



eex group



Current state and development of international carbon markets

CFTC Energy and Environmental Markets Advisory Committee
June 3rd, 2021



About EEX Group

EEX Group operates
4 commodity exchanges and
2 clearing houses

776+
 trading participants
 from 40 countries

2,000th auction for
 carbon emission allowances
 held on EEX Group
 environmental markets in 2020

7,077 TWh
 of electricity traded
 on EEX Group
 power markets in 2020

2,412 TWh
 of natural gas traded
 on EEX Group
 gas markets in 2020

789,921 lots
 of dry bulk freight traded
 on EEX Group
 freight markets in 2020

› eex

› epexspot

› eexasia

› nodal

› ecc

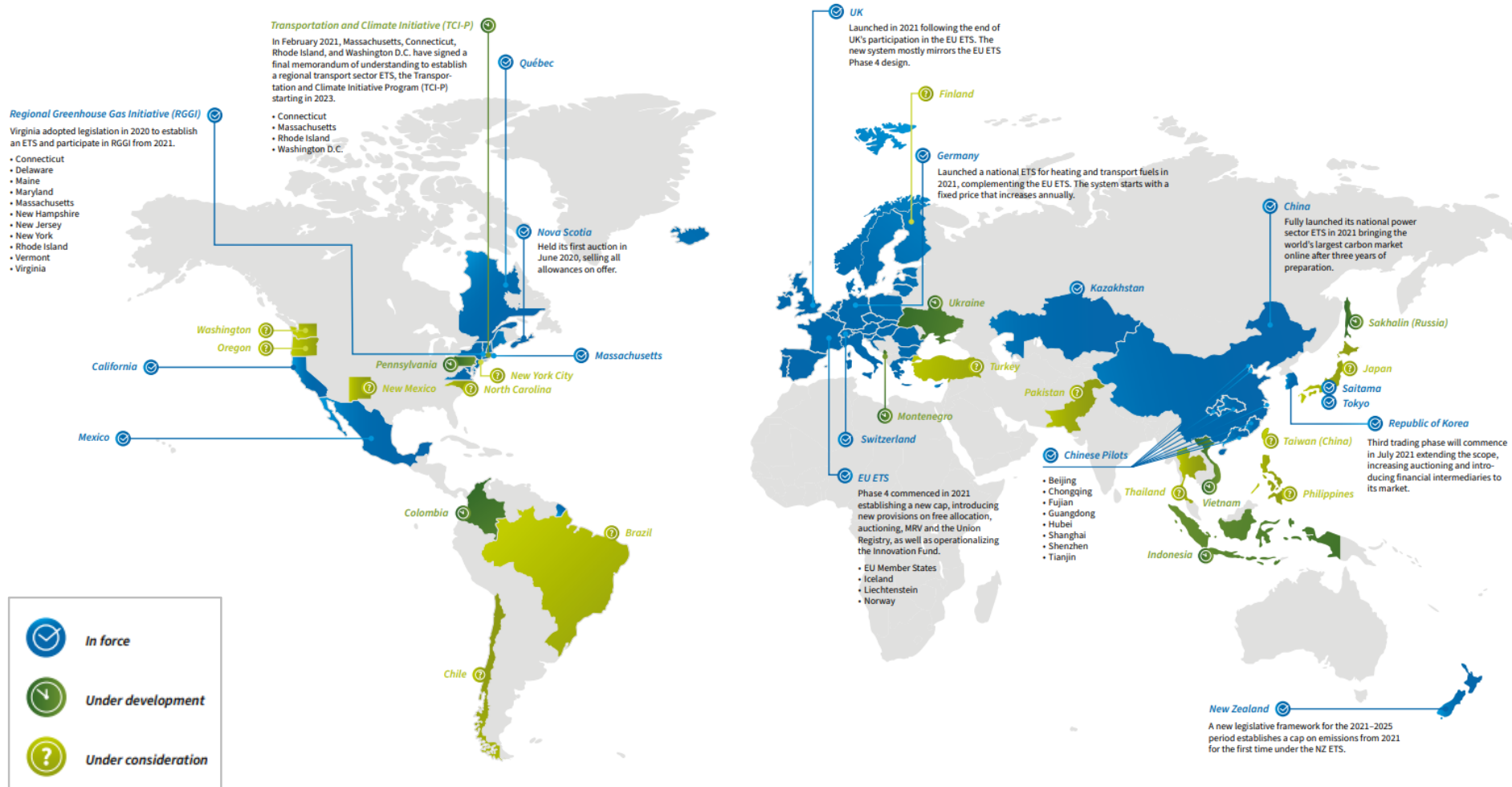
› nodalclear

› grexel

› pxe

The bigger picture: carbon markets globally

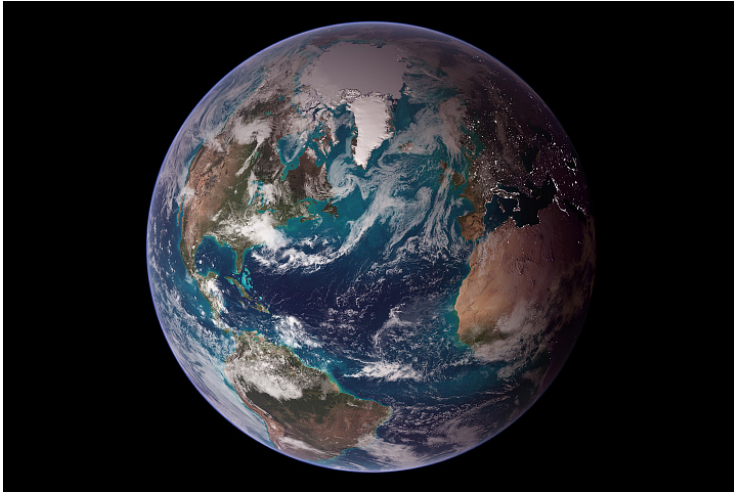
16% of global GHG emissions covered under ETS, ~3x since 2005, approaching 9 Gt CO₂e



Source: ICAP Status Report 2021

Carbon pricing is an essential tool to achieve climate targets

We believe in the power of markets for a cost-efficient decarbonization of our economies



Source: Visible Earth, NASA Blue Marble project

52,400,000,000 t CO₂e

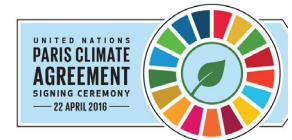


Net zero

United Nations Environment Programme (UNEP), Emissions Gap Report 2020: 52.4 Gt CO₂e global GHG emissions in 2019 including **Fossil CO₂ (~38-40 Gt)**, Methane, Nitrous oxide and Fluorinated gases; 59.1 Gt including land use change

Further development of emissions trading schemes worldwide is accelerated by the 'Paris Agreement':

- All countries have made national pledges for emissions reductions (bottom-up approach)
- Countries have full discretion how to reach those targets; instruments are laid out in national 'action plans'
- Majority of countries' action plans explicitly make reference to the introduction of carbon pricing in some form



How can energy and environmental exchanges contribute to achieve our climate targets?

- Support implementation of environmental policies
- Provide a safe and reliable regulated environment for local and international carbon trading
- Transparent price discovery mechanism on exchange, firm deals, daily marks, secure settlement
- Proved mechanisms of financial markets to manage price risk, liquidity risk and credit risk
- Access to related markets and services

Environmental contracts offered by EEX Group

We believe in a granular, holistic offering of environmental products and services



North America

Carbon Emissions (6)

- WCI CCA Futures & Options
- RGGI Carbon Futures & Options

SO₂/NO_x Emissions (7)

- CSAPR TR SO₂ Group 1&2 Futures
- CSAPR TR NO_x Annual Allowances Futures
- CSAPR NO_x Ozone Season Group 2&3 F&O

Renewable Energy Certificates (58)

- PJM GATS REC Futures & Options (Tri-Qual, DC, MD, NJ, OH, PA)
- NEPOOL GIS REC Futures & Options (Duo-Qual, CT, ME, MA, NH, RI)
- NY-GATS REC Futures
- M-RETS REC Futures
- TX REC Futures & Options

Renewable Fuel Credits (12)

- California Low Carbon Fuel Standard F&O
- Oregon Clean Fuel Program F&O
- Renewable Identification Numbers F&O (D3 Cellulosic Biofuel, D4 Biodiesel, D5 Advanced Biofuel, D6 Renewable Biofuel)

Europe

Carbon Emissions (15)

- EUA auctions (EU, DE, PL)
- EUA Spot, Futures & Options (EU)
- EUAA auctions (EU, DE, PL)
- EUAA Spot, Futures (EU)
- UKA Spot, Futures & Options (UK) *(in preparation)*
- German fuel ETS (DE) *(in preparation)*

Guarantees of Origin (1)

- French GO auctions

Registry services

- Power GO registries (DK, FR, HR, HU, IE, IS, LT, LV, LU, NO, RS, SE)
- Biogas GO registries (DK, FI, FR, UK)
- Hydrogen certificate registry (EU)
- Energy Savings Certificates registry (FR)

Asia Pacific



Carbon Emissions

- Cooperation with NZX operation of NZU auctions



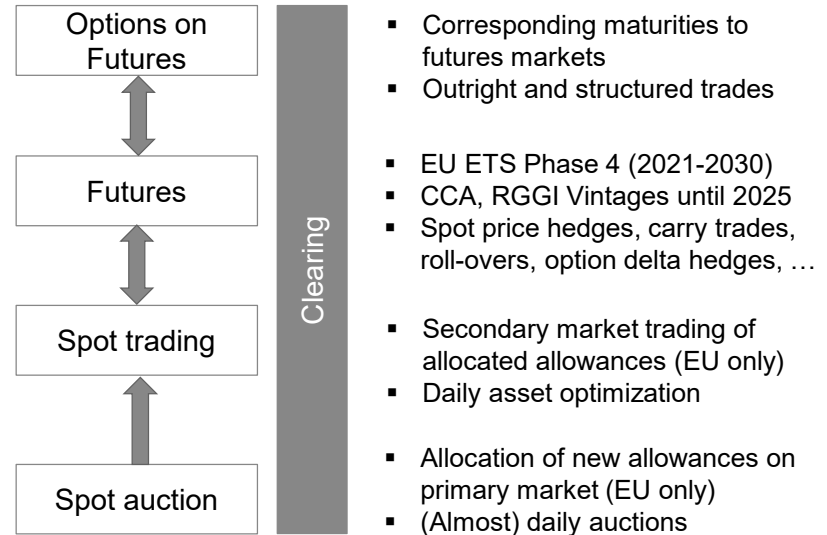
Focus on EEX Group carbon contracts

We believe in building markets long-term and in the combination of synergetic elements

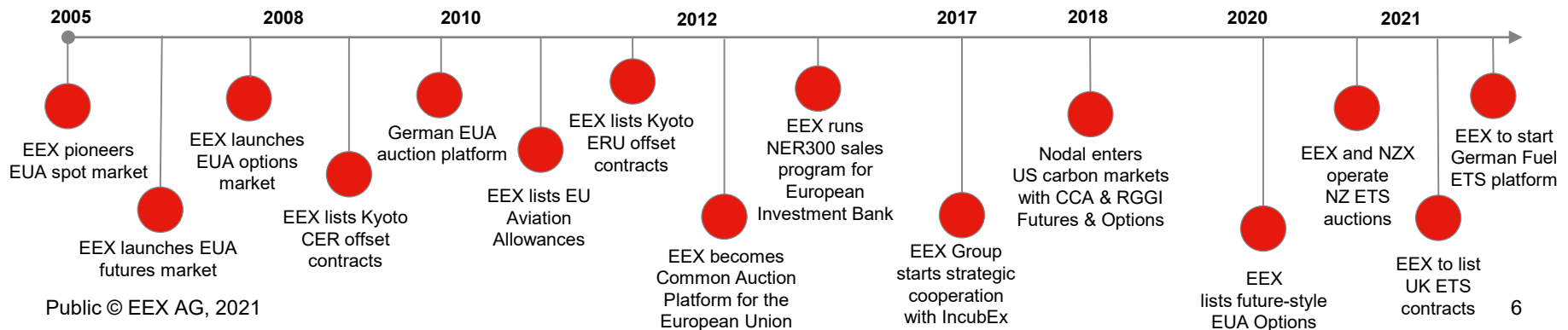
Typical carbon futures contract

- **Underlying:** greenhouse gas emissions allowance of the relevant program, each representing 1 metric ton of CO₂e
- **Trading unit:** 1 lot
- **Lot size:** 1,000 allowances
- **Currency:** USD (or EUR)
- **Price precision:** \$0.01 (or EUR 0.01) / allowance
- **Contract series:** monthly, main expiry in December
- **Final settlement price:** Daily settlement price of last trading day
- **Settlement:** physical delivery three (or two) business days after last trading day via registry system

Range of exchange traded carbon contracts

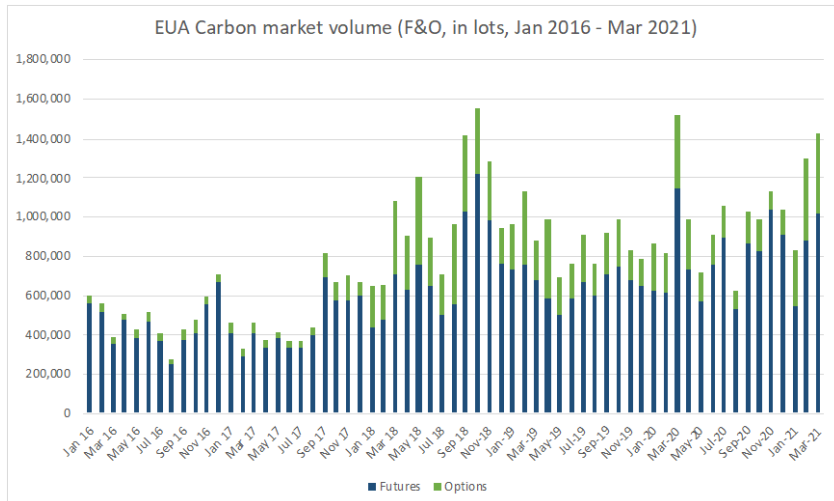
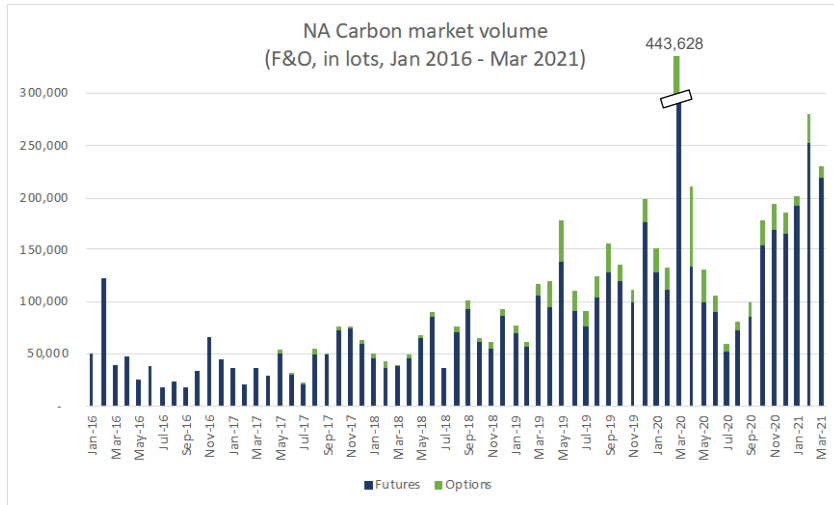


Milestones of EEX Group carbon markets



State of international carbon markets

Exchange traded carbon derivatives¹ on growth path in North America and in Europe



North America (WCI + RGGI)

- Underlying market supply (cap): 401.6 Mt CO₂e in 2020
- Upward trend in trading volumes since around mid-2018
- ~1.97M F&O contracts² traded in 2020, up 33% over 2019
- Rise primarily driven by CCAs, accounting for 88% of volume in 2020, 78% in Q4/2020 (balance: RGGI)
- Price of CCA front month rose from below \$13 per ton in January 2016 to above \$19 today
- COVID lockdown in spring 2020 caused price drop and spike in trading volumes
- Open interest in F&O roughly doubled over two years (2019/2020); stands today above 1.1M contracts

Europe

- Underlying market supply (cap): 1,816 Mt CO₂e in 2020
- Trading volumes increased significantly since around mid-2017, including options
- 11.69M F&O contracts¹ traded in 2020, up 10% over 2019
- EUA front month price rose 6.5-fold from below EUR 8 per ton in Jan 2016 to above EUR 52 EUR today
- EUA Dec21 Futures reached ATH of EUR 56.90 on 5/14/21
- First COVID lockdowns in spring 2020 led to significant price drop and high trading volumes
- Open interest in F&O stands above 1.7M contracts today

¹ total market

² 1 contract = 1,000t CO₂e

Major trends in global carbon market development

Wide range of dynamic external factors is shaping global carbon markets

Higher GHG reduction targets & ambitions towards carbon neutrality

- UK to reduce emissions by 78%¹ until 2035, net zero by 2050
- Germany plans 65%¹ reduction by 2030, net zero by 2045
- US returned to Paris Agreement, WH announced 50-52%² GHG emissions reduction by 2030, net zero by 2050

Geographic expansion of ETS

- Regional ETS in the US, e.g. Virginia joined RGGI in 2021
- Potential EU carbon border adjustment mechanism (CBAM)
- Expected full scale operations of Chinese national ETS
- Potential linking of national or regional ETS

Sectoral expansion of ETS

- Inclusion of maritime and aviation industry into existing ETS
- Establishment of new ETS in other sectors than power generation, e.g. industry, transport and buildings

Rise of voluntary carbon markets

- Standardization of VCM contracts
- International private sector initiatives, e.g. TSVCM⁴
- VCM offsets complement ETS compliance markets

International climate change initiatives

- CORSIA: agreement by the ICAO's⁵ 191 member states to cap net carbon emissions for the international aviation industry; will become mandatory in 2027
- IMO⁶ aims to reduce carbon intensity of international shipping by 40%³ by 2030

¹ compared to 1990

⁴ Task Force on Scaling Voluntary Carbon Markets

² compared to 2005

⁵ International Civil Aviation Organization

³ compared to 2008

⁶ International Maritime Organization



Thank you

Christian Schneider
Managing Director, Strategy
EEX Group Strategy Director

Nodal Exchange
Tel: +1 703 962 9872
schneider@nodalexchange.com