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WisdomTree Europe

EU Carbon Emissions Trading – to Zero Emissions and Beyond

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EU Allowance Futures

European Union's carbon market

EU Emissions Trading System (ETS)

EU Allowances

EU Emissions Trading System (ETS)

First and largest carbon emissions trading system in the world

- Started in 2005
- In 2020, 8 billion emission allowances changed hands, with a market value of €201bn

Remains the centrepiece of European Union's climate strategy

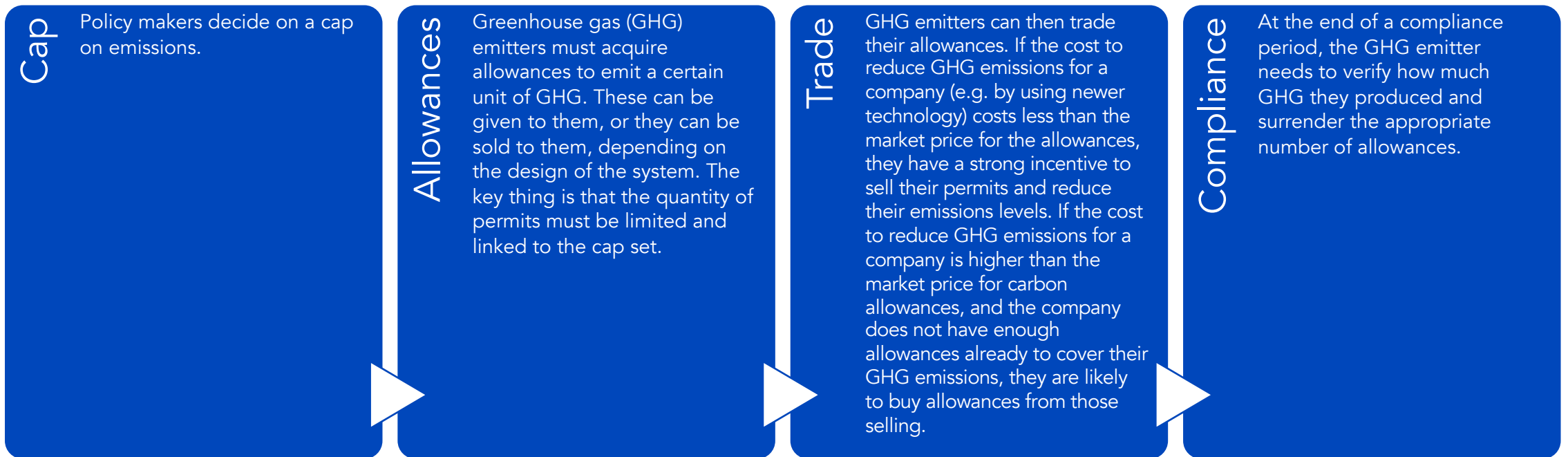
- As climate goals become more aggressive, the EU ETS will be more heavily relied on to deliver results
- The EU sees the ETS as an efficient market-based system to deliver emission abatement and therefore is preferred over carbon taxes for example

We expect:

- The scope of the European carbon market to expand
- The supply of allowances to emit carbon to shrink
- The price of allowances to rise and thus help policy makers deliver on their promises to decarbonise and become emissions net neutral by 2050

Source: WisdomTree; European Commission July 2021; Refinitive , January 2021. An allowances is permit to produce a quantity of carbon equivalent greenhouse gas (see slide 4)

What is 'cap and trade'



EUAs are the currency of carbon in EU

- + A European Union Allowance (EUA) permits the holder to emit one tonne of carbon equivalent greenhouse gases
- + EUAs are priced in Euros per tonne of Carbon equivalent (€/tCO₂e)
- + Allowances need to be surrendered at the end of a compliance period to cover the amount of emissions a company has produced
- + Penalties: Regulated entities must pay an excess emissions penalty of €100/tCO₂e for each tonne of CO₂ emitted for which no allowances have been surrendered and buy and surrender the equivalent amount of allowances.

Source: European Commission

EU ETS is not the only emissions trading system in the world, but is by far the largest

Global carbon market size 2018-2020 (including futures where available)
 Million tonnes CO2 equivalent (Mt) and Million Euros

	2018		2019		2020		Volume change 2019-2020	Value change 2019-2020	Share of total value
	Mt	€ million	Mt	€ million	Mt	€ million			
Europe (EUAs, aviation EUAs) ^a	7,754	129,736	6777	168,966	8,096	201,357	19%	19%	88%
CERs ^b (primary and secondary)	15	32	12	40	16	61	33%	53%	
North America (CCAs ^c , RGGIs ^d)	1,126	12,871	1,673	22,365	2,010	26,028	20%	16%	12%
South Korea	51	809	38	744	44	870	16%	17%	
Chinese pilot schemes (allowances and offsets) ^e	103	194	130	249	134	257	3%	3%	
New Zealand	23	299	30	433	30	516	0%	19%	
Total	9,062	14,3847	8,660	192,797	10,330	229,089	19%	19%	

a Volume and value of EUAs excludes option positions

b Certified Emission Reductions

c California Carbon Allowance

d Regional Greenhouse Gas Initiative. The units traded in the Regional Greenhouse Gas Initiative are short tons, which are 0.907 metric tonnes. For unit consistency, we have converted RGGI's total volume figures to metric tonnes.

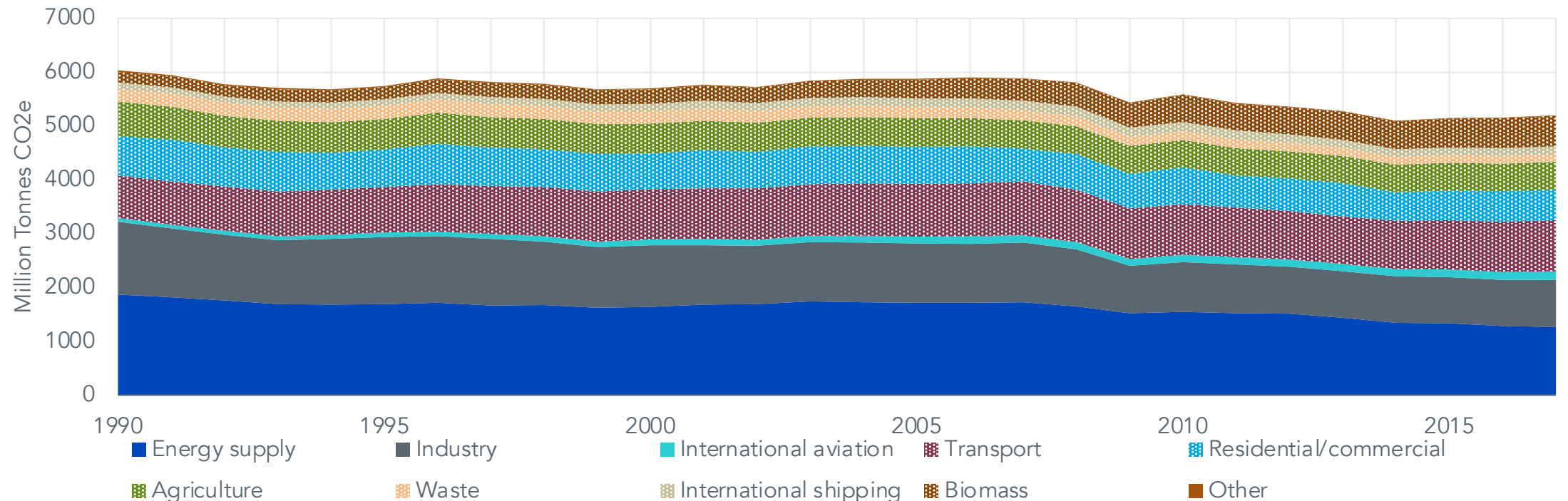
e The value for Chinese market includes allowances only.

All non-European transactions are priced in local currencies, for the sake of consistency we have converted values into euros. Source: Refinitiv Carbon Market Year in Review 2020, January 2021

Historical performance is not an indication of future performance and any investments may go down in value.

EU ETS currently only covers Energy utilities^a, industrial emitters^b and intra-EU aircraft operators^c, which is less than half of EU emissions

EU 28 Greenhouse gas emissions by sector



a Operating in electricity and heat generation

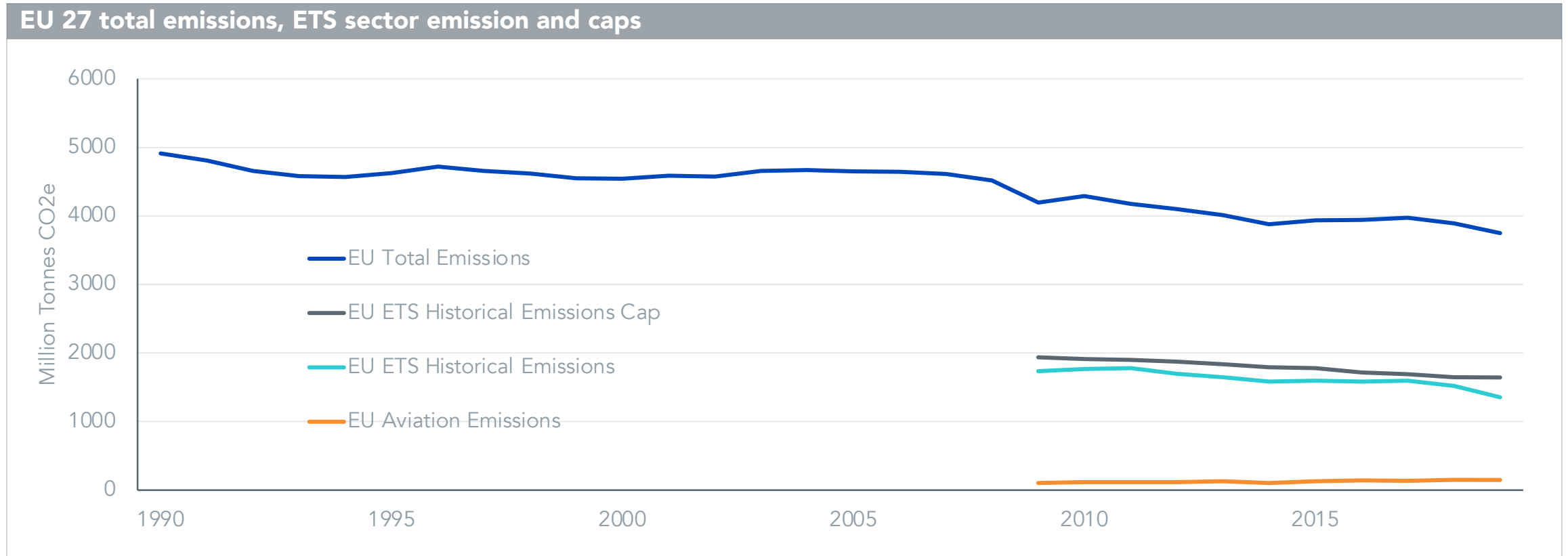
b Including oil refineries, steel works, and production of iron, aluminium, metals, cement, lime, glass, ceramics, pulp, paper, cardboard, acids and bulk organic chemicals.

c Flights from one European port to another European port

Source: WisdomTree, European Environment Agency, 1990 – 2017 data. The purpose of this chart is to be illustrative. Not all installations in the energy supply, industry or international aviation sector are covered by the EU ETS. Furthermore, this chart is compiled at the EU 28 level. With the UK having left the system, the current programme applies to EU 27.

Historical performance is not an indication of future performance and any investments may go down in value.

EU ETS has been very successful in the sectors covered



Source: WisdomTree, European Environment Agency, 1990 – 2019 data. Available as of April 2021. Note data is at EU 27 level (removing the UK, which is no longer part of the system). **Historical performance is not an indication of future performance and any investments may go down in value.**

Future expansion

- + There is a proposal to expand to the following sectors
 - Shipping
 - Buildings
 - Road transportation
- + Some of these may be achieved through adjacent programmes with links to the main ETS

Source: WisdomTree, <https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52021DC0550&from=EN>

Becoming Paris Aligned – Fit for 55 legislation

The Paris Agreement is a legally binding international treaty on climate change. Its goal is to limit global warming to well below 2, preferably to 1.5 degrees Celsius, compared to pre-industrial levels.

The European Union is the most advanced region in developing a roadmap to get there.

As a near term goal, the European Commission has developed legislative tools to reduce greenhouse gas emissions by **55% by 2030 from 1990 levels.**

The EU ETS is the cornerstone in this strategy

Source: WisdomTree, <https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52021DC0550&from=EN>

Fit for 55: a legislative package that will tighten the market with a variety of measures

More
aggressivel
y reduce
emissions
cap

Place more allowances
into a reserve

Restrict free allowances

Add more sectors to the system

Cancel
allowances
in the
reserve
(based on
historic
use)

Promote
clean
technology
through
various
funds

Implement
a carbon
border tax
to stem
'carbon
leakage'

Integrate
aviation
sector to
main
system

Shipping

Buildings

Transport

Source: WisdomTree, <https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52021DC0550&from=EN>

Summary of why EU ETS

Cap and trade is a markets-based system to reduce GHG emissions

- Efficiently cuts emissions by incentivising those with least costs to reduce emissions to do so. A distinct advantage over a tax

EU ETS is the largest and most liquid in the world

- Size and liquidity considerations make this the most investable carbon market

It is the cornerstone of the EU's strategy to meet climate goals

- The relevance of EU ETS is unlikely to fade away. The recent trend of tightening the market is here to stay

Fit for 55 legislation is likely to be the catalyst for the next round of tightening

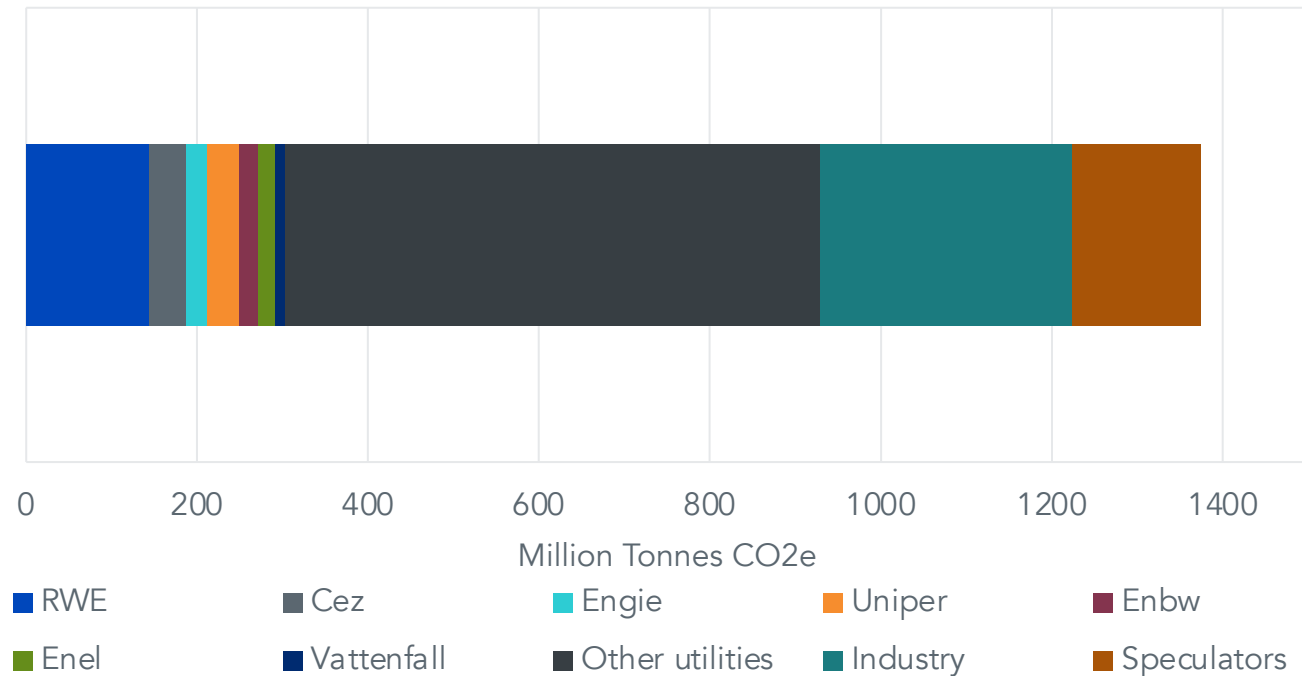
- With more sectors to be covered, caps to be reduced more aggressively, less allowances to be given away, this market will tighten to reflect a carbon price commensurate with the EU's path to becoming net neutral by 2050



An emerging asset class

Role of speculators in the EUA market

Hedged holdings of EUAs in 2020

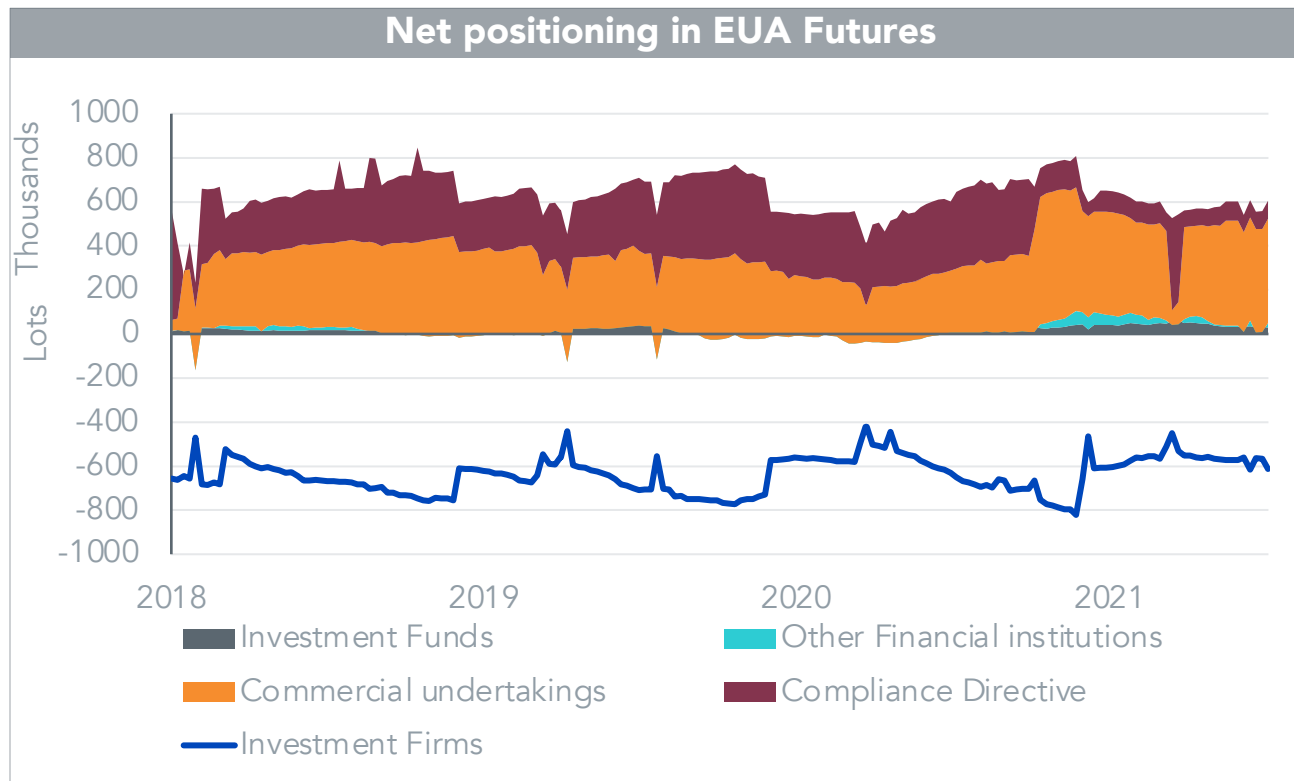


- Speculators can enhance liquidity and aid the price discovery process
- With the EU reliant on a market mechanism to price carbon emission allowances correctly, a robust price discovery process is important
- The cost of an under-priced carbon market would be the overproduction of carbon and hence speculators play a vital role in this market

Source: WisdomTree, BloombergNEF, company reports. REW, Cez, Engie, Uniper, Enbw, Enel, Vattenfall are all large energy utilities. Other utilities are energy utilities excluding those separately listed. Industry includes companies in the following covered sectors; oil refineries, steel works, and production of iron, aluminium, metals, cement, lime, glass, ceramics, pulp, paper, cardboard, acids and bulk organic chemicals.

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MiFID II Commitment of Traders Futures Position Reporting



- Commercial undertakings and compliance directive (those who have a compliance obligation in EU ETS and are using EUA futures for hedging) are structurally long futures
- Investment firms (banks and brokers) are structurally short futures
- In the past year, we have seen a growing presence of investment funds and other financial institutions
 - A sign that EUA futures are becoming an investment asset
- Diversification of futures holders could help in robustness of pricing

- Investment firms – includes banks and other firms regulated under MiFID II (structurally short EUAs as they provide a service to commercial undertakings and funds)

- Investment funds – entities holding investments directly in the commodity derivatives market as a form of collective investment scheme, including hedge, pension and exchange-traded funds.

- Other financial institutions – those financial firms not falling within any of the other categories.

- Commercial undertakings – non-financial entities using commodity derivatives, for example firms using those markets to hedge the risk they directly incur from dealing in physical commodities such as producers, end users, processors, manufacturers, shippers and merchants.

- Operators with compliance obligations under the Emissions Allowance Trading Directive – such as commercial airlines, entities in power and heat generation, energy-intensive industry sectors including oil refineries, steel works, production of iron, aluminium, metals, cement, lime, glass, ceramics, pulp, paper, cardboard, acids and bulk organic chemicals.

- Compliance Directive – mainly EU power generators

Source: WisdomTree, Bloomberg, ICE Futures Europe, Weekly data, Data to 23/07/2021

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Solactive Carbon Emission Allowances Rolling Futures Index

Solactive Carbon Emission Allowances Rolling Futures Index

Exposed to front December EUA futures

- Front December is currently the most liquid futures contract
- Strategy therefore reflects the main activity of the EUA futures market

Rolls once a year

- On the 15th calendar day in November
- In a 10-day window

Euro based index

- Same currency as underlying future

Source: Solactive, Live date was 10/06/2021

Average Daily Trading Volumes (Trailing 1-year from contract expiry), Lots

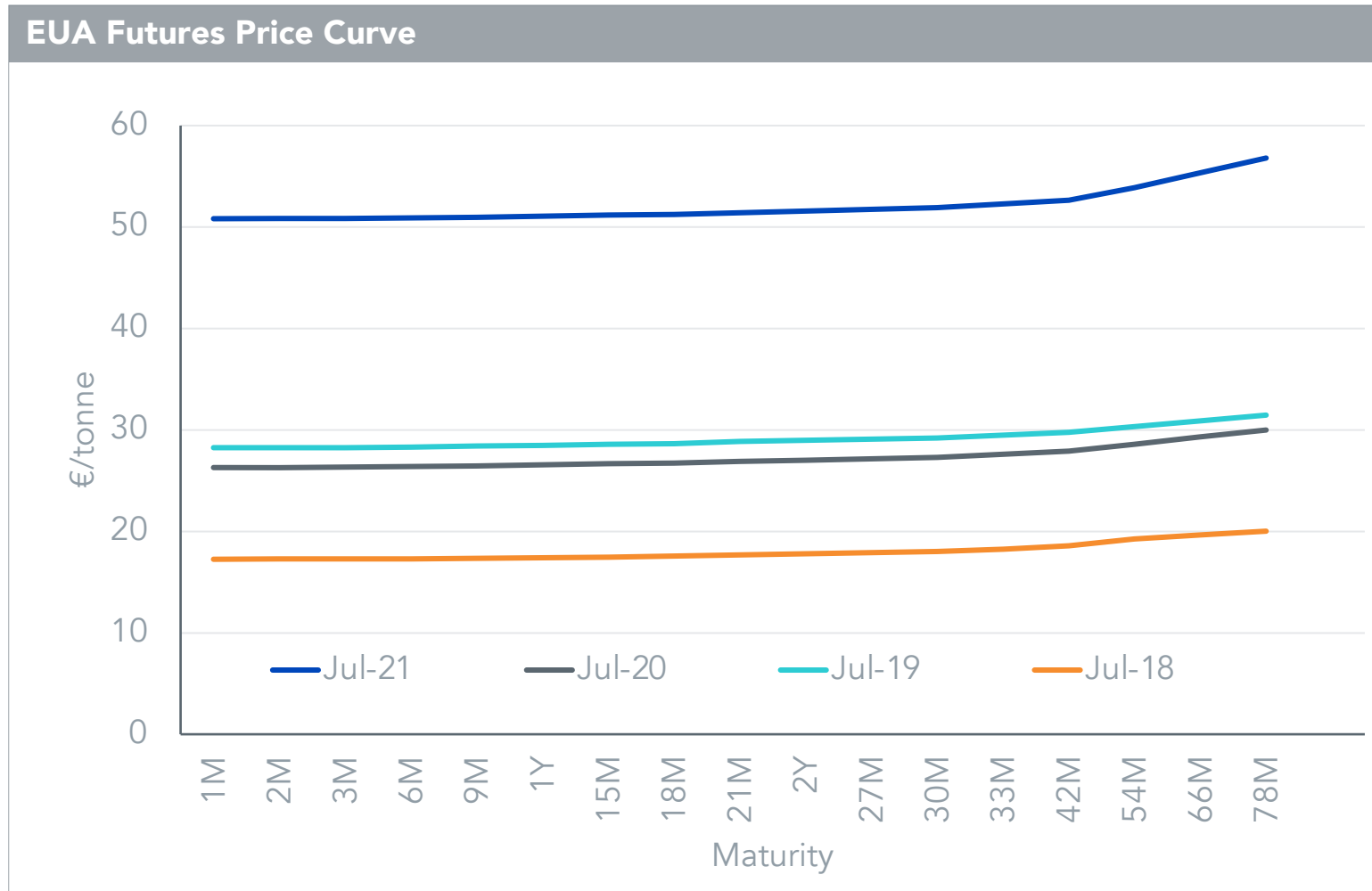
Year	Front March	Front June	Front September	Front December	Second December
2018	910	78	110	21,783	4,199
2019	763	229	200	22,264	3,421
2020	865	462	154	26,673	4,319
2021	1,378	659	711	20,460	2,663
Average	979	357	294	22,795	3,651
Front Dec has x times volume as	23	64	78	1	6

On average between 2018 and 2021, the Front December contract has had 6 times the trading volume as the Second December contract and 78 times the Front September contract.

Source: WisdomTree, Bloomberg. Average daily trading volumes over 1 calendar year prior to expiry of respective contract for front month contracts. Timeframe for average trading volumes of Second December contract is based on the timeframe for the Second December contract. As September 2021 and December 2021 contracts have not expired yet, we use a trailing 1-year time frame from 3rd August 2021

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Sample EUA futures curves



- Absence of storage costs result in relatively flat futures curves
- Historically we have seen fairly parallel shifts in the curve as the price of EUAs rise

Source: WisdomTree, Bloomberg, ICE (Intercontinental Exchange) Endex, Futures curves taken from final week of July for each respective year.
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