

Carbon Markets Update

UBS Asset Management | UBS Investment Bank

Rebecca Idell, Head of Sustainable Finance and ESG Structuring, **Virat Agarwal**, Head of Commodities Structuring, and **Ray Fuller**, Head of Indexed Alternatives Portfolio Management shared their insights on how carbon markets play a key role in reducing carbon emissions in a cost-effective way.

There are two distinct types of carbon credits

- A carbon credit represents one metric tonne of carbon dioxide or greenhouse gas equivalent.
- A **compliance carbon credit** is an emission allowance that permits an entity to emit one metric tonne of carbon dioxide.
- A **voluntary carbon credit** represents one metric tonne of carbon dioxide that is either avoided or is removed from the atmosphere.
- The compliance markets are regulated and more established, while the voluntary markets are unregulated and more fragmented.

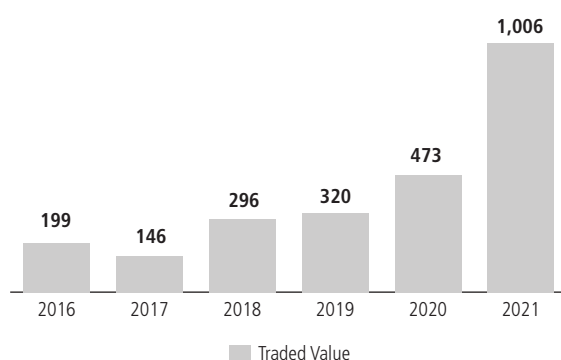
Voluntary carbon markets are growing rapidly

- There has been a rapid increase in the scale of these markets. In 2021, USD 1 billion of voluntary carbon credits traded.
- There have been efforts across the industry to explore ways to scale these markets in a credible and high-integrity way.
- With growing demand for carbon credits and more participants, we expect the market to become more standardized.

Types of projects that are financed by voluntary carbon credits

- The two broad categories of projects in the voluntary space are:
 1. Avoidance/Reduction type
 2. Removal/Sequestration type
- Within each of these broad categories, we break it down further into nature-based credits or technology-based credits.
- A nature-based Avoidance/Reduction credit would reflect an Avoided Nature Loss, for example, a forest that was slated for deforestation until an entity put up the funds to conserve it.
- A technology-based Avoidance/Reduction refers to energy efficiency or clean energy projects that avoid further increases in carbon dioxide being emitted.
- A nature-based Removal/Sequestration could be a reforestation of an area, or a peat restoration or coastal restoration.
- Examples of a technology-based Removal/Sequestration credit are emerging technologies such as Bioenergy with Carbon Capture and Storage (BECCS) or Direct Air Carbon Capture and Storage (DACCS).

Traded value of voluntary carbon offsets (US\$m)



Source: Ecosystem Marketplace as of November 2021

Cost, supply and quality dynamics impact the price of a credit

- When looking at the quality of carbon credits, we ask whether it is additive. Would the reduction or removal have happened without the financing provided by the carbon credit project? And how permanent is the sequestration or removal of the carbon?
- A technology-based removal is the highest quality credit. This area sees scarcity of supply, and it is expensive, because the tech is so new and hasn't been scaled.
- At the other end, we see much higher supply and lower costs for avoided nature losses. An avoided nature loss credit might cost USD 8- USD 12 per tonne, while a technology-based direct air carbon capture credit could be USD 800-USD 1000 per tonne.
- This illustrates how fragmented the voluntary markets are. And things are further complicated by the fact that there is not a central price of carbon, nor a single registry for all the credits.

Compliance carbon markets take two forms

- There are 30 different regulated compliance emissions markets globally and the most accessible to investors are: Europe (European Union Allowance), California, Regional Greenhouse Gas Initiative, and U.K. In addition, Korea is starting to open up to investor access.
- The world's 30 markets cover about a sixth of global emissions. The European carbon market, which is by far the largest, covers about 55% of the total emissions in Europe, and we believe this is expected to reach 70%-75% by the end of this decade.
- These markets take the form of Cap and Trade systems. A Cap and Trade system provides emissions allowances to participants, but places a limit on the total number. Participants are allowed to trade with each other.

How cap and trade works in the European compliance market

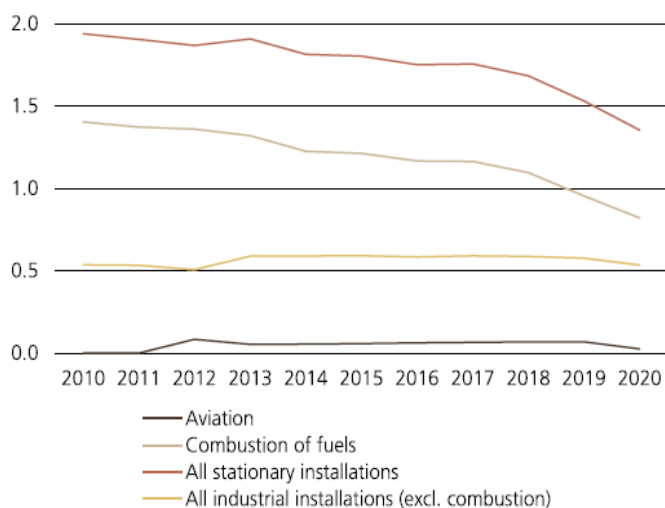
- The European Commission (EC) releases a fixed amount of carbon emission credits each year – the cap. That cap is coming down each year, reducing the amount of total emissions.
- The trading occurs among the companies that are mandated by the EC to participate in the scheme. Those with a surplus of carbon allowances are allowed to sell them to other companies, while companies that have a deficit are allowed to buy them.
- This is a sizable marketplace, both in terms of futures contracts and spot markets. In our view, Europe releases about 1.6 billion credits every year, which is € 130 billion of notional value. The market trades over one billion euros per day.
- The EC asks companies to monitor their emissions on a daily basis. In February, they must report their total emissions released for the year, and in March, they must submit those credits into the system.
- If the companies don't have sufficient credits at that point, they are required to source the credits – and pay a penalty of 100 euros for each credit they did not source.

Tackling the problem in three dimensions simultaneously

- The European market has gone through four phases since it

Emissions by sector within the European Economic Area

(Values are in billion tons of CO₂ equivalent)



Source: European Environment Agency, UBS 2020

began in 2003, and the EC has evolved its approach.

- First, it has brought more industries and more greenhouse gases into the scope of this trading system, with plans to add more over the next decade.
- Second, the rate of emissions reduction has accelerated from 1.6% to 2.2%, and is continuing to grow.
- Third, the EC is decreasing the number of free carbon credits and increasing the number that must be purchased. While all the credits were freely allocated at the outset, that number is expected to reach zero by the end of the decade.
- Overall emissions have declined in Europe as the amount of free allocation credits has declined. The revenues from purchased credits will be used by the EC for climate projects.

It will take much higher carbon prices to reach global decarbonization

- In order to make full decarbonization more economical, carbon prices will have to reach a range of USD 100 to USD 500/metric tonne.
- For example, steel production would require carbon prices of USD140–USD160/tonne to fully decarbonize.
- Steel production is extremely dependent on coal to power the blast furnaces that melt iron into steel. Full decarbonization would require using hydrogen as the main agent in an electric furnace to melt iron.
- The EC and European governments continue to fully support the scheme despite higher energy prices and political pressures.

The EUA futures market

- Because of the February reporting season for the European market, the bulk of EUA futures expire in December. Fully 95% of the annual liquidity is in the December contracts.
- The majority of the participants are long these contracts, because they are the companies who require the credits and need them to be delivered before reporting season.
- The main shorts are the banks, who are giving companies the hedge for this market.
- The futures curve is upward sloping because this market is dominated by participants who are using it for hedging purposes. It should reflect the cost of funding in euros, because there's no cost to store these credits. The premium should be roughly equal to the average cost of financing.
- There are several ways to trade EUA futures: cash and carry; buy the spot, sell the future and lock in the arbitrage; or go long the futures to get exposure to this market.

Applications and use cases for investors

- The climate transition is an unprecedented shift in terms of investment, technological change and behavior change.
- Carbon credits are one of the tools in the toolkit to support and accelerate that transition.
- As investors, we broadly see the following applications for carbon markets to support that transition:

1. Neutralizing and compensating portfolio emissions.

We need to have credible transition and decarbonization plans for our investments. These include engaging with industries that are heavy emitters and taking steps to decarbonise assets. Using carbon credits to neutralize or compensate for portfolio emissions can offer a complementary solution, and puts an economic value on carbon where there's not a consensus price.

2. Mitigating portfolio climate risks. Climate transition is increasingly becoming a prevalent risk. Carbon markets offer a potential source of pure play exposure to that climate transition and potentially uncorrelated sources of returns.

3. Generating impact. Many investors are thinking about how to integrate sustainability criteria in their investments, especially with the development of Article 8 and Article 9 of the Sustainable Finance Disclosure Regulation (SFDR). With voluntary carbon credits, by selecting and financing those projects, not only are investors achieving a verified emissions reduction, they're also providing a range of social and other co-benefits.

- In addition, we need technological innovation and change to achieve net zero. As the recent UN IPCC report noted, it will require carbon removal technologies to achieve the 1.5C goal. As an investment community, supporting and financing those technologies to make them commercially and economically viable is going to be crucial to that transition.

Measuring emissions in a portfolio context

- The key approaches to measuring the emissions of a portfolio of assets are Weighted Average Carbon Intensity (WACI) and emissions per US dollar invested.
- WACI is a measure of the emissions generated per unit of output. We use a revenue or sales figure as the denominator and total emissions as the numerator to calculate a score that we can use to compare portfolios or companies.
- From an emissions offsetting perspective, we tend to look at emissions per US dollar invested or capital deployed to determine the share of emissions attributed to an investment. We use the market cap if we're looking at equity or enterprise value for debt. This lets us look across sectors, or asset classes, or across the whole portfolio.
- By weighting these numbers and rolling them up into a portfolio context, we can determine the number of tonnes of CO2 equivalent emitted for every dollar invested.

What does a tonne of carbon mean in the real world?

- Even a portfolio that integrates environmental criteria can still create residual emissions that are extremely material.
- For example, a USD 100 million green equity portfolio, consistent with an SFDR Article 8, would produce emissions that are equivalent to 3,000 return trips from Europe to New York.
- Using voluntary carbon credits can offset the residual emissions of a portfolio and support additional climate co-benefits.
- We estimate that the costs to offset emissions for global equity portfolios are relatively low, ranging from 7 basis points to 1 basis point, yet can have a large impact.

The voluntary carbon market as an asset class

- The world produces approximately 41 billion tonnes (gigatonnes) of CO2 equivalent each year. In our view, this needs to be taken to zero by 2050. By 2030, we need to remove 23 gigatonnes of emissions from our annual output.
- Carbon removal and sequestration through the use of voluntary carbon markets will have an increasingly large role to play as we find those residual emissions increasingly difficult to reduce.
- There are estimates that this could be a USD100-USD150 billion market and could grow from removing 100 million tonnes of CO2 today to 2 billion tonnes by 2030 – and more than 10 billion tonnes by 2050, in our opinion.
- There aren't many markets with the potential for 100 times scaling.
- Based on current annual emissions of 41 gigatonnes, the value of carbon credits in current global compliance markets is USD 3 to USD 3.5 trillion at today's prices. It is already a sizable market.

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