

## Basics of ETS and EU ETS **Part 4: Emissions Trading in Action**



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### Content

- ▬ The basics of emissions trading
  - Types of trading - primary and secondary market
  - Traded products
  - Registry
- ▬ Different market players
- ▬ Price development in the EU ETS
  - Price trends
  - Price factors
- ▬ Market oversight



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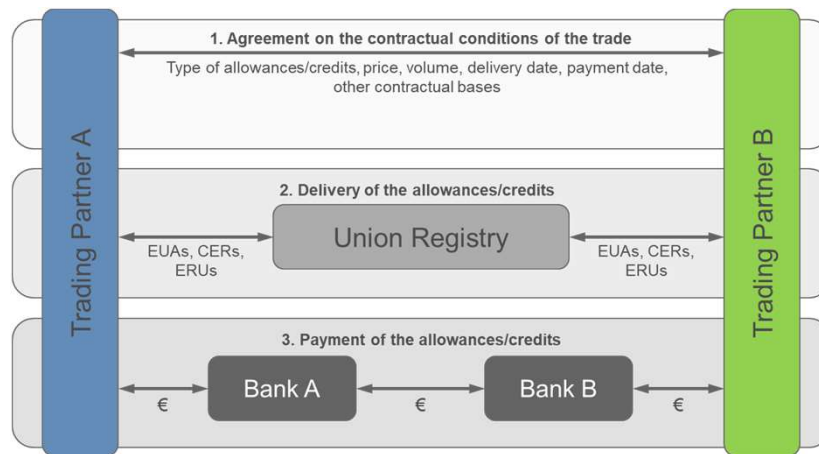
### = Market oversight



## The Merits of Emissions Trading

- = Environmental effectiveness: emission reduction target achieved exactly
- = Cost efficiency: market accounts for differences in abatement costs among covered entities, total emissions reductions achieved at minimum net cost
- = Defining the scheme ex-ante provides high predictability/reliability for companies/operators
- = Highest possible flexibility for companies/operators
- = Cap and trade self-adjusts to economic conditions: prices tend to go down in economic crises and up during economic growth
- = Linking can help create a global carbon market and improve cost efficiency

## Trading in the CO2 Market



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## Types of Trading

### Primary market – where allowances enter circulation

Auctions: governments sell allowances

- Since 2013 default method of allocation in the EU ETS
- Will progressively replace free allocations until 2030 (industries exposed to Carbon Leakage Risk receive free allocation using ambitious benchmarks)

### Secondary market – how allowances change hands

Trading on exchanges

- Only standardised products
- High-volume transactions
- High level of security  
(exchanges take counterparty risk, offer clearing services)

Over-the-counter (OTC)

- specific (tailored) contracts
- bilateral trades, often with intermediaries (brokers)
- lower-volume transactions, specific offset deals
- can be cleared via exchanges

## Primary market: Auctions in the EU ETS

### – Auctioning

- is the most transparent allocation method
- avoids windfall profits for companies

### – Member States sell allowances on a common auction platform:

- an exchange, currently the European Energy Exchange (EEX)
- Germany, Poland, and the UK auction their allowances separately (UK uses London-based Intercontinental Exchange (ICE))

### – Auction format:

- Single-round, sealed bid, uniform price
- Entities may submit multiple bids, e.g. for 50,000 EUAs at €15/EUA and 30,000 EUAs at €12/EUA, etc.
- Each successful bidder pays the same price, receives the volume it bid at that price
- Bids collectively create a "demand curve," auction clears at price where that curve meets volume on offer (supply)
- Bids are successful if they are at or above the clearing price

### Example: Determination of auction clearing price EU ETS

\_ Auction volume: 1,000,000 EUA

\_ Single-price, sealed-bid auction

Orders in chronological order			Orders sorted by price				Allocation	
Bidder	Price	Volume in t	Bidder	Price	Volume in t	Accumulated	Bidder	Volume in t
A	6.22 €	300,000	G	6.25 €	150,000	150,000	G	150,000
B	6.24 €	100,000	B	6.24 €	100,000	250,000	B	100,000
C	6.18 €	250,000	H	6.24 €	50,000	300,000	H	50,000
D	6.00 €	500,000	F	6.23 €	250,000	550,000	F	250,000
E	6.10 €	400,000	A	6.22 €	300,000	850,000	A	300,000
F	6.23 €	250,000	C	6.18 €	250,000	1,100,000	C	150,000
G	6.25 €	150,000	E	6.10 €	400,000			
H	6.24 €	50,000	D	6.00 €	500,000			
Total		2,000,000	Total		2,000,000			

\_ The total auction volume of 1,000,000 EUA is sold for 6.18 €/t

\_ Bidder C defines the price for all successful bidders (marked orange)

\_ Bid of bidder C will only partially be fulfilled (marked blue)

### Auctions: Example EEX (European Energy Exchange)

\_ Three ways to participate on EUA auctions at the EEX:

- Full membership at EEX
- Emissions-only membership
- Auction-only membership

\_ Auction-only membership (EEX):

- Free of technical or annual fees, if participation is handled via fax
- Fixed annual costs, if a technical front-end is used
- Variable costs similar to costs on secondary market

Source: <https://www.eex.com/de/produkte/umweltprodukte/auktion-von-emissionsberechtigungen/zugang-zur-auktion>

## Secondary Market: OTC trading

### \_ Counterparties

- Directly between firms (that already have existing business relationship)
- Facilitated by an intermediary

### \_ Two ways to contract:

- Master agreement plus single confirmation:
  - \_ "Template contract" defines all relevant elements, e.g. product, costs, date of delivery, date of payment, terms of default – lengthy document
  - \_ "Confirmation" secures terms of each deal (e.g. price, volume), can be agreed on by mail or phone - one or two pages long
  - \_ Makes sense if many trades will be made with the counterparty concerned
- Single contract:
  - \_ Defines all terms of trade
  - \_ Shorter than a master agreement, but longer than a confirmation
  - \_ Makes sense if only a few trades will be made with the counterparty concerned

## OTC: Trading via Intermediaries

### \_ Bilateral trading can be done via intermediaries

### \_ Counterparty is a professional trader

- Usually not trading for compliance purposes, but as a service for clients
- Trading might be the core business for the intermediaries, or
- Only ancillary to the main business for their clients

### \_ Usually a company only uses a few intermediaries

### \_ Typical intermediary traders:

- Banks
- Large energy suppliers
- Consultancies

## OTC: Trading via Brokers

- \_ Brokers collect bids and offers
- \_ Once there is a match (bid and offer have the same terms of trade), the brokers exchange the contact details of the counterparties
- \_ Brokers get a brokerage fee from each counterparty
- \_ The deal itself is nothing else than a bilateral deal
- \_ Brokers are:
  - More flexible than exchanges, but less transparent
  - Dominating in newly established markets in first instance

## Exchange Trading

- \_ The company has to be a member of the exchange
  - complex master agreements
  - initial and annual fees, variable fees
  - but: auction- only access at EEX for EUA auctions in the EU ETS for free
- \_ Initial effort/investment is usually much higher than for other kinds of trading
- \_ Variable fees usually lower than those for other kinds of trading
- \_ Exchange trading makes sense if the company has to trade high volumes throughout the year

### Exchange Trading – Pros and Cons

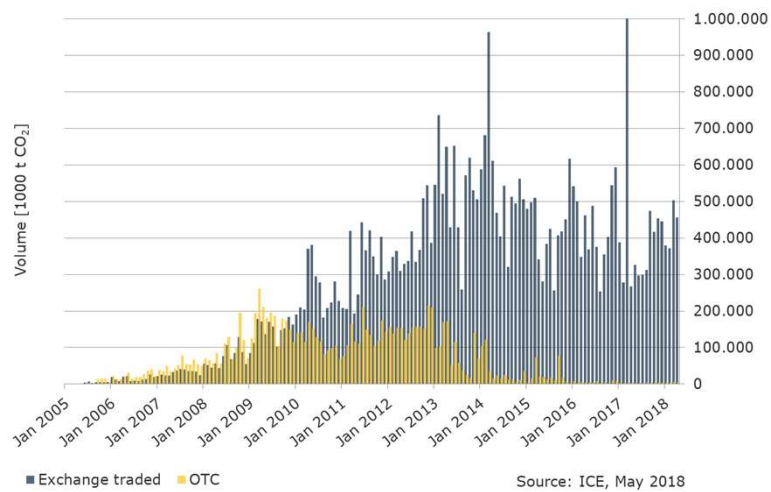
**Pros:**

- High security
- Anonymous trading
- High price transparency
- Standardised products
- Fast and secure procurement
- Low variable costs

**Cons:**

- High entry barriers
- Usually high entry costs
- Eventually high margining
- Minimum lot sizes

### Exchange - OTC: Trading Volume 2005-2018 (ICE only)







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## Spot vs. Forward Trading

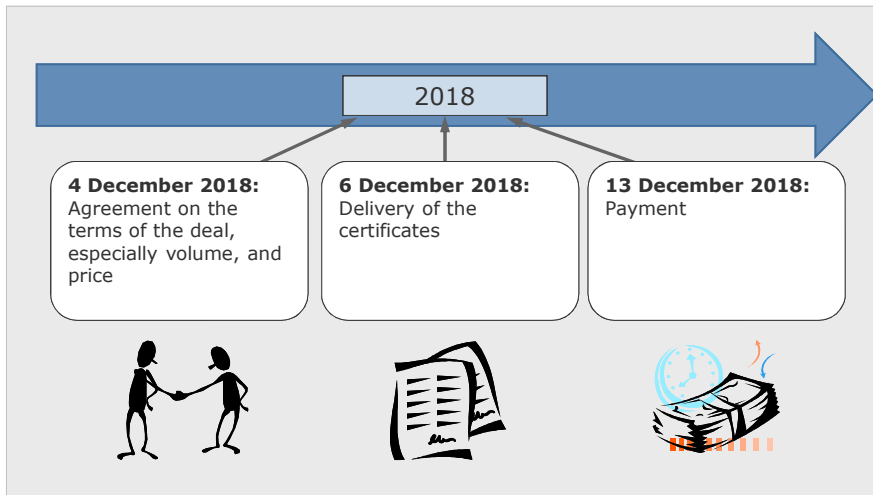
### = Spot:

- Pay for an allowance now, get it now: delivery and payment within a couple of days
- Low counterparty risk
- Good for getting volume immediately

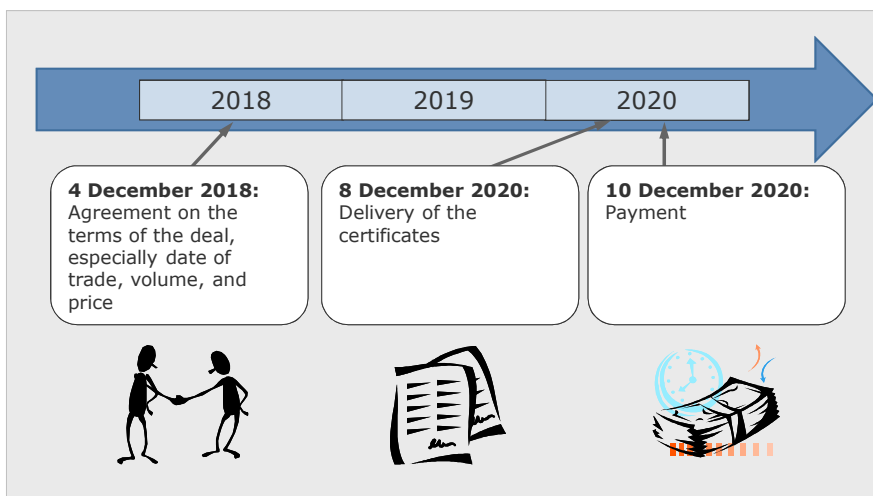
### = Forward:

- Agree on volume and price now – delivery occurs at future date defined in the contract
- Forward prices are secured  high planning reliability
- Counterparty risk depends on the rating of the counterparty
- EU ETS: contract for delivery in December of the current year is the most popular traded product, the “benchmark contract” that represents the current carbon price
- Usually forward contracts are more expensive than spot contracts due to cost of carry

### Spot Trading: Example



### Forward Trading - Example



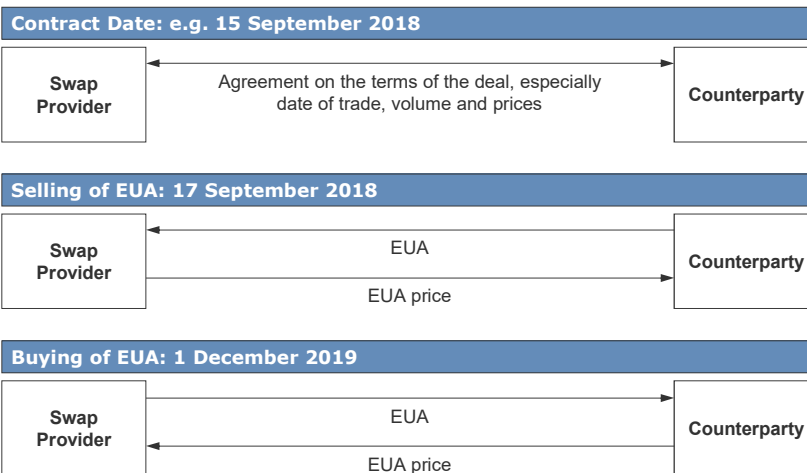
## Swaps

= Swaps are common instruments in financial markets, e.g. for securing currency deals.

= In carbon markets there are two main kinds of swaps:

- CER-EUA swap (in EU ETS; in general: swap of offsets and allowances):
  - \_ Takes advantage of the price difference between CER and EUA;
  - \_ The buyer of the CER gets a premium (depending on the market situation);
  - \_ Calculable earning at minimum risk;
  - \_ Was mainly used in 2010-2014 in the EU ETS
- Maturity swap:
  - \_ Secures prices for forward deals while trading in the present;
  - \_ Comparable to a credit or an investment, respectively;
  - \_ "Interest rate" depends on the market situation

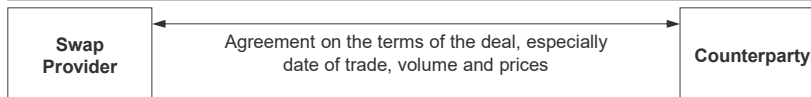
## Maturity Swap to Get Liquidity



Source: FutureCamp

## Maturity Swap as a Financial Investment

**Contract Date: e.g. 15 September 2018**



**Selling of EUA: 17 September 2018**



**Buying of EUA: 1 December 2019**



Source: FutureCamp

## Options

- = An option is the right to
  - buy ("call option") or to
  - sell ("put option") a
  - defined volume of a product at a
  - pre-defined future date ("expiration date") at a
  - pre-agreed price ("strike price")
- = The seller gets a premium for providing the option
- = The buyer can decide whether to exercise the option, or not
- = Options are used to secure a specific price level
- = In the EU ETS
  - options played a minor role in the past
  - they are increasingly relevant since 2018
  - analysts started to include the expiration dates into their estimation of price trends



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## What is a Registry?

### = Here a "Registry" can be defined as

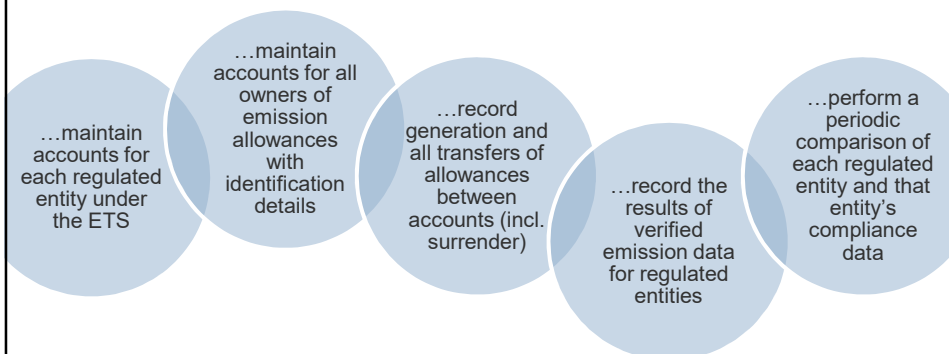
- an information technology system
- that records and tracks the ownership and
- transfers commodities (in this case, emission allowances)
- between account holders.

### = Legal ownership of an emission allowance or credit is completely transferred only once data on the transaction is recorded in a registry.

### = Registry is an important element of the infrastructure of an ETS as it tracks all emission allowance related issues in the scheme.

## Role of Registries in an ETS

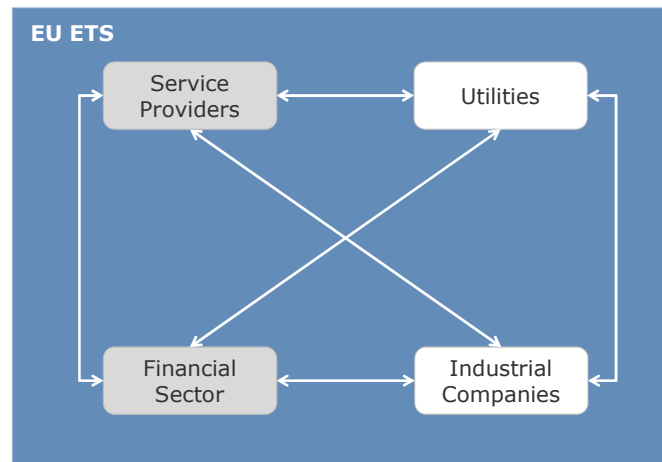
- \_ Emission markets require reliable tracking of the issuance, allocation, ownership and transfers (incl. surrender) of emission allowances and credits. This is transparently executed through use of a unique serial number for each certificate.
- \_ Specifically, a registry system will:



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## Market Players in the EU ETS



## Experience EU ETS: Market Players – Utilities

- Big players and large utilities trade on a regular, frequent basis (daily, weekly) to hedge their power/heat sales and/or fuel purchases (futures);
- SME often use spot contracts and trade less regular;
- Big players and large utilities usually have their own trading departments or common outsourced trading platforms together with other utilities;
- SME usually have only one or two persons responsible for carbon trading;
- Big players use all venues;
- Large and SME utilities use different venues via intermediaries (e.g. service provider, financial players, other utilities).

## Experience EU ETS: Market Players – Industry

- \_ Still receive high free allocations (carbon leakage);
- \_ Had a strategic long position in the 2nd trading period;
- \_ Usually trade on a quarterly or yearly basis using intermediaries;
- \_ Only few players have direct access to exchanges;
- \_ Trading activity depends on level of emissions;
- \_ Do not necessarily have a trading strategy (will change for 2021-2030) and tended to banking;
- \_ Sell allowances if liquidity is needed (e.g. in economic crisis).

## Experience EU ETS: Market Players – Financial Sector

- \_ Provide liquidity for covered entities (more counterparties, lower bid-offer spreads)
- \_ Facilitate trading by acting as intermediaries
- \_ Use all trading venues (auctions, exchanges, OTC)
- \_ Many banks withdrew from carbon business in 2013;
  - Poor market conditions;
  - Reputational problems.
  - Comeback in 2018



## Experience EU ETS: Market Players – Service Providers

### = Consultancies

- Often offer carbon trading as ancillary service for their clients
- Usually trade small volumes
- Back-to-back trading

### = Trading companies

- Independent trading companies
  - \_ Usually also active in other commodities
  - \_ Take small margins
- Joint ventures, e.g. trading companies of utilities
  - \_ Mainly trade for purposes of their clients
  - \_ Offer special contracts to their co-venturers

### = Brokers

- Simply bring together buyers and sellers
- Usually do not trade on their own account (though some also act as traders)

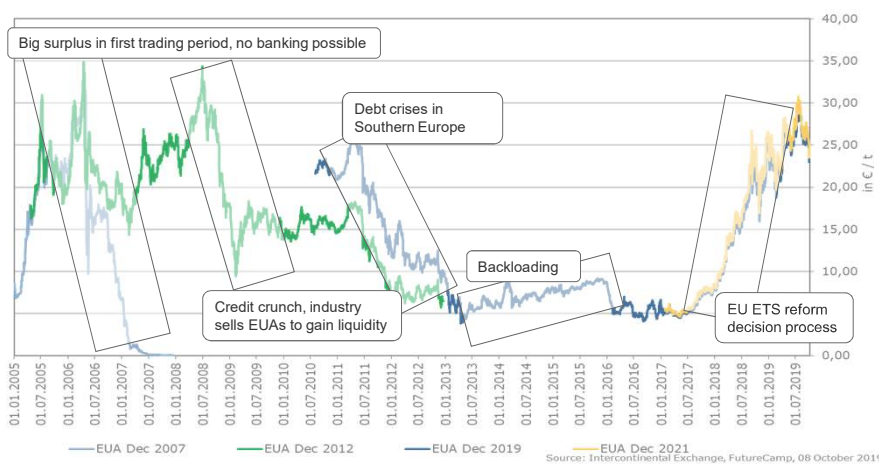
## Experiences and Lessons Learned – market behaviour

2005-2007	2008-2012	2013-2020
<b>Energy sector</b>		
<ul style="list-style-type: none"> <li>• Active trading from the beginning</li> <li>• Large windfall profits</li> </ul>	<ul style="list-style-type: none"> <li>• Active trading</li> <li>• Still windfall profits</li> </ul>	<ul style="list-style-type: none"> <li>• Active trading</li> <li>• No free allocation for electricity</li> <li>• No windfall profits</li> </ul>
<b>Industry:</b>		
<ul style="list-style-type: none"> <li>• No or little trading activities</li> <li>• Free allocation sufficient</li> <li>• No selling of allowances</li> </ul>	<ul style="list-style-type: none"> <li>• Beginning of trading activities</li> <li>• Free allocation sufficient</li> <li>• Selling of allowances during economic crisis</li> </ul>	<ul style="list-style-type: none"> <li>• Increase of trading activities</li> <li>• Beginning of structural shortage (slowly)</li> <li>• Selling of allowances during economic crisis</li> </ul>

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EU ETS: EUA Prices 2005-2019

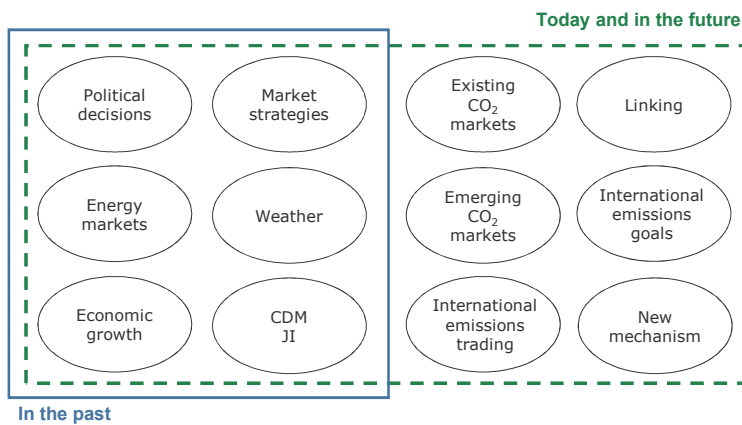


Source: Intercontinental Exchange, FutureCamp, 08 October 2019

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## CO<sub>2</sub> Price Factors



Source: FutureCamp



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## Objective of Market Oversight

- ▬ Create fair and efficient trading conditions for all market participants
- ▬ Prevent and sanction market misconduct, in particular insider dealing and market manipulation
- ▬ Minimise the risk that the market is used as a vehicle for other illegal activities, such as money laundering and VAT fraud
- ▬ **Create security and support the credibility of the trading mechanism as an instrument for climate protection**

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