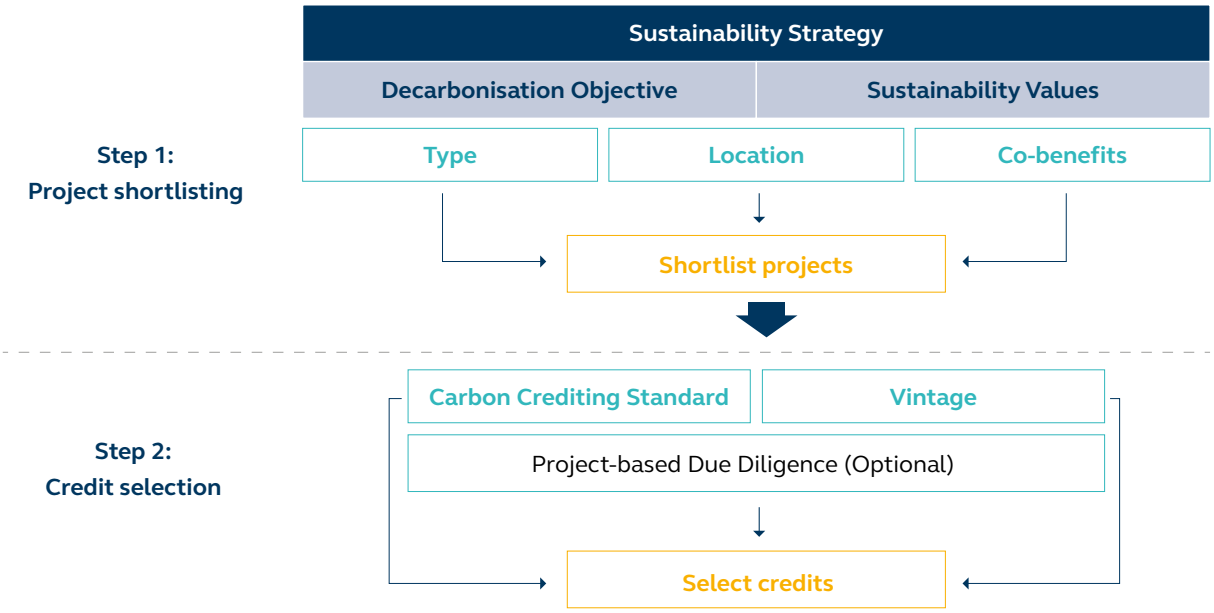
Now that we have considered the “what”, “why” and “where” of carbon credits, this section focuses on the “how” – a series of practical steps companies can take to first shortlist carbon projects and then select carbon credits that meet their needs.

The shortlisting and selection process is rooted in each corporate’s sustainability strategy, which includes a decarbonisation objective – whether to accelerate the net-zero transition or to reach net zero – and other sustainability values.

When it comes to picking carbon projects and carbon credits, these decarbonisation objectives and sustainability values offer a useful lens through which to evaluate a project's type, location and co-benefits and assemble a shortlist.

From this shortlist of projects, corporates can select their carbon credits based on standard and vintage criteria. We will explore these considerations in turn, and also examine how additional project-based due diligence can help companies select credits that are appropriate for their needs.

Chart 1: Overview of carbon project shortlisting and credit selection process



This framework guides corporates in the selection process of carbon credits, helping them to choose carbon credits that align with their overall sustainability strategy.

Project Shortlisting

Corporates' Sustainability Strategies

There were over 6,000 registered carbon projects across the 12 largest international crediting registries at the end of 2024,[5] and the process of creating a shortlist may appear overwhelming at first. Corporates can gain clarity and guidance by referring to their sustainability strategies, which typically include a decarbonisation objective that focuses on accelerating the net-zero transition or achieving net zero.

For most companies in the early stages of their sustainability journeys, accelerating the net-zero transition is their decarbonisation objective, meaning they are focused on reducing their own emissions while purchasing carbon credits for unabated emissions. As companies progress to meet net zero, the emphasis shifts to acquiring removal credits to neutralise their unavoidable emissions.

Companies can refer to steps 6 and 7 of the Practical Net-Zero Guide for Business, published by HKEX, to learn more about using carbon credits during the net-zero transition and achieving net zero.

Keeping a decarbonisation objective in mind when considering carbon projects can help corporates weigh the features of different projects, as laid out below.

Decarbonisation Objectives	
Accelerating the Net-Zero Transition	**Achieving Net Zero**
Speeds up efforts to reduce emissions	Remove unabated emissions after decarbonisation efforts
Short to medium term	Longer term
Focuses on the pace of progress	Focuses on end goals
Involves early action and fast implementation	Targets a specific year (e.g., 2050)
Prioritises innovation, investment and urgency	Relies on gradual changes

In addition to considering their decarbonisation objective, companies should also take stock of the broader set of values embedded within their overall sustainability strategy. These may include commitments to biodiversity, community development, climate justice and other causes.

By taking these factors into account, companies can select carbon projects that not only support their emissions targets but also reflect their wider sustainability ethos, creating more meaningful and impactful outcomes.

With that in mind, we can now explore the three factors that are key to identifying suitable carbon projects.

Project type, location and co-benefits are key considerations when building a project shortlist.

5 Refer to Frozen Carbon Credit Market May Thaw as 2030 Gets Closer, MSCI.

Project Type

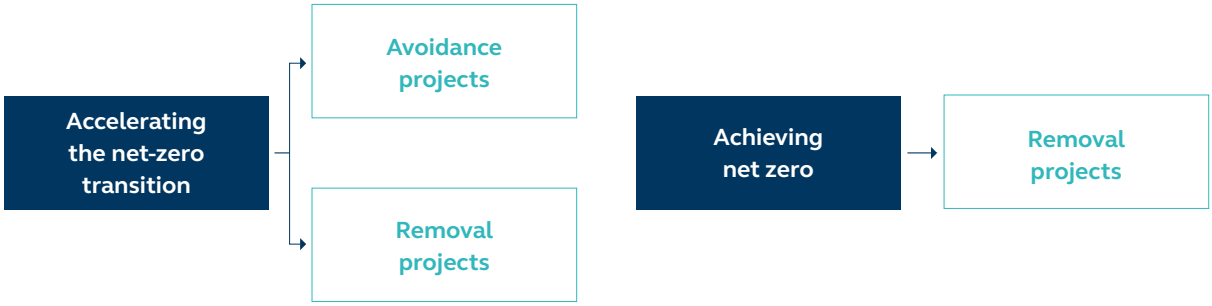
Carbon projects either avoid or remove emissions, and are either nature-based or technology-based. These terms can be used in combination, with project types ranging from 'technology-based avoidance' to 'nature-based removal', as we explore below.

Avoidance or removal projects

Avoidance projects prevent future emissions, such as improving energy efficiency or destroying ozone-depleting substances. Removal projects eliminate existing CO_2 from the atmosphere through methods like reforestation or direct air capture.

Avoidance projects can accelerate progress toward net zero, while removal projects are vital for achieving net zero, especially for residual emissions.

Chart 2: Selection of project type based on decarbonisation objectives



If the decarbonisation objective is to accelerate the transition to global net zero, companies can consider shortlisting both removal projects and avoidance projects.

On the other hand, if companies are going to achieve net zero, their shortlist must include removal projects. This is because removing GHG emissions from the atmosphere and storing them for a long-enough period can neutralise the impact of the company's GHG emissions that continue to be released into the atmosphere.

In the short to medium term, carbon avoidance projects can help accelerate progress toward global net zero. But as companies move closer to their net-zero target date, the opportunity to cut emissions shrinks, since most avoidances and reductions should already be achieved across the economy.

In the long term, and especially at the point of reaching net zero, avoidance alone is no longer enough. To truly achieve net zero, companies must neutralise any residual emissions – those that are hard to eliminate – through highly durable carbon removal credits.

Nature-based or technology-based projects

On another dimension, carbon projects can be further divided into two main types, nature-based or technology-based projects.

In general, nature-based projects tend to offer additional environmental benefits, such as increasing biodiversity and conserving ecosystem services, while technology-based projects use technology to avoid or remove emissions. Shortlisting types of projects that are related to companies' industry is an example of alignment with their sustainability strategies.

Nature-based projects focus on protecting, sustainably managing and restoring nature, while technology-based projects use advanced engineering and scientific innovations to avoid or remove GHG emissions.

Table 2: Examples of nature-based and technology-based projects

<table>
<tr><th colspan="2">Nature-based</th><th colspan="2">Technology-based</th></tr>
<tr><th>Avoidance</th><th>Removal</th><th>Avoidance</th><th>Removal</th></tr>
<tr><td>Reducing deforestation and forest degradation</td><td>Afforestation and reforestation</td><td rowspan="3">Landfill gas recovery

Renewable energy

Destruction of ozone-harming substances</td><td rowspan="3">Carbon capture, utilisation and storage (CCUS)

Direct air capture (DAC)</td></tr>
<tr><td colspan="2">Forest management improvement</td></tr>
<tr><td colspan="2">Farmland management improvement</td></tr>
</table>

How does reversal risk compare between nature-based and technology-based removal projects?

Permanence refers to how long CO_2 remains removed from the atmosphere and is one of the major characteristics of removal projects. Reversal risk is the degree of likelihood that stored carbon from a project is released back into the atmosphere.

Nature-based removal projects, such as tree planting, have higher levels of reversal risk stemming from the release of emissions back into the atmosphere due to changes in political priorities, land use, economic constraints and the climate itself, for example from increased wildfires. However, reversal risk can be reduced if projects are well-governed, adaptively managed and designed to be resilient to climate shocks and societal pressures.

Standards bodies also have buffer pools, which are reserves of credits that are not sold. They guard against any unexpected losses or damage to the project. These buffer credits can be cancelled by standards bodies in the case that reversals occur.

Technology-based removal projects, such as DAC, may have lower levels of reversal risk because they can usually store carbon for a longer time than nature-based removal projects. However, due to the novel nature of the technologies involved, technology-based removals usually involve higher costs and, consequently, the number of projects to choose from may be limited. All the same, ongoing monitoring of projects is important to ensure the emissions remain stored and are not released.

Use Case: China Energy Conservation and Environmental Protection Group (CECEP)

CECEP is a leader in the field of energy conservation and environmental protection in Mainland China and Hong Kong. One of its subsidiaries has played a pivotal role in supporting the construction of O·PARK2, the first carbon-neutral construction project in Hong Kong. O·PARK2 is the city's largest food waste recycling centre, processing 300 tonnes of food waste daily to address about 8% of the city's food waste.

The subsidiary developed a range of emission reduction strategies over the course of the project, from designing a carbon neutrality roadmap to conducting carbon audits. To offset the remaining emissions during the construction phase – from September 2019 to June 2022 – nature-based carbon credits were purchased, enabling the project to achieve carbon neutrality. These credits were specifically chosen for their high ecological value compared to technology-based credits.

Location

Companies have the flexibility to choose carbon projects from around the world and contribute to the development of carbon projects in those specific regions. There is a wide range of projects that they can pick to align with their sustainability strategies and values.

When selecting where to support carbon projects, companies may consider the following location factors:

- **Operational or supply chain relevance:** Companies may prioritise carbon projects in regions where they have a physical presence, such as factories, offices or key suppliers.
- **Support for climate-vulnerable or low-income countries:** Companies may also choose to invest in carbon projects in developing nations that are disproportionately affected by climate change. These regions often lack the financial resources to implement large-scale climate solutions. They bring co-benefits to local communities, such as job creation, improved air quality, and access to clean energy or water.

Co-benefits

Co-benefits from carbon projects may allow companies to address multiple aspects of their corporate sustainability strategy. Examples of co-benefits include job creation, nature conservation and increased biodiversity.

Co-benefits are additional social or environmental benefits generated alongside carbon avoidance and removal.

A helpful framework for identifying and aligning these co-benefits is the UN Sustainable Development Goals (SDGs), which encompass 17 global priorities focused on people, planet, prosperity, peace and partnership.[6] For instance, projects that increased biodiversity may align with SDG 14: Life below Water or SDG 15: Life on Land.

Projects offering extra social or environmental benefits may have additional certifications certified by a standards body. These certifications help show that the project not only cuts emissions but also creates other positive social or environmental impacts. Choosing projects with certain SDGs allows companies to support projects that align with their sustainability strategy.

6 Refer to The 17 Goals, the United Nations.

Use Case: Carbon Growth Partners (CGP)

CGP, an Australia-headquartered asset manager in the carbon markets, invests in high-quality carbon projects and carbon credits, and has committed more than US$220 million in financing for emissions reduction projects since its inception in 2021. It works with clients in pooled investment vehicles as well as bespoke portfolio investments to achieve targeted outcomes.

Specifically, CGP invests in nature-based projects not only to address the urgent need to restore and protect tropical forest landscapes amid ongoing deforestation, but also to preserve the extraordinary biodiversity values inherent in these projects and deliver meaningful benefits – such as health, education, and livelihoods – to local communities and indigenous people who have long depended on and safeguarded these ecosystems.

CGP views co-benefits, including community well-being and livelihoods and biodiversity protection, as core benefits because they support the long-term sustainability of the project. A healthy and sustainable community that supports a diverse natural environment can play an important role in enhancing a project's long-term economic viability.

In terms of location, CGP uses an investment screening process to focus investments in countries with both a secure enabling policy framework and the ability to support SDGs of developing countries.

Table 3: Examples of additional certifications

Certification	Description
Verra's Sustainable Development Verified Impact Standard (SD Vista)	Projects with certified social and environmental benefits with regards to SDGs.
Verra's Climate, Community and Biodiversity (CCB)	Land use projects that deliver tangible benefits to climate, support local communities and smallholders and conserve biodiversity.

Hypothetical example for shortlisting projects relevant to a company's operation and supply chain

A food and beverage company wishing to accelerate transition to net zero chooses agricultural projects (e.g. improved agricultural land management project) linked to where it sources most of its raw materials, thereby enhancing supply chain resilience and security (e.g. improvement in soil quality and fertility).

In addition, to align with its sustainability strategy on enriching biodiversity, the company also shortlists projects that contain the certification on improving SDG 15: Life on Land.

Credit Selection

After shortlisting projects that align with their decarbonisation objective and sustainability values, companies can begin the credit selection process.

Carbon credit selection consists of two main components: standard and vintage. In addition, companies may also consider conducting further project-based due diligence.

Below, we will explore these three considerations, and also examine the role of rating agencies in the credit selection process.

A carbon crediting standard has its own scope, rules and requirements for carbon projects to follow.

Vintage is the year in which a carbon project's emission avoidance or removal occurred.

Carbon Crediting Standard

Carbon projects are certified by carbon crediting standards. Each standard has its own scope, rules and requirements. Below are some examples of carbon crediting standards.

Table 4: Examples of crediting mechanisms[7]

Crediting Mechanism	Description	Example(s)
Governmental crediting mechanisms	• Administered by one or more national or sub-national governments.	• Thai-VER scheme • The Californian Compliance Offset Program • Australian Carbon Credit Unit Scheme
Independent crediting mechanisms	• Administered by NGOs.	• Verra's Verified Carbon Standard (VCS) • Gold Standard
International crediting mechanisms	• Administered or managed by an international organisation established with the authority of national governments, such as UN agencies.	• Paris Agreement Crediting Mechanism (PACM), the principal international crediting mechanism, established under Article 6.4 of the Paris Agreement

Filtering carbon crediting standards against key global meta-standards, such as the CCPs, can facilitate companies in selecting credits from standards bodies and methodologies that have gone through ICVCM's assessment process, meaning that all credits meet the same level of quality.

These meta-standards have their own assessment criteria for considering carbon crediting standards and methodologies, and they publish lists of carbon crediting standards and methodologies that meet their requirements. Meta-standards do not assess individual projects – that responsibility lies with the standards bodies and VVBs that have received meta-standard accreditation.

7 Refer to 2025 State and Trends of Carbon Pricing, World Bank.

Vintage

Carbon credit vintage refers to the year in which the carbon emission avoidances or removals occurred. The Science Based Targets Initiative (SBTi) proposes that vintages from 2021 onward should be selected to align with Article 6 of the Paris Agreement.[8]

The market generally favours newer vintages over older ones for two main reasons:

- Older vintages held by project proponents that are still available for sale may represent credits that no longer need carbon credit revenue.
- Older vintages are issued against older, less stringent crediting methodologies as compared to newer vintages that are issued against newer, more rigorous crediting methodologies.

Some market participants argue that older vintages may be more valuable, provided that they meet the criteria of a reputable standard. This perspective stems from the urgency of decarbonisation and the long-lasting impacts of carbon emissions in the atmosphere. In addition, avoiding older vintages altogether may inadvertantly penalise project proponents who took the risks to develop projects earlier.

Paris Agreement

Article 6 of the Paris Agreement provides a framework for international cooperation on climate action, outlining how national governments can reach their climate action goals.

Use Case: Tencent

Tencent, a world-leading internet and technology company, pledges to achieve carbon neutrality in its own operations and supply chain by 2030, using carbon credits for residual emissions which cannot be further reduced. It aims to build a well-balanced portfolio of carbon credits across different project types.

In the near term, Tencent places greater emphasis on avoidance and conservation (e.g., nature conservation) projects. Over time, it plans to increase support for nature-based removals and, in the longer term, technology-based removals.

In terms of project location and vintage, Tencent purchases carbon credits that align with the geographical location of its emissions, using vintages from 2021 as the baseline for its future vintage requirements to support their 2030 target. Given the ongoing updates to methodologies, Tencent prioritises credits issued under the latest methodologies to reflect higher quality.

In addition, Tencent discloses retired carbon credits at the project level and all Verra project retirements are publicly recorded.

8 Refer to SBTi's Above and Beyond: An SBTi Report on the Design and Implementation of Beyond Value Chain Mitigation (BVCM).

Project-based Due Diligence

Companies can conduct due diligence on a project-by-project basis to form their own opinion toward the quality of the project.

Due diligence measures include reviewing project documents, taking reference of project ratings and project site visits for sophisticated buyers. Companies can establish their own project assessment framework which typically includes the common quality criteria shown in Table 1.

Risks in carbon projects

There are potential risks associated with carbon projects. Such risks include uncertainty in the assumptions used to calculate the amount of emissions avoided or removed, as well as business risks faced by project proponents and external events like wildfires.

However, risks in carbon projects do not equate to low quality. With sufficient risk management and robust monitoring by project proponents, these risks can be mitigated.

Corporates purchasing low-quality projects may be scrutinised by the market, making it vital that corporates consider potential risks carefully.

Ratings from Carbon Rating Agencies

Ratings produced by agencies are another means of assessing the quality and environmental impacts of carbon projects.

Since rating agencies differ in terms of governance structure, monitoring of projects, and the rating methodology and metrics used, companies need to understand how a rating is produced when choosing a carbon rating agency.

Pricing of Carbon Credits

A common pool of influences, including market perception of credit quality, recognition by mandatory or industry requirements and implementation factors, will determine how these credits are priced, as well as a complex interplay of market dynamics and project-specific considerations.

Market perception of credit quality

The market perception of a project's quality is shaped by a range of considerations including, but not limited to, project type, co-benefits and vintage, which in turn affect the price of carbon credits. Projects that are perceived to be higher quality are able to charge a premium compared to lower-quality ones.

Recognition by mandatory or industry requirements

Projects that are recognised by mandatory or industry requirements can generally charge a premium compared to those that are not.

Implementation factors

The cost of project development will influence the price of the carbon credits that are generated. These upfront costs are a result of a project's type, location and size. For instance, afforestation projects require upfront investment and may take years to mature. They also tend to have higher operational and maintenance costs, which are often reflected in their pricing to ensure financial viability.

Communicating on Carbon Credits – Environmental Claims and Disclosure

After retiring carbon credits, corporates may consider making environmental claims and disclosing relevant project information. Doing so enhances credibility and transparency, and avoids the perception of greenwashing. Various guidelines are being developed around the world to determine what constitutes a good claim and how to make it.

Environmental claims

There are various certification schemes to support credible claims related to the use of carbon credits as part of corporates' sustainability strategy. These certifications generally constitute several key components, including emissions calculations, reduction measures, carbon offsetting and third-party verification. These schemes help ensure accountability, reinforcing stakeholder trust in the integrity of corporate climate actions.

Various jurisdictions, including the European Union, the United Kingdom and Canada, have introduced or updated frameworks that provide legal grounds for legitimate claims.

Disclosure

For companies using carbon credits to achieve any net GHG emissions targets, they should clearly communicate the contribution of carbon credits to their overall sustainability commitments. Companies may refer to the Implementation Guidance for Climate Disclosures under HKEX ESG reporting framework, which outlines disclosure expectations for companies intending to use carbon credits to offset GHG emissions in pursuit of any net GHG emissions targets.

Concluding Remarks

Understanding the fundamentals of carbon credits – from what they are and how to evaluate them to when and where to buy them – is crucial for corporates aiming to take meaningful climate action during the transition to net zero.

Carbon credits should complement corporates' emission reductions. They offer a way for corporates to take responsibility for their emissions during the transition and support global sustainability efforts.

Companies should carefully choose carbon credits from carbon projects that align with their corporate sustainability strategy and understand the integrity of the carbon credits they intend to purchase. By choosing high integrity carbon credits and pairing them with direct emissions cuts, corporates can contribute to the global transition to a low-carbon future.

With this guide, corporates can be better equipped to embark on their journey to net zero, and looking ahead, HKEX will continue its commitment to provide guidance, training and education on carbon credits to our stakeholders as we move forward in building a vibrant carbon market for all.

We at HKEX are proud to be a change agent in the fight against climate change and we invite corporates in Hong Kong, Mainland China, Asia and beyond to join us, whether on Core Climate or as part of the broader sustainable finance ecosystem being nurtured worldwide.

The journey – to understanding, to action and ultimately to net zero – is just beginning, and we look forward to walking alongside corporates as we progress the sustainability of our communities for years to come.

Glossary

Term	Definition
Avoidance projects	Avoidance projects prevent future emissions.
Carbon capture, utilisation and storage	Carbon capture, utilisation and storage involves the capture of carbon dioxide (CO_2), generally from large point sources like power generation or industrial facilities that use either fossil fuels or biomass as fuel. If not being used on-site, the captured CO_2 is compressed and transported by pipeline, ship, rail or truck for use in a range of applications, or injected into deep geological formations such as depleted oil and gas reservoirs or saline aquifers.[9]
Carbon credit	A carbon credit is a transactable unit that represents one tonne of CO_2 or carbon dioxide equivalent (CO_2e) avoided or removed from the atmosphere.
Carbon crediting standard	A carbon crediting standard, established by a standards body, establishes clear guidelines for how projects should be designed, implemented and monitored. Each standard has its own scope, rules and requirements.
Co-benefits	Co-benefits from carbon projects are additional social or environmental benefits generated alongside carbon avoidance and removal.
Core Carbon Principles	The Core Carbon Principles are a set of 10 fundamental, science-based principles for identifying high-quality carbon credits that create verifiable climate impact developed by the Integrity Council for the Voluntary Carbon Market.
Net-zero emissions	Net-zero emissions are achieved when human-caused greenhouse gas (GHG) emissions are balanced by removing the same quantity of emissions from the atmosphere over a specified period of time. Net-zero GHG emissions must be achieved at the global level to stabilise temperature increase at 1.5°C.[10]
Neutralisation	Neutralisation refers to measures that companies take to counterbalance the climate impact of GHG emissions which are impossible to avoid after their net-zero target date. Neutralisation involves permanent removal and storage methods of CO_2 from the atmosphere.[11] In order to achieve net zero, once companies have achieved their long-term target, they must neutralise any residual emissions (usually less than 10% of base year emissions) using permanent carbon removal and storage.

9 Refer to Carbon Capture Utilisation and Storage.

10, 11 Refer to Net-Zero Jargon Buster - a guide to common terms.

Term	Definition
Paris Agreement	The Paris Agreement is a legally binding international treaty on climate change. It was adopted in Paris in 2015 by 195 parties at the United Nations Climate Change Conference.
Permanence	Permanence refers to how long removed CO_2 remains out of the atmosphere and is one of the major characteristics of removal projects.
Removal projects	Removal projects eliminate existing CO_2 from the atmosphere.
Retirement	Retirement of carbon credits is when credits have been used to claim the associated emission reduction and are removed from circulation in the market.
Sustainable Development Goals	The Sustainable Development Goals were adopted by the United Nations in 2015 as a universal call to action to end poverty, protect the planet, and ensure that by 2030 all people enjoy peace and prosperity.[12]
Validation	Validation is when the project meets all rules and requirements of the carbon crediting standard and can then be submitted for project registration.
Value chain	A value chain is the full range of activities that businesses undertake to bring a product or service from conception to the customer.[13] Therefore, value chains encompass activities from both the upstream (inputs into a product or service) and downstream (outputs from a product or service) associated with the operations of the reporting company. A value chain is different from a supply chain because a supply chain only refers to upstream activities/emissions (i.e. from suppliers). The terms 'value chain emissions' and 'Scope 3 emissions' can be used interchangeably.
Verification	Verification is when the outcomes set out in the project documents have been achieved and quantified according to the requirements of the carbon crediting standard.
Vintage	Vintage is the year in which a carbon project's emission avoidance or removal occurred.
Voluntary carbon market	A voluntary carbon market is a market for participants to purchase and sell carbon credits that correspond to verified emission avoidance or removal projects.

12 Refer to United Nations Development Programme's website.

13 Refer to Net-Zero Jargon Buster - a guide to common terms.

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