FROM SUPRANATIONAL TO LOCAL

Emissions trading systems operate at every level of government

1 Supranational
- EU Member States
  + Iceland
  + Liechtenstein
  + Norway

5 Countries
- Kazakhstan
- Mexico
- New Zealand
- Republic of Korea
- Switzerland

16 Provinces & States
- California
- Connecticut
- Delaware
- Fujian
- Guangdong
- Hubei
- Maine
- Maryland
- Massachusetts
- New Hampshire
- New Jersey
- New York
- Nova Scotia
- Québec
- Rhode Island
- Vermont

7 Cities
- Beijing
- Chongqing
- Saitama
- Shanghai
- Shenzhen
- Tianjin
- Tokyo

9% of global GHG emissions are covered by an ETS

Almost 1/6 of the global population lives under an ETS in force

Jurisdictions making up 42% of global GDP are using emissions trading
ALLOWANCE PRICES

Evolution of primary and secondary market prices in the 2010s

The figure uses data from the ICAP Allowance Price Explorer to visualize price developments during the 2010s in selected ETSs around the world. Sustained trends and short-term volatility can be seen throughout the decade in all systems and were driven by changes in current and expected future scarcity of allowances. In turn, these changes are due to variations in general economic conditions, revisions to the rules of the systems (including those governing offsets and market stability mechanisms), and interactions with other climate and energy policies. All data are in USD and are converted using the exchange rate valid on the day. The allowance prices for RGGI, California and Québec are obtained from primary markets while for all other systems secondary market prices are used. For the Chinese pilots the minimum and maximum price data on a given day are used to compute the 90-day moving average which in turn is depicted as the grey shaded region. See the section titled “Notes on Methods and Sources” for additional details.
EMISSIONS TRADING WORLDWIDE

The state of play in existing and upcoming systems in 2020

The ICAP ETS world map depicts emissions trading systems currently in force, under development or under consideration. There are now 21 systems covering 29 jurisdictions with an ETS in force. Another nine jurisdictions are putting in place their systems for operation in the next few years, including China, Germany and Colombia. 15 jurisdictions including Chile, Turkey and Pakistan are also considering the role an ETS can play in their climate change policy mix. The number of systems under development and consideration includes Montenegro and the Philippines, respectively, but this is not reflected in the map below as the announcements were made after the editorial cut-off date of this report.

If a jurisdiction already has a system in force and is developing or considering an additional system, it is depicted in the map as its system being in force only (i.e. in blue).

Regional Greenhouse Gas Initiative (RGGI)
New Jersey adopted legislation in 2010 to establish an ETS and rejoined RGGI at the beginning of 2020.
- Connecticut
- Delaware
- Maine
- Maryland
- Massachusetts
- New Hampshire
- New York
- New Jersey
- Rhode Island
- Vermont

Transportation and Climate Initiative (TCI)
Several TCI participants are currently discussing a draft framework outlining basic design features for a regional transport sector ETS starting in 2022.
- Connecticut
- Delaware
- Maine
- Maryland
- Massachusetts
- New Hampshire
- New York
- New Jersey
- Rhode Island
- Vermont

Quebec
Working on a proposed reform of free allocation for 2024–2030.

The Market Stability Reserve started operating in 2019 and auction volumes were reduced throughout the year accordingly.

EU ETS
Linked to the EU ETS on 1 January 2020 following ratification by both states and revision of the Swiss legislative framework.

Mexico
Continues to prepare for the full launch of its national ETS. Simulation trading is expected to start in 2020.

China
- Beijing
- Chongqing
- Fujian
- Guangdong
- Hubei
- Shanghai
- Shenzhen
- Tianjin

Chinese Pilots

EU ETS
- Beijing
- Chongqing
- Fujian
- Guangdong
- Hubei
- Shanghai
- Shenzhen
- Tianjin

EU ETS
Decided on further reforms to the system, including phasing down industrial allocation starting in 2021.

New Zealand
- Auckland
- Christchurch
- Dunedin
- Hamilton
- Invercargill
- Napier
- New Plymouth
- Palmerston North
- Rotorua
- Timaru
- Wellington

Transportation and Climate Initiative (TCI)
- Connecticut
- Delaware
- Maine
- Maryland
- Massachusetts
- New Hampshire
- New York
- New Jersey
- Pennsylvania
- Rhode Island
- Vermont
- Virginia

New Jersey
Pilot ETS started operating in January 2020. The program covers direct CO2 emissions from energy and industry, representing 37% of national emissions.

New York
- New York City
- North Carolina

Oregon
- Oregon

Pennsylvania
- Pennsylvania

South Africa
Linked to the EU ETS on 1 January 2020 following ratification by both states and revision of the South African regulatory framework.

UK
Considering a UK ETS following the country’s planned exit from the EU ETS at the end of 2020.

Germany
Scheduled to launch a national ETS for heating and transport fuels in 2021, complementing the EU ETS. The system will start with a fixed price that increases annually.

Québec
Working on a proposed reform of free allocation for 2024–2030.

Rwanda
Joined the EU ETS in 2020 following ratification by both states.

US
- California
- Oregon
- Washington

California
- California

Oregon
- Oregon

Washington

New Mexico

South Africa
Linked to the EU ETS on 1 January 2020 following ratification by both states and revision of the South African legislative framework.

Mexico
Continues to prepare for the full launch of its national ETS. Simulation trading is expected to start in 2020.

China
- Beijing
- Chongqing
- Fujian
- Guangdong
- Hubei
- Shanghai
- Shenzhen
- Tianjin

Chinese Pilots

EU ETS
Decided on further reforms to the system, including phasing down industrial allocation starting in 2021.
GLOBAL EXPANSION OF EMISSIONS TRADING

GHG emissions under ETSs

The graphic depicts the worldwide growth of emissions trading over time. Systems are spreading around the world and new additions will soon triple the share of global GHG emissions covered by emissions trading since the launch of the EU ETS in 2005. Changes over time are driven by the addition of new sectors and systems, as well as by the counteracting trend of declining caps in many systems. See the section titled “Notes on Methods and Sources” for additional details.
SECTOR COVERAGE

Sectors covered by emissions trading across systems

The graphic shows sectors (types of economic activity) covered by ETSs in force, as well as whether a sector is regulated upstream. Systems are listed clockwise in decreasing order of share of aggregate emissions covered. Sectors are considered covered by a system when at least some entities in the sector have explicit compliance obligations. Typically, not all of the sector’s facilities or GHG emissions are regulated because of limits like inclusion thresholds. In addition, not all sub-sectors, gases, or processes of a given sector may be covered. The jurisdictions’ respective factsheets provide more information on system coverage. Only sectors covered by at least one ETS are included in the graphic. See the section titled “Notes on Methods and Sources” for additional details.

* indicates which sector represents upstream coverage

→ Emissions coverage based on the most recent data available.
DIFFERENT SHAPES OF ETS

A comparative look at key metrics in six well-established systems

The axes in each graph show four key metrics. Cap trajectory indicates the average yearly decline rate in the system’s cap between 2017 and 2020. Coverage shows the share of the jurisdiction’s emissions that falls under the ETS. Allowance price is measured in USD per metric ton of CO$_2$e in each system and averaged over 2019. Auction share, expressed as a share of the 2019 cap, denotes the number of allowances that were auctioned and generated revenues for the jurisdiction’s government. To aid comparison, the axes share the same scale across graphs.
AUCTIONING REVENUE

Emissions trading as an additional source of government revenue

Auctioning allowances can generate public revenue that can be used in different ways depending on the priorities of the jurisdiction. Systems have tended to use auctioning revenue to fund climate programs, including on energy efficiency, low carbon transport and renewable energy. Auction revenue has also been used to support energy intensive industries, as well as to assist disadvantaged and low-income groups. The amount of revenue generated is expressed in USD and depends on the size of the jurisdiction, the ETS coverage, the number of auctioned allowances and the allowance price. By the end of 2019, systems worldwide had raised over $78 billion cumulatively. See the section titled “Notes on Methods and Sources” for additional details.
THE PATH TO NET ZERO

The role of carbon pricing and companion policies in achieving net zero emissions

The infographic illustrates how carbon pricing and companion policies can be combined to lower the cost of emissions reductions across sectors and to incentivize negative emissions. The bottom panel replicates one of the “four illustrative 1.5°C-consistent pathway archetypes”, namely the middle-of-the-road pathway S2 in Chapter 2 of the IPCC Special Report on Global Warming of 1.5°C (IPCC, 2018). It shows the magnitude of the effort required and the time scales over which it must be applied. The top panel, which focuses on the role of carbon pricing and provides a non-exhaustive list of sector-specific companion policies, combines the conclusions in Burke et al (2019) and the analysis in the IPCC Special Report. It is deliberately stylized because the precise effectiveness of carbon pricing and companion policies is subject to academic debate and depends on the characteristics of the jurisdictions in which they are implemented. See the section titled “Notes on Methods and Sources” for additional details.
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