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A 3-Pronged Approach to Low Carbon

How Carbon Markets Can Aid the Transition to Net Zero

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A 3-Pronged Approach to Low Carbon: How Carbon Markets Can Aid the Transition to Net Zero

Executive Summary

Carbon allowances, which are issued within Compliance carbon markets, are designed to reduce emissions via the help of market forces.

Often erroneously labelled as carbon credits, carbon allowances create a "climate divided" by creating annual emission reductions. Thus, unlike offsets, they do not have to be retired to create environmental impact, making them an investment instead of a cost.

EU Carbon Allowances (EUAs) and California Carbon Allowances (CCAs) are uncorrelated assets with a strong returns profile, and are investable through a range of Exchange-Traded Products.

Allowances can also be used to hedge the carbon price exposure inherent within today's portfolios.

The challenges faced by today's investors

Investors seeking to transition their portfolios to Net Zero are faced with three key challenges:

1) They must align their investment activities with the Net Zero transition, per the demands of voter constituents and the general public
2) They must monitor and manage risks associated with the transition in accordance with regulation and a burgeoning fiduciary responsibility
3) They must identify outperforming investment opportunities during the transition

This paper explores how investing in carbon allowances can serve as a tool to meet these challenges.

Untangling carbon markets

Though often labelled as a single market ("the carbon market"), there are in fact *two* distinct types of carbon market: Compliance and Voluntary. Table 1 summarises key aspects of each. Both markets are designed to aid decarbonisation.

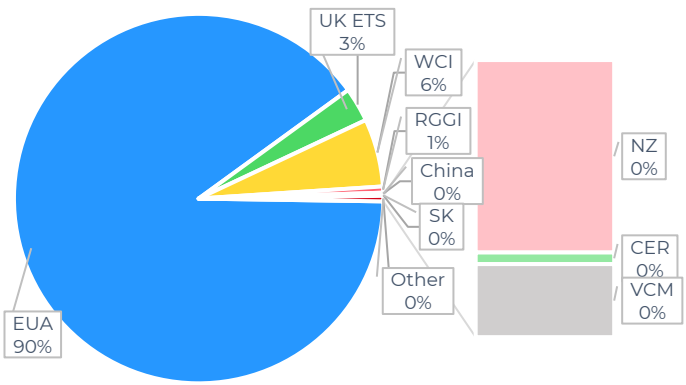
Table 1: Two kinds of carbon markets

	Compliance Carbon Markets	Voluntary Carbon Market (VCM)
Philosophy	Price emissions of polluters to provide economic incentive to reduce emissions	Pay/finance emission reduction projects
Mechanics	Regulator issues a limited volume of carbon allowances, for which polluters have to compete. Every year, scarcity increases, forcing polluters to cut emissions over time. Each allowance permits the emission of 1 tonne of CO_2.	Projects reduce emissions and receive a carbon credit for each tonne of CO_2 avoided/reduced. The credit can be sold to raise funds, and the ultimate acquirer can retire the credit to claim the carbon benefit
Regulatory framework	Enforced by jurisdiction, mandatory participation for covered companies, regulated	Voluntary participation, little regulation
Underlying instrument	Carbon Allowance	Carbon Credit ("Offset")
Main participants	Sellers: Governments Buyers: Utilities, Oil&Gas majors, Energy Intensive Industry, Aviation	Sellers: Project developers, including trading houses, energy majors or banks Buyers: Global corporates, private individuals
Market size (2021, growth rate 20-21)	€759.2bn (+264%)	€1.1bn (+232%)

Both types of carbon markets have a range of subcategories. For example, there are 30+ Compliance Carbon Markets Globally, and at least 6 different standards that issue Carbon Credits. As Figure 1 shows, the market is currently heavily dominated by the EU ETS, which represents 90% of the global carbon market, followed by the Californian/Canadian Western Climate Initiative (WCI) with 6%.

The EU ETS and WCI are the focus of this paper.

Figure 1: Global Carbon Markets by 2021 Trading Value



Source: Refinitiv, Ecosystem Marketplace

Carbon Allowances as an investable asset

How carbon allowances work

Carbon Allowances are a permit in an electronic registry. Each compliance carbon market has its own allowance and registry, and usually an allowance from one market cannot be used for complying with a different market. Companies covered by the jurisdiction's carbon market must surrender carbon allowances equalling their emissions by the compliance deadline. Penalties for non-compliance are severe: In the EU, companies are not only fined but must also submit the allowance at a later date. In the WCI, companies must surrender 4 allowances for each missing allowance due by the compliance deadline. Therefore, compliance is very close to 100%.

Carbon Allowances are created by the regulator according to the respective laws, which limits the number of allowances and sets clear rules on handling of such allowances. Usually, the annual volume of allowances created is reduced over time to drive down emissions. The allowances are either handed out free of charge to some emitters, or sold via auctions. Auctions and the registry are usually open to all kinds of companies, subject to significant administration and due process.

Returns, volatility and correlations

Over the past 5 years, carbon allowances were one of the best performing asset classes. Table 2 lists average annual returns for each major market.

Table 2: Average annual returns and volatility for the EU ETS and WCI markets

	1 year (Sept '21-Aug '22)	3 years (Sept '19-Aug '22)	5 years (Sept '17-Aug '22)
EUAs (EU ETS)			
Average annual returns	32%	47%	69%
Annualised volatility	55%	48%	47%
CCAs (WCI)			
Average annual returns	11%	16%	12%
Annualised volatility	36%	28%	22%

Source: Bloomberg

Carbon allowances are a largely uncorrelated asset class. In particular, the very liquid EU Carbon Allowances (EUAs) trade uncorrelated to any major asset class, whereas the less liquid WCI instrument (California Carbon Allowance, CCA) sees some correlations, as table 3 exhibits.

Table 3: Correlation between Carbon Allowances and major asset classes

	EUA	CCA
Bund 10year	0.025	0.041
US Treasury 10 years	0.136	0.248
MSCI Daily Net World	0.146	0.329
SP500 total return	0.123	0.328
Coal	0.054	-0.003
Gas	-0.032	0.049
Gold	-0.047	-0.164
Crude Oil	0.167	0.228
US Aggregate	-0.016	-0.034
US High Yield	0.112	0.286
MSCI US REIT	0.071	0.433

Source: Bloomberg, monthly correlations Sep 2012 to Aug 2022

Even within carbon allowance markets, the respective systems trade uncorrelated, as each market follows its own rules. Over the last 10 years, the EUA contract showed a correlation of +0.24 to CCAs and +0.18 to RGGI allowances, the second biggest compliance carbon market in the US.

Carbon as part of an investment portfolio

Creating outperformance

Adding carbon allowances to an investment portfolio can impact returns in two ways.

First, the most basic approach is a long-only strategy with a carbon allowance position. Most analysts expect carbon prices to increase over the coming decade, as supply of allowances reduce and the energy transition requires higher carbon prices to decarbonise at scale. Table 4 shows selected carbon price projections. Combined with the low correlation with other asset classes, adding carbon allowances can increase risk-adjusted returns.

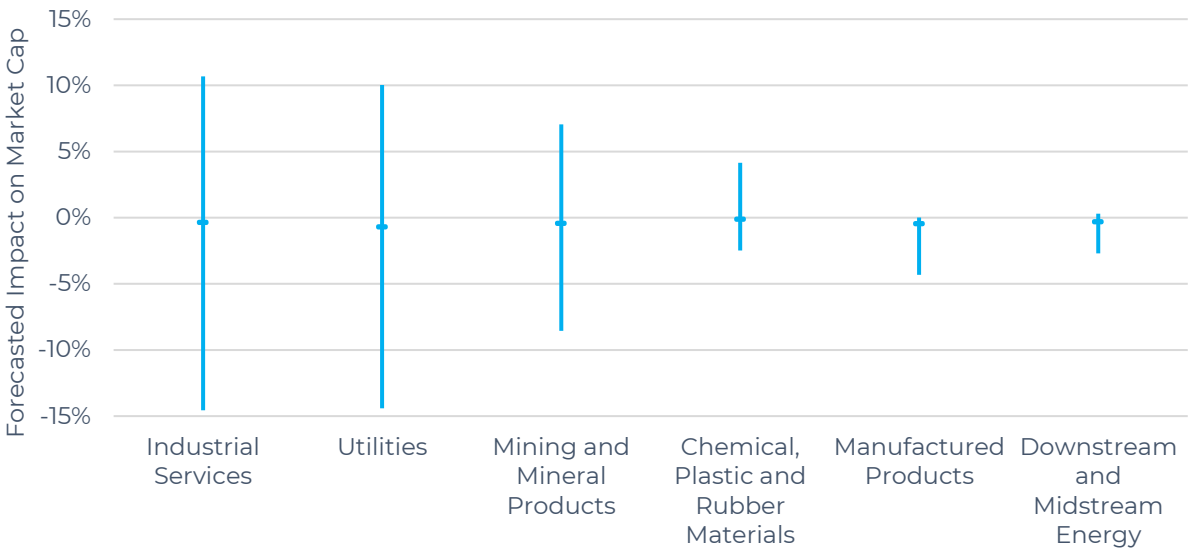
Table 4: Selected carbon price forecasts for EU/US by 2030

NGFS Orderly transition scenario EU	$ 300
IEA Net Zero 2050 scenario	$ 130
Median analyst EUA price forecast (CarbonPulse, July 22)	€ 134

Second, most investors are *already* exposed to carbon pricing: As corporates are exposed to carbon pricing, their long-term market value is also driven by future carbon price scenarios. By analysing the exposure of corporates across varying

scenarios, investors can identify potential outperformers in a high carbon price future. Figure 2 shows the impact of EUA prices on market value of EU equities.

Figure 2: Forecasted change in 2025 Market Capitalisation in a 100€ EUA price scenario



Source: SparkChange internal calculation based on CarbonAlpha Model

Hedging risk

As described above, assets carry an intrinsic carbon price risk. Although these risks may appear less significant today due to low carbon prices, analysts are forecasting higher prices which will surface the financial risks associated with carbon inefficient corporates. Fiduciary duty will require portfolio managers to actively track and mitigate this carbon price risk. The 2022 European Central Bank climate stress test showed that >70% of the assets at risk in the short-term are due to carbon pricing[1]

Existing carbon price risk models are based on impractical assumptions such as an average global carbon price. They ignore real-world prices as well as individual market specifications such as subsidies, exclusions or hedging strategies of corporates. CarbonRisk, a proprietary dataset created by SparkChange, solves this by providing granular, bottom-up analysis per market for 6,500 corporates.

Creating Impact

Reducing financed emissions is a key aspect of ESG investing, and organic emission reductions through direct engagement are the gold standard. However, such reductions are time-intensive and can result in investors struggling to meet their short-term reduction pledges. Instead of relinquishing voting control of such companies by divesting, investors can use carbon allowances to create more immediate impact.

Buying and holding carbon allowances reduces the available pool of allowances, which, in turn, forces polluters to reduce emissions further. Furthermore, the

[1] ECB 2022 Climate stress test: https://www.bankingsupervision.europa.eu/press/pr/date/2022/html/ssm.pr220708~565c38d18a.en.html

resulting price increase of allowances makes decarbonisation technology more economical in comparison, triggering more emission reductions.

Due to the unique design of the EU ETS, there is a window of opportunity that allows investors **to divest EUAs at some point in the future without forfeiting the environmental impact** by leveraging the mechanics of the Market Stability Reserve (MSR). For more information, please read "Using Physical Carbon Allowances to Mitigate Financed Emissions". This creates a significant advantage over buying carbon credits (which must be retired to achieve impact) as EUAs currently create an annual "emission reduction dividend" during their holding period.

Investors can therefore 'overlay' EUAs within their portfolio to compensate for any financed emissions. This requires a 1-4% allocation to EUAs to entirely neutralise the financed emissions of a developed market portfolio.[2]

How to get involved

Allowances can be traded in the spot market, or the (usually much more liquid) futures market. In 2021, according to Refinitiv, 91.7% of EUA's trading volume traded in the futures market. Even though it is possible, directly trading carbon allowances can be cumbersome. Overall, there are four options to trade EUAS or CCAs:

1) Open a registry account and directly hold physical carbon allowances in the registry
   Operationally challenging, but most direct approach
2) Trade Futures on a commodity exchange such as the ICE, CME, EEX or Nodal Markets
   Trading commodity futures may be difficult for some investors, but offers the most liquid market
3) Invest in a financial product that is backed by carbon allowance futures,
   Easier to hold for investors, but annual rolling cost can add to fees. Does not necessarily remove EUAs from polluters.
4) Invest in a financial product that is backed by a physical carbon allowance, such as the SparkChange EUA ETC Ticker CO2.L
   Easily investable while liquidity is backed by both futures and spot markets

For each use case above, there are different options available.

Alpha	Short-term strategies - leverage: futures/options on ICE or bespoke structured products Long-term strategies - inexpensive: physically backed products, either direct access to registry or SparkChange EUA ETC CO2.L
Risk	Leveraged products: futures/options on ICE or bespoke structured products Carbon hedged products
Impact	Physically-backed products, either direct access to registry or SparkChange EUA ETC CO2.L

[2] Solactive: A stitch in time saves nine

Ultimately, carbon allowances can serve a range of use cases around the climate transition, and even do this in parallel. The use case will drive the position sizing, but may also serve more than one purpose. This makes it one of the most powerful tools to incorporate the low carbon transition into investment decisions.

Contact Us

Combining extensive industry experience across carbon markets, financial products and data analytics, our 25+ team shares a passion for our company's mission: To link the financial world to carbon markets.

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