

Carbon trading

Practical insights

June 2021

The role of carbon trading

In our series of ESG alerts to date we have carried a simple message - now is the time for businesses to commence their transition to a carbon-neutral future. To do this companies must:



In this alert we focus on the third limb, offsetting, through carbon trading.

There is rising global support for carbon trading to form a significant stepping stone in the global transition to green and sustainable economies.

Carbon markets, or as they're more formally termed, emission trading schemes, are either government run, regulated "cap-and-trade" systems or arise as "voluntary markets" that are not driven by compliance with mandatory schemes.

We refer to "carbon markets", "carbon" trading and "carbon" credits in this alert as the general term for trading greenhouse gas (**GHG**) emissions.

Whether achieved through a regulated or voluntary market, the overall objective and theory is the same. The markets rely on the trading of carbon credits or permits with the aim of reducing carbon emissions in the atmosphere.

Carbon credits must be:

- **measurable** meaning you can quantify the reduction in emissions; and
- **verifiable** meaning an independent third party has assessed the project and emissions data.

It does not matter where emissions are reduced, as long as they are removed from the atmosphere. This has a host of added benefits by stimulating green and sustainable investment in developing countries, supporting community development, protecting ecosystems, reforestation, reducing reliance on fossil fuels and installing efficient technology.

We describe below how regulated and voluntary markets work, how to check the credibility of carbon credits and provide examples of existing and new carbon markets, including China's new national carbon market and Hong Kong's renewable energy certificates initiative.

"A robust voluntary carbon market is one important tool the private sector can use to address climate change and reach net-zero emissions by 2050. While this market is important for a number of reasons, I am most excited because I believe it has the potential to drive early investment in green technologies, especially those that are difficult to commercialize...if we don't start financing innovation now, it will be impossible to reach our decarbonization goals before we run out of time...those who have the courage to take these steps now will not only help the world avoid a climate disaster, they will position themselves for success by being the best equipped to finance, produce, and buy the clean solutions that will underpin our future economy." Bill Gates

The development of carbon markets

The United Nations Framework Convention on Climate Change (**UN Framework**) was adopted in 1992, with the aim of stabilising GHG concentrations in the atmosphere. Signatories to the UN Framework meet at regular intervals at so called “COPs” (**Conference of the Parties**) to agree on action to be taken to achieve this aim. Certain COPs have been particularly significant:



The UK will host the next COP, the 26th to take place, in November 2021.

Under the Kyoto Protocol, 37 industrialised countries and economies plus the European Union committed to an average 5% reduction in GHG emissions compared to 1990 levels by 2012. Under the second commitment period (not fully ratified) the parties committed to reduce GHG emissions by 18% below 1990 levels by 2020. An important element of the Kyoto Protocol was the establishment of flexible market mechanisms based on emissions permit trading, including the “Clean Development Mechanism”, described below.

To continue the process of stabilising GHG concentrations after 2020, the Paris Agreement was adopted. Unlike the Kyoto Protocol that bound only industrialised countries, all signatories to the Paris Agreement committed themselves to national carbon reduction targets. Article 6 of the Paris Agreement allows countries that beat their Paris climate targets to sell their overachievements to countries that have fallen short on their own goals. Article 6 also allows for the creation of a new international carbon market, governed by a UN body, for trading carbon credits in the public or private sector. Attempts to reach agreement on how to establish new carbon markets under Article 6 have so far been elusive. However, it is clear that regulated markets are here to stay and more countries are introducing national and regulated markets to help achieve their Paris Agreement commitments.

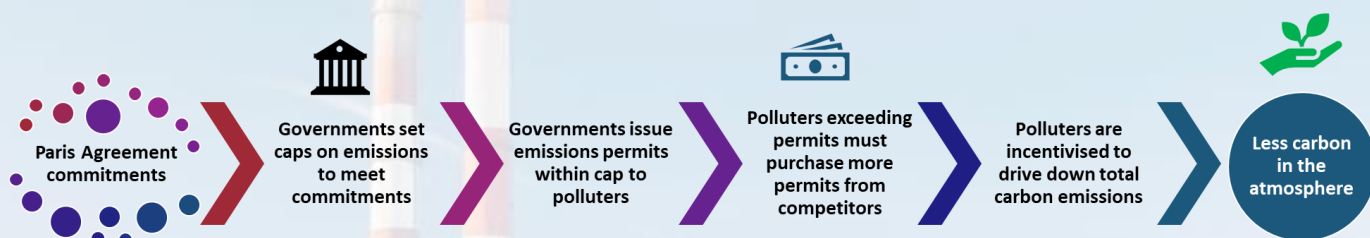
Voluntary carbon markets are also now gaining in momentum. Voluntary markets offer access to carbon trading to more sectors of the economy than regulated markets. The Taskforce on Scaling Voluntary Carbon Markets (**Voluntary Markets Taskforce**) is a private, sector-led initiative, working to scale an effective and efficient voluntary carbon market to help meet the goals of the Paris Agreement. The Voluntary Markets Taskforce was initiated by Mark Carney, UN Special Envoy for Climate Action and finance advisor to the UK’s Prime Minister for the 26th COP. The Voluntary Markets Taskforce recently launched a report with the aim of creating a blueprint for voluntary carbon markets.

Carbon market types – an overview

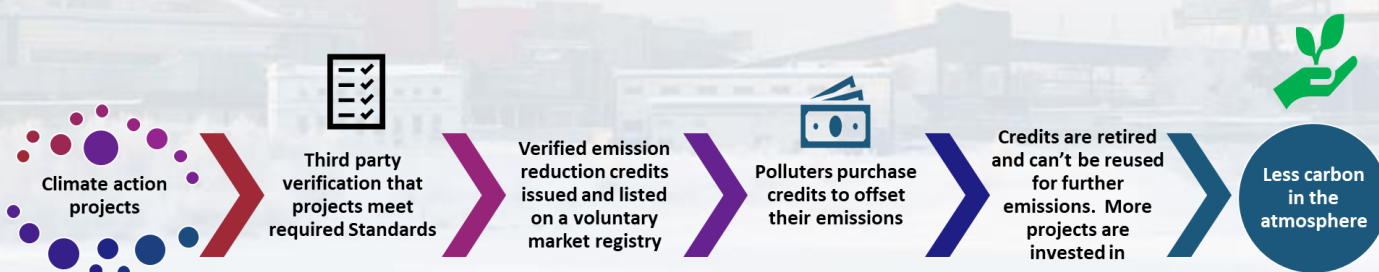
Regulated markets use “certified emission reduction” credits created through a regulatory framework. Certified emission reduction credits are used by companies and governments that are required to account for their GHG emissions and mandated to offset those emissions. The markets are regulated by international, regional and national schemes.

For example, under the Clean Development Mechanism developed under the Kyoto Protocol, emission-reducing projects in developing countries can earn certified emission reduction credits. These credits can be purchased by industrialised countries to help them to meet their emission reduction targets under the Kyoto Protocol.

National schemes, such as the well-established European Union (EU) Emissions Trading Scheme (ETS) and now China’s new ETS operate on a “cap-and-trade” basis. The government or regulator sets an emissions cap for an industry and issues a quantity of emission allowances consistent with that cap to industry members. Companies must hold an allowance for every ton of GHG they emit. Companies that can reduce their emissions such that they do not use their full allowance may sell any excess allowances to those companies that are going to exceed their own allowance.



Voluntary markets allow private companies and individuals to purchase “verified emission reduction” credits on a voluntary basis. These credits are mainly issued by non-government organisations (NGOs). These NGOs have created their own methodologies to certify projects that limit, avoid or remove GHG emissions from the atmosphere (i.e. their “Standards”). The project owners request the NGOs to validate their projects as likely to produce verified emission reductions in accordance with the relevant Standards and then provide proof of the actual reductions generated by the projects. This is then verified by the NGO and the verified emissions reduction credits can be listed on a voluntary market registry. Companies and individuals can compensate for their GHG emissions or carbon footprints by purchasing the verified emission reduction credits from the registry, the credit is then “retired”.



Regulated markets – cap and trade

“Cap-and-trade” regulated markets generally work as follows:

- The government or intergovernmental body sets an overall legal limit on emissions permitted to be produced by an industry sector or multiple sectors (the “cap”) over a specific period of time, and grants a fixed number of permits to entities releasing the emissions within the covered sector(s).
- A polluting company must hold enough permits to cover the emissions it releases.
- Each permit in the existing carbon trading schemes is considered equivalent to one tonne of carbon dioxide equivalent (CO₂e).
- Theoretically, permits are to be sold, usually by auction, so that polluters are forced to put a price on their emissions, and are incentivised to reduce to a bare minimum their emissions, thus reducing the permits they are required to buy.
- Permits or allowances must be surrendered by the polluter to cover its emissions.
- Credits are a source of permissions to pollute bought by companies that reach their allowance limit from other companies that have not used their full allowances.
- By purchasing the credit, the emitter is allowed to exceed the cap because they are effectively paying someone else to reduce their emissions instead.

Example

Project A has been running for decades. It is owned by Company A, subject to a cap of 100 units. Its legacy technology means it produces 200 units. The company will be taxed for the 100 additional units.

Project B owned by Company B has the same 100 unit cap but is able to utilise new carbon reducing technology and innovative solutions to drive down its emissions to 50 units.

A market mechanism allows the carbon credits to be valued, recorded, traded and used such that Company A can purchase Company B's excess credits. The purchase price is less than the tax otherwise payable by Company A.

Importantly, emissions are not reduced, merely replaced. The reduction is intended to be driven by Company A's desire not to continue paying for credits. Ideally, leading it to explore green finance solutions to fund the transition of Project A to a greener project.

“Cap-and-trade” is much more complex in practice as it involves determining the allocation of units, verifying emission reductions and tracking trading.

European Union

The biggest carbon market by volume and value of contracts traded globally is the EU ETS. It operates in all EU countries (plus Liechtenstein, Norway and Iceland) and caps the total amount of certain GHG emissions that can be emitted by around 10,000 factories, power stations and other installations in the power and manufacturing industry, as well as airlines. The permitted cap is reduced over time so that total emissions fall.

Within the cap, installations obtain emissions permits, which they can trade with one another as needed. The limit on the total number of permits available ensures they have a value. After each year, an installation must surrender enough permits to cover fully its emissions, otherwise heavy fines are imposed.

If an installation reduces its emissions, it can keep any spare permits to cover future needs or sell them to another installation that is short of allowances.

The price of carbon permits has sky-rocketed in recent years, reaching an all time high in 2021. In May 2021, ETS carbon prices doubled to EUR50 a tonne from an average in 2019-2020 of EUR25 a tonne.*

The EU ETS covers:

- carbon dioxide from electricity and heat generation, energy-intensive industry sectors and commercial aviation within the European Economic Area;
- nitrous oxide from production of nitric, adipic and glyoxylic acids and glyoxal; and
- perfluorocarbons from production of aluminium.

Carbon leakage

At the G7 summit that took place in June 2021, the G7 leaders acknowledged the risk of carbon leakage, i.e. the risk that introducing tough policies on polluters in one country will lead them to relocate to another country where they can continue to emit GHG cheaply.

The G7 leaders pledged to “*work collaboratively to address [carbon leakage] risk and to align our trading practices with our commitments under the Paris Agreement*”.

How this would be achieved was not specified at the summit but comes ahead of a planned proposal from the EU due to be published in July 2021 that would impose a carbon border tariff on imports of steel, aluminium, cement, fertilisers and electricity. If brought into place, importers will be required to buy digital certificates, each representing a tonne of carbon emissions embedded in the imports. Pricing is intended to be based on the cost of a permit in the EU ETS.

*Fitch Ratings

China

Unlike the EU's well established ETS, China is new to the market. However, China intends for its new ETS to become the largest in the world with the volume of total allowances allocated exceeding the EU ETS, according to China's Ministry of Ecology and Environment.*

The operational phase of China's ETS began on 1 February 2021, starting with around 2,000 power generators. These entities are required to verify 2019-2020 emissions, which, along with carbon intensity and other variables, will determine their free allowance allocation. Entities whose emissions exceed the free allocation will be required to purchase an allowance under the ETS. Trading is set to begin mid-2021. Over time, the market will expand to cover other sectors such as steel, cement and energy production.

Carbon allowances will be allocated for free based on four benchmarks that will be determined by each power generator's size and fuel type. This means, for example, that power plants burning natural gas will have a different benchmark to those fired by coal. There is then a carbon-intensity based cap. This means putting a limit on the amount of carbon dioxide allowed per unit of output. Initially, this will mean each power plant is allocated a certain number of credits, depending on how much electricity it produces and the energy source.

This is different to the pre-determined and absolute cap system used by the EU ETS. The EU ETS system means the same absolute cap applies regardless of the size of a powerplant and the volume of power it produces, whereas China's ETS instead adjusts allowances of carbon emissions per unit of output. Using fuel type as a benchmark also means improving efficiency of existing plants, rather than encouraging the use of cleaner energy. The rules initially are not onerous but this may be because the first phase is being used to explore the market and test the infrastructure, but the rules are expected to tighten as the market expands.

China's ETS does not include detailed provisions regarding foreign investors participation in the national carbon market. However, the expectation is that these rules will be forthcoming. In May 2020, China's central bank, the People's Bank of China (**PBOC**), together with other authorities, announced the development of pilot foreign exchange rules for carbon emissions trading to explicitly allow qualified overseas investors (foreign institutions and individuals) to trade in the carbon market of the Guangdong-Hong Kong-Macao Greater Bay Area of China (**GBA**) with foreign exchange or Renminbi. We have also seen cross-border investment being encouraged with initiatives such as the imminent Wealth Management Connect scheme and the anticipated international launch of e-CNY, China's central bank digital currency.

*At a press conference held on 26 May 2021:

<http://www.scio.gov.cn/xwfbh/gbwxfbh/xwfbh/hjbhb/Document/1705018/1705018.htm>

Hong Kong

Hong Kong does not have its own carbon market but polluting entities can look to offset their emissions by purchasing renewable energy certificates or through voluntary markets (described further below).

Renewable energy certificates are traded under an initiative, the “Feed-in Tariff” Scheme, between the Government of the Hong Kong SAR and Hong Kong’s two power companies, CLP Power and Hong Kong Electric. Both power companies can issue renewable energy certificates that represent a volume of electricity from renewable sources, generated by the power company itself or bought from other green project owners. Those who install solar photovoltaic (**PV**) or wind systems at their premises can sell the renewable energy certificates they generate to the power companies at a rate as high as about five times more than the normal electricity tariff rate. This aims to encourage installations of renewable energy equipment by ensuring a quick return on investment. Revenue from selling on the renewable energy certificates assists in covering the increased cost of the electricity produced or purchased at the increased rates from local green project owners. The quality and integrity of certificates are detailed in the Renewable Energy Certificates Assurance Specification which is verified annually by a third party auditor.

The certificates can be purchased by corporates and individuals and are priced by both power companies at HK\$0.50 per kilowatt-hour of energy. This is a premium price on top of “normal” electricity rates. Bulk purchases (5,100 units upwards) are available on a first come first served basis and open to price negotiation.

Many corporates in Hong Kong look to purchase renewable energy certificates to assist them in meeting their ESG policies and targets. The purchaser has the right to claim environmental attributes associated with the amount of electricity carried in each certificate. According to CLP’s 2020 annual report:

*“Sales of Renewable Energy Certificates **grew about 70%** compared with [2019]. Even more encouragingly, some customers expressed interest in larger purchases of certificates, either for a greater amount or for a longer period, demonstrating their commitment to a greener, lower carbon Hong Kong.”*

It is clear that corporates and individuals in Hong Kong are already exploring ways to offset their emissions. At present, renewable energy certificates offer one solution. Alternatives exist through voluntary markets.

Hong Kong Exchanges and Clearing Limited (**HKEX**) has also made its first offshore investment in China in with a 7% stake in the Guangzhou Futures Exchange. The Guangzhou Futures Exchange was launched in April 2021 and will develop carbon futures products and explore introducing electricity futures and climate related products. According to the Interim Chief Executive of the HKEX, Calvin Tai:

“We are already champions of sustainable finance within the Greater Bay Area and we now look forward to extending our promotion of green and low-carbon markets through the commercialisation and international development of the Guangzhou Futures Exchange in the region.”

Voluntary markets

An increasing number of companies are making commitments to reduce their own emissions, emissions associated with supply chains, and emissions produced through the use of their products. In this context, voluntary carbon markets are booming. Carbon credits, purchased voluntarily, enable companies to compensate for the emissions they have not been able to eliminate by financing the avoidance or reduction of emissions from other sources, or the removal of GHG from the atmosphere and thus meaningfully contribute in the transition to global net zero.

For example, Cathay Pacific, Hong Kong’s flag carrier airline, runs the “Fly Greener” carbon offset program where travellers can offset the carbon footprint of their flight through the purchase of carbon credits from projects that reduce or prevent carbon emissions, such as those focused on renewable energy. The carbon offset projects are certified by a third party under the Gold Standard to ensure that they are verifiable and credible.

Projects that generate voluntary emissions reduction credits are generally categorised as:

Avoidance / reduction projects	Removal / sequestration projects
<p>Avoidance/reduction projects reduce emissions from current sources.</p> <p>For example, by funding the implementation of lower-carbon technologies such as renewable energy, and avoiding practices that cause emissions such as by reducing deforestation.</p> <ul style="list-style-type: none">➢ Avoided nature loss, these limit the loss of nature such as forests and peatlands that store and sequester carbon➢ Technology based avoidance / reduction, for example setting up clean cookstoves, changing industrial processes to emit less greenhouse gas emissions and capturing methane	<p>Removal/sequestration projects take out and use/store CO2 from the atmosphere, including through nature-based sequestration such as reforestation, peatland restoration, and technology-based removal such as bio-energy with carbon capture and storage and direct air capture with carbon capture and storage.</p> <ul style="list-style-type: none">➢ Nature based sequestrations, using nature to sequester more carbon in the biosphere, including reforestation and restoring soil, mangroves, and peatlands➢ Technology based removal, removes and uses or stores CO2 from the atmosphere with the help of modern technology that uses or stores it in the geosphere or through other secure methods such as in concrete

A recent report from the Voluntary Markets Taskforce states that for finance to flow to these two types of projects, a well-functioning voluntary carbon market will be a critical enabler:

“A liquid voluntary carbon market at scale could allow billions of dollars of capital to flow from those making commitments, such as carbon neutral or net-zero, into the hands of those with the ability to reduce and remove carbon.”

The Voluntary Markets Taskforce predicts in the report that, depending on different price scenarios and underlying drivers, the market size at stake in 2030 could be up to US\$50 billion at the highest end of the spectrum.

*https://www.iif.com/Portals/1/Files/TSVCM_Report.pdf

Voluntary Markets Taskforce recommendations

The Taskforce believes significant expansion of the market, through a step-change in the scale of supply and demand of high quality, additional, verifiable, and traceable carbon credits will be critical and can be achieved but structural challenges remain to be solved. Namely, the need to help buyers navigate various standards and find high-quality credits at transparent prices. There is also a need to address supply side issues including uncertainty in future demand and long lead times to verify credits. The Voluntary Markets Taskforce has identified six key topics for action. Given the link to the 26th COP through Mark Carney, and the members of the Voluntary Markets Taskforce, representing buyers and sellers of carbon credits, standard setters, the financial sector and market infrastructure providers, the recommendations are significant. They are set out at a high level below.

Core carbon principles and attribute taxonomy:

- Establish core carbon principles and taxonomy of additional attributes
- Assess adherence to the core carbon principles
- Scale up high-integrity supply

Core carbon reference contracts:

- Introduce core carbon spot and futures contracts
- Establishing an active secondary market

Infrastructure trade, post-trade financing and data:

- Build or utilise existing high-volume trade infrastructure
- Create or utilise existing resilient post-trade infrastructure
- Implement advanced data infrastructure

Consensus on legitimacy of offsetting:

- Establish principles on the use of offsets
- Align guidance on offsetting in corporate claims

Market integrity assurance:

- Implement efficient and accelerated verification
- Develop global anti-money-laundering / know-your-customer guidelines
- Establish legal and accounting frameworks
- Institute governance for market participants and market functioning

Demand signal:

- Offer consistent investor guidance on offsetting
- Enhance credibility and consumer awareness for consumer product offerings, incl. Point-of-Sale (POS) solutions
- Increase industry collaboration and commitments
- Create mechanisms for demand signalling

High quality credits – a checklist

There are concerns about the integrity of the carbon credits being traded in the voluntary markets.

There are however, some fundamental checks that can be conducted by a buyer when looking to purchase carbon credits. These checks include:

- **Verification:** to confirm that an independent third party has certified the credit.
- **Reducing or removing emissions:** check to ensure that the credits actually help to fight climate change by either reducing or removing carbon emissions from the environment, and understand how they were created.
- **Double counting and traceability:** after an organisation or an individual buys a carbon credit, it should be permanently retired so that it cannot be reused. Check to ensure that the credits have individual serial numbers and/or that they come with identification numbers so they can be tracked and accounted for on a register.
- **Permanence:** check to ensure that the actual reduction or removal of carbon is permanent, and make sure that it cannot be undone in the future.
- **Proof of ownership:** verify that the person selling the credit owns it.

Such checks are far easier to carry out when the carbon credit is listed on a reputable voluntary offset market registry. There are several registries in existence that have been developed by governments, NGOs and in the private sector. Carbon offset registries track offset projects and issue offset credits for each unit of emission reduction or removal that is verified. They then track the ownership of credits through to retirement of the credit. A serial number is assigned to each verified offset credit, when the credit is sold, the serial number for the reduction is transferred to the buyer's account. If the buyer then claims the credit against emissions, the registry retires the serial number so that it cannot be resold or "double-counted".

There are several third-party, internationally-recognised registries in the voluntary offset market, for example:

- [American Carbon Registry;](#)
- [Gold Standard Impact Registry](#)
- [Verra Registry](#)
- [Social Carbon Registry](#)
- [IHS Markit](#)

The future for carbon markets

We considered how organisations can seek to finance their transition to being carbon neutral our last [ESG alert](#). In the meantime, organisations must consider options available to them to offset the carbon emissions they cannot reduce.

Existing formal “cap and trade” markets are expanding, with the EU ETS aiming to cover an increasing percentage of GHG emissions over time. However, all eyes are on China’s new ETS.

The new Chinese ETS, with benchmarks determined by size and fuel type and caps based on carbon intensity rather than an absolute cap, is unique. Whilst the new market is expected to bring real change, this may be incremental at first. Whilst the initial impact may be minimal as the market and infrastructure is trialled, we expect it to be adjusted as China moves towards achieving its ambitious climate targets, pledged in December 2020 at the UN Summit and under the Paris Agreement. It may be that absolute carbon emission caps are eventually applied.

There is an expectation that China may release rules for foreign investors’ participation in the national carbon market, providing an opportunity to global businesses, including those in Hong Kong. Even if global participation is some way off, GBA collaboration may be reasonably expected in the near future. This is in line with the PBOC’s announcement regarding the development of pilot foreign exchange rules for carbon emissions trading to explicitly allow qualified overseas investors and China’s current policy encouraging GBA cross border investments with schemes such as Wealth Management Connect and Bond Connect.

In Hong Kong, purchase of renewable energy certificates from the two power companies allows corporates and individuals to invest meaningfully in renewable energy.

As an alternative, businesses can look to voluntary carbon markets to purchase carbon credits that allow them to offset emissions, with a number of voluntary offset programmes and standards available.

Next steps ...

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We would be delighted to help.

*Any “reference to “China” refers to the People’s Republic of China, excluding the Hong Kong Special Administrative Region of the People’s Republic of China (“**Hong Kong**”), the Macau Special Administrative Region of the People’s Republic of China (“**Macau**”) or any other special administrative region or territory. “Hong Kong” shall be construed as a reference to “Hong Kong Special Administrative Region of the People’s Republic of China”.

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