



**International Carbon
Action Partnership**

EMISSIONS TRADING WORLDWIDE

EXECUTIVE SUMMARY

STATUS REPORT 2023

EMISSIONS TRADING WORLDWIDE

INTERNATIONAL CARBON ACTION PARTNERSHIP STATUS REPORT 2023

CITE AS:

ICAP (2023). Emissions Trading Worldwide: Status Report 2023.
Berlin: International Carbon Action Partnership.

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The ICAP Secretariat expresses its gratitude to policymakers from the ICAP membership and further collaborators from the emissions trading field, who provided insightful written contributions and/or carefully reviewed the report:

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(Nova Scotia), Andrew Webber (Nova Scotia), Whitney Dorer (Oregon), Rachel Fernandez (Oregon), Nicole Singh (Oregon), Hadika Syeda Jamshaid (Pakistan), Jennie Demjanick (Pennsylvania), Louie Krak (Pennsylvania), Ottmar Edenhofer (Potsdam Institute for Climate Impact Research), Michael Pahle (Potsdam Institute for Climate Impact Research), Jonathan Beaulieu (Québec), Claude Côté (Québec), Julie Côté (Québec), Steve Doucet-Héon (Québec), Nicolas Garceau (Québec), Olivier Lacroix (Québec), Kim Ricard (Québec), Mourad Ziani (Québec), Ministry of the Environment of the Republic of Korea, Jin Li (Shanghai Environment and Energy Exchange), Lishen Li (SinoCarbon), Siyue Liu (SinoCarbon), Simon Fellermeier (Switzerland), Thomas Kellerhals (Switzerland), Rongphet Bunchuaidee (Thailand), Pathom Chaiyapruksaton (Thailand), Phakamon Suparppunt (Thailand), Noriko Adachi (Tokyo Metropolitan Government), Aoki Tomotaka (Tokyo Metropolitan Government), Abdulkadir Bektaş (Türkiye), Kaan Moralı (Türkiye), Okan Uğurlu (Türkiye), Öykü Uyanık (Türkiye), Pavlo Masiukov (Ukraine), Olga Yukhymchuk (Ukraine), Rufina Acheampong (United Kingdom), Ishtar Ali (United Kingdom), Joe Cooper (United Kingdom), Matthew Davies (United Kingdom), Seamus Gallagher (United Kingdom), Joe Glynn (United Kingdom), Charlie Lewis (United Kingdom), Hannah Lewis (United Kingdom), Jacob Rose (United Kingdom), Greg Smith (United Kingdom), Brian Woods (Vermont), Tang The Cuong (Vietnam), Luong Quang Huy (Vietnam), Mai Kim Lien (Vietnam), Bill Drumheller (Washington), Luke Martland (Washington).

The ICAP Secretariat is grateful to the Federal Ministry for Economic Affairs and Climate Action, Germany, for funding this report. adelphi consult GmbH lends scientific and technical support to the ICAP Secretariat and coordinated the compilation and production of the report.

We wish to thank Katie Kouchakji (KKE Communications) for her careful editing and proofreading of the report, as well as for her communication advice.

A special thanks to Carolin Faulenbach and Janibel Munoz Torres for editorial assistance.

EXECUTIVE SUMMARY

This year's edition marks the 10th anniversary of the International Carbon Action Partnership (ICAP) Status Report and provides a good opportunity to look back at developments in emissions trading systems (ETs) over the last decade. Since the first Status Report, the number of ETs in operation has more than doubled, growing from 13 to the current 28, and so too did the share of global emissions covered by an ET, which jumped from 8% to 17%, following the increase from below 4 gigatons in 2014 to the current 9 gigatons.

Beyond the bare numbers, it is remarkable to look back and see what themes and developments characterized the first ICAP ET Status Report in 2014. The report's foreword opened by sorely noting that "despite years of international negotiations, a comprehensive global accord to halt climate change remains elusive". In the report's first signed article, EU policymakers reflected on the ongoing debate around backloading in the EU ET, a measure aimed at mitigating overallocation in the system due to the global economic downturn that followed the 2008 financial crisis. Other articles focused on the lessons learned from the first few months of operation of the Shenzhen carbon market, China's first pilot ET, and on the experiences with the investment of auction proceeds in the Regional Greenhouse Gas Initiative (RGGI), which was the only ET with extensive experience, given that auctioning in other systems was just beginning. The report was eagerly awaiting the operationalization of the ET linkage between California and Quebec, with the first joint auction scheduled for later that year, and the launch of the Korean ET in 2015.

Fast forward ten years and the Paris Agreement is in full force and a key driver for global climate action. The EU ET, along with the other existing ETs, has fully recovered from the effects of the 2008 financial crisis, weathered a global pandemic, and is proving resilient to an unprecedented global energy crisis. Building on the experience gained with the ET pilots, China has launched a nation-wide ET, which is now the world's largest such system. The use of auction revenues has become a key aspect in most mature systems, and it is especially useful in maintaining public support for carbon pricing, mitigating the effects of the energy crisis, and achieving additional co-benefits. The linkage between California and Quebec is now a prime example of successful cross-border linking and the Korean ET, now in its third phase of operation, is a reference for other jurisdictions in Asia. And these are just some examples.

The last decade has not been smooth sailing. As the global economy slowly lifted itself out of the pandemic, war in Europe has triggered yet another series of tempests that have affected many countries across the world. The starkest of these is the ongoing energy crisis. It has not only laid bare severe energy dependencies but has once again served as a stress test for climate policies like emissions trading.

As governments and companies address these challenges both in the immediate and mid- to longer term, it is important to keep sight of ambitious climate targets and commitments to net zero by

mid-century. At the same time, vulnerable segments of the population must be protected through supportive policies to ensure a socially just green transition. Emissions trading remains pivotal in this context and lies at the core of decarbonization strategies in an increasing number of jurisdictions.

This 10th edition of the ICAP Emissions Trading Worldwide report provides a comprehensive analysis of the latest developments and key trends in the ETS space from the past year. It includes a series of infographics that illustrate important ETS facts and figures, as well as detailed factsheets on all systems currently in force, under development, or under consideration.

The report confirms the growing momentum for the ETS developments, as the number of systems continues to rise. There are now 28 such systems in force, three more than last year, with 20 more systems under development or consideration across the world, particularly in the Latin American and Asia-Pacific regions. For the first time, we see concrete steps towards emissions trading being taken in Africa. The share of global emissions covered by an ETS remains unchanged at 17%, as the increase in coverage thanks to the introduction of new systems was offset by the overall reduction in emissions under ETS caps – as is expected from systems designed to reduce emissions.

Despite the challenging and unprecedented global backdrop, existing systems showcased maturity and proved to be remarkably resilient to significant external shocks. Systems currently in operation have weathered an eventful year without major disruptions. After making significant gains in 2021, prices in most systems started and ended 2022 at around the same levels, despite some fluctuations over the course of the year. The observation that allowance prices did not rise in 2022 is worth noting in the context of the ongoing energy crisis and its impacts on consumers, who have experienced significant rises in the consumer price index as well as its energy component.

Emissions trading confirmed itself to be a valuable source of revenues as 2022 marked another record, with more than USD 63 billion of auctioning proceeds collected in a year. As a result of higher allowance prices and an increasing use of auctioning, more than half of the total revenue raised by ETSs since 2008 was collected in 2021 and 2022, with many governments channeling these resources back into further climate action, subsidizing emerging technologies, or supporting lower-income households.

The report also features a collection of deep-dive articles written by policymakers and experts from key jurisdictions around the world, which offer valuable insights into the rapidly evolving ETS landscape.

The Russian invasion of Ukraine in early 2022 made Europe's energy dependence painfully clear, just after the EU committed to becoming climate neutral by 2050 and reduce net emissions by 55% by 2030, compared to 1990. The war has significantly impacted climate policy. In his article, Jos Delbeke of the European University Institute and former Director-General of the European Commission's DG for Climate Action, raises the question: are energy security and decarbonization compatible goals? He lays out the importance of combining Europe's energy security and climate objectives and engaging in strong bilateral and multilateral cooperation. Looking ahead, the EU must leverage its Green Deal, energy policies, and carbon pricing mechanisms to accelerate the transition.

As the energy crisis has taken hold, there are further lessons to be learned as we push ahead with carbon pricing. An article by Ottmar Edenhofer and Michael Pahle of the Potsdam Institute for Climate Impact Research highlights how the EU has successfully upheld its climate ambitions, despite concerns that carbon pricing would directly expose households to increased costs and wane public support for broader climate policy. The authors emphasize the need to integrate all reforms with other policy domains, such as social policy to protect vulnerable communities and energy security to leverage its synergy with climate policy and foster European solidarity.

The EU has moved rapidly to address the urgent climate crisis, committing to reducing net GHG emissions by at least 55% below 1990 levels by 2030. An article by the European Commission details how the bloc's climate and energy policy, including the EU ETS, has been undergoing revisions to support this goal. These reforms include a reduced cap, expansion of the ETS's coverage to maritime transport, and more concerted use of the Innovation Fund and Modernisation Fund to catalyze the deployment of low-carbon technologies and provide support to lower-income Member States. The new EU ETS 2 will incentivize emissions reductions from road transport, buildings, and industry not covered by the existing system. The accompanying Social Climate Fund will channel revenues from emissions trading to provide dedicated support to vulnerable citizens and businesses. In these ways, the EU is committed to advancing the green transition across the entire economy while leaving no one behind.

Next, the United Kingdom reflects on its progress to further develop the UK ETS and engage with stakeholders, particularly amid the ongoing energy crisis. The UK ETS is at the heart of delivering on the UK's net zero target. The article emphasizes the importance of complementary policies and a holistic decarbonization approach to addressing climate change and the challenge of increasing costs. It also highlights the role that carbon leakage mitigation measures and the expansion of the scheme to new sectors could play in providing certainty to the market and decarbonization efforts.

Meanwhile across the Atlantic, Québec's cap-and-trade system, launched in 2013 and linked to California's program since 2014, is going strong after 10 years. Over time, it has proven that it can withstand external shocks. As it looks ahead, Québec is prioritizing a just and

equitable transition towards a green economy. In its article, Québec shows how its collaboration with California has been fruitful, how it has channeled ETS revenues into further climate action, and how the high share of renewables in its electricity grid have shielded it from the worst impacts of the energy crisis.

In its article, Chile shows how carbon pricing policies can be tailored to specific contexts. The country has had a carbon tax in place since 2017. Starting in 2023, entities covered under the tax will be able to comply with their obligations using offsets stemming from sources not regulated by the tax. This new system aims to promote mitigation in other sectors and develop a domestic market for offsets. Looking ahead, under the banner of the framework law on climate change, the Ministry of Energy is looking into establishing a system of GHG emission caps, similar to a baseline-and-credit system for high-emitting sectors, as well as a cap-and-trade system for the power sector. Both instruments would support a cost-effective transition towards carbon neutrality.

The New Zealand Emissions Trading Scheme (NZ ETS) has been the country's primary tool to help reach its climate targets. In its article, New Zealand describes the role of its first Emissions Reduction Plan, which sets the course to net zero by 2050 and highlights emissions pricing as a key instrument. The plan compiles a host of regulations and supporting policies that will help unlock new ideas, businesses, and markets to cost-effectively drive climate action. The article points to the importance of addressing the distributional impacts of the NZ ETS and weaving such considerations into the policy design itself.

YEAR IN REVIEW

Throughout 2022, ETSs across the globe have undergone a series of developments, including policy decisions spurred by rising prices caused by the energy crisis. New systems are also being introduced as jurisdictions work to design and implement ETSs. Below, we summarize major updates from the systems currently in force (i.e., those already in operation) and those under development (i.e., where a mandate for an ETS is in place, and where system rules are currently being developed but not yet in force), as well as other jurisdictions which are considering an ETS.

EUROPE AND CENTRAL ASIA

Austria: Austria's national ETS began operation in October. Originally set to begin in July, the system was suspended for three months as part of the Austrian government's energy price relief plan. By its launch in October, regulated entities had to open a registration account on the dedicated platform. Late registration was possible without penalty until 1 February 2023.

European Union: In December, the EU Parliament and Council reached an agreement on a major reform of the EU ETS, strengthening its ambition in order to achieve the EU's 55% emissions reduction target for 2030. The reform includes a tighter cap for the existing ETS for electricity, industry, and aviation and a phase-in of the maritime sector from 2024 onward. A phase-out of free allocation for some industrial sectors will be accompanied by a phase-in of a carbon border adjustment mechanism from 2026. Moreover, the EU decided to introduce a new EU ETS for buildings, road transport, and process heat in industry in 2027 or, in case of high energy prices, in 2028.

Germany: 2022 marked the second year of operation of the German ETS. According to an evaluation report published in November, the system has been successfully implemented. As of October, 1,700 regulated entities and 500 intermediaries had opened a registry account. The first compliance period covering 2021 concluded in September, with a compliance rate of 98% in terms of surrendered allowances.

Kazakhstan: In July, a new National Allocation Plan for 2022-2025 was approved, establishing a cap of 163.7 MtCO₂ for 2023.

Montenegro: The operation of the Montenegro ETS was negatively affected by several changes of government throughout 2022, which caused major delays in the adoption of the annual allocation plan. The government set up a working group mid-year to review the country's climate legislation, including the ETS. This work is still ongoing as of January 2023, with the adoption of the revised "ETS Decree" and "Climate Law" expected by April 2023.

Sakhalin (Russia): In March, a "Federal Law on Conducting an Experiment to Limit GHG Emissions in Selected Federal States of the Russian Federation" was approved in its final reading, introducing mandatory emissions reporting and verification requirements for regulated entities in the Sakhalin region and obliging them to comply with the allocated emissions allowances. The law also sets a legal basis for "allowance circulation". As a mandatory scheme to regulate GHG emissions, the Sakhalin pilot ETS was meant to launch in September but has been delayed pending cap-setting and allowance allocation processes.

Switzerland: A market stability mechanism was introduced in the Swiss ETS. Due to a large number of allowances in circulation, the auction volume was reduced by 50%. A revision of the "CO₂ Act" that covers the period 2025-2030 is in process.

Türkiye: Türkiye held its first Climate Council meeting with participation by public and private institutions and NGOs. The Council's recommendations included the launch of a pilot ETS in 2024 to align the development of a national ETS with the country's 2053 net zero target. These recommendations were reflected in Türkiye's Medium-Term Program for 2023-2025 and, following approval from the president, published in the Official Gazette.

Ukraine: The design process of the Ukrainian ETS has been severely impacted by the Russian war of aggression, making it impossible to finalize the draft instruments for cap-setting and allowance allocation developed during the year. A stakeholder engagement process was nevertheless carried out and finalized in early 2023.

United Kingdom: The UK launched a major consultation on scheme reforms addressing several issues, including how to align the cap trajectory with the country's net zero target and expanding the scheme's sectoral coverage. An initial response with changes to be implemented from 2023 was published in August, while the full response is expected in 2023.

NORTH AMERICA

California: In December, the Board of the California Air Resources Board (CARB) adopted the state's "Final 2022 Scoping Plan", which establishes the strategy to meet California's emissions reduction targets. In light of the additional emissions reductions now expected by 2030, CARB announced it would review all major programs, including the state's Cap-and-Trade system. CARB will report to the state legislature on any potential program changes by the end of 2023.

Canada Federal: All Canadian provinces and territories had to hand in proposals for carbon pricing systems for the 2023-2030 period. These must meet the strengthened federal benchmark criteria of CAD 65 (USD 50) per tonne of CO₂ equivalent in 2023, increasing by CAD 15 per year to CAD 170/tCO₂e in 2030. In November, the Canadian government announced which proposals had been approved and where the federal carbon pollution pricing "backstop" system would apply from 2023.

Massachusetts: As a result of the review of the "310 CMR 7.74" regulation which concluded at the end of 2021, the Massachusetts Department of Environmental Protection started auctioning future vintage allowances in June and September. In each of the auctions, MassDEP offered almost 400,000 2023 vintage allowances, equivalent to 5% of the 2023 cap.

New York State: In January 2023, New York's Climate Action Council issued a "Final 2022 Scoping Plan" that proposes a range of policies and actions to meet the State's carbon neutrality goal in 2050 – including an economy-wide cap-and-invest program. When adopted, the program will cover all emitting sectors under an enforceable and declining cap, with the caps for 2030 and 2050 corresponding to state-wide emission limits. The Governor has directed the Department of Environmental Conservation and the New York State Energy Research and Development Authority to develop ETS regulations before January 2024.

North Carolina: In an Environmental Management Commission Air Quality Committee meeting in July, North Carolina's Department of Environmental Quality provided information on how a proposed regulation to become a participating state in RGGI deviates from the existing RGGI Model Rule. Among others, the North Carolina regulation would

cover industrial units, regardless of grid connectivity, and emissions from biomass/biofuel. Consideration of the RGGI rule by North Carolina's Environmental Management Commission has been delayed to 2023.

Nova Scotia: In 2023, the province's cap-and-trade system is being replaced by an output-based pricing system (OBPS), approved by the federal government in November. The cap-and-trade system will be phased out after the 2022 compliance deadline in December 2023, with two more auctions scheduled during the year to allow entities to purchase allowances for their verified 2022 emissions.

Oregon: In March, Oregon's Department of Environmental Quality (DEQ) distributed allowances to the 18 covered fuel suppliers currently subject to the emissions cap under the Climate Protection Program. The distribution of allowances was based on the program rules for the first compliance period, which began in 2022 and includes calendar years 2023 and 2024. In September, DEQ launched a voluntary trading platform and the forms needed for trading between transferring and acquiring covered fuel suppliers.

Pennsylvania: In April, the final regulation to establish an ETS in Pennsylvania and to participate in RGGI was published. The regulation is currently being challenged by several lawsuits. Until legal proceedings are concluded, the Pennsylvania Department of Environmental Protection will not take steps to implement or enforce the RGGI regulation.

Québec: In September, Québec adopted a new approach for free allocation, which will apply from 2024. Without reform, freely allocated allowances were forecast to represent an increasing share of the total cap, as industrial output grew. It is expected that the new approach will see a reduction of free allocation of 2.9 million allowances between 2024-2030.

Regional Greenhouse Gas Initiative: RGGI states are currently conducting the Third Program Review. As per the timeline for the program review released in November, an updated draft Model Rule would be released in fall 2023, with the program review concluding in December 2023.

Washington: Following a year of intensive preparations, Washington state's new cap-and-invest program started operating in January 2023. The system's design closely resembles that of California's program. Washington began a public process to explore the possibility of linking to other cap-and-trade systems.

LATIN AMERICA AND THE CARIBBEAN

Chile: The government published its 2022-2026 Energy Agenda in August. It states that a pilot ETS project for the energy sector will be developed to evaluate the role of this instrument in achieving emissions reductions and a just transition in a cost-effective manner.

Colombia: The “Climate Action Law” (Ley de Acción Climática), which came into force in December 2021, sets a goal to fully implement an ETS by 2030. This law also appoints an independent group of experts to generate recommendations to promote and develop carbon markets in Colombia. These recommendations are to be considered by the environment and finance ministries.

Mexico: The operational phase of the Mexican ETS began in January 2022. The Ministry of Environment and Natural Resources is expected to publish regulations for the operational phase of the ETS in the first half of 2023.

AFRICA

Nigeria: In August, the Nigerian Minister of the Environment announced that the country has started activities towards establishing a national ETS. The National Council for Climate Change, established in November 2021, is responsible for developing the system. Key design elements such as the timeline and sectoral scope remain to be decided. The proposal will go through stakeholder engagement before decisions are made on features such as the allocation framework.

ASIA-PACIFIC

China: With the experience from the first compliance period, the Ministry of Ecology and Environment updated MRV guidelines in March, with the aim of improving data quality. In November, the Ministry released draft allocation plans for 2021 and 2022 for public consultation, significantly tightening benchmark values for coal-fired power plants.

Chinese Pilots: All Chinese regional pilots continued trading and compliance. Besides regular activities, Beijing, Chongqing, Guangdong, Shanghai, Shenzhen, and Tianjin released or updated their Tan Pu Hui offsets framework to incentivize individual or small-scale GHG reduction projects. Credits generated from these projects will be used for compliance purposes in these pilots.

India: The Indian government took steps towards the establishment of a national carbon market. A draft blueprint by the Bureau of Energy Efficiency proposes a phased introduction involving two mechanisms: a voluntary market supported by a domestic project-based offset scheme and a compliance market with mandatory participation for regulated entities. The voluntary market is expected to enter into force by July 2023, followed by the compliance market.

Indonesia: In October, the Ministry of Environment and Forestry released implementing regulations for the upcoming national ETS, with details on offsets, sectoral roadmaps, MRV procedures, and institutional arrangements. Sectoral regulations are currently under development. In January 2023, the Ministry of Energy and Mineral Resources announced that the

mandatory, intensity-based ETS for the power sector, initially set to begin in 2022, would launch in February and cover 99 coal-fired power plants.

Japan: In February, the government announced the upcoming Green Transformation (GX) League, a baseline-and-credit system for companies expected to become fully operational in April 2023. This will build upon existing carbon trading systems such as the JCM and J-Credit scheme. Although participation in the GX League is voluntary, compliance is mandatory once formally a participant. The government is currently working on the rules for the GX League, which will become fully operational in April 2023. In February 2023, the Cabinet passed the basic GX plan, a 10-year roadmap which includes initial arrangements for a mandatory national ETS from 2026.

Malaysia: The Ministry of Natural Resources, Environment, and Climate Change will conduct a study under the 12th Malaysia Plan to develop a policy and design framework for the domestic ETS. The study is looking into ETS market design frameworks, registration, and alignment with international standards and is expected to commence in 2023.

New Zealand: After the major reforms of previous years, the New Zealand government continued to make incremental improvements to the operation of the NZ ETS. Changes coming into effect for the forestry sector in 2023 include a shift to averaging accounting and a new “permanent forest” category. Decisions were also taken to tighten the eligibility and accounting rules for industrial allocation. Consultations continue on an improved market governance framework, as well as a carbon pricing mechanism for biological emissions from agriculture.

Republic of Korea: In November, the government announced several near-term changes to the K-ETS. These include: increasing incentives to reduce emissions and facilitate low-carbon investment by issuing more free allowances to the most efficient covered entities; encouraging trading and mitigating price volatility by opening up the ETS to more financial firms and increasing the allowance holding limit; facilitating the conversion of international offset credits to Korean Credit Units; strengthening MRV; and increasing support for small businesses and new entrants.

Thailand: The Thailand Voluntary ETS (T-VETS) pilot project was extended to the Eastern Economic Corridor area, a key industrial region of Thailand. Early in the year, the government also published rules and guidelines for carbon credit trading, which were followed in September by the launch of the carbon credit trading platform FTIX.

Vietnam: In July, Vietnam issued a Decision by which the country commits to achieving net zero GHG emissions by 2050, with a mid-term target of 43.5% below BAU levels by 2030. This decision follows “Decree 06/2022/ND-CP”, which outlines a roadmap for the implementation of an ETS with a declining cap corresponding to Vietnam’s NDC. The pilot ETS is expected to start in 2026 and become fully operational by 2028.

FROM LOCAL TO SUPRANATIONAL

EMISSIONS TRADING SYSTEMS OPERATE AT EVERY LEVEL OF GOVERNMENT

This infographic demonstrates the diversity and complexity that exists with respect to the level of government at which emissions trading can be implemented. At one end of the spectrum, city-level ETSs are in operation, for example, in Shenzhen and Tokyo. At the other end, the EU ETS operates supranationally in all EU Member States plus Iceland, Liechtenstein, and Norway. Multiple ETSs may be in force in countries like Germany and Austria, where some emissions are covered by the EU ETS and others by the German or the Austrian National ETS. Similarly, the China National ETS currently covers power sector emissions while other province- and city-level ETS pilots regulate emissions from a variety of sectors. In North America, many provincial or state-level ETSs exist, with some linked domestically or internationally. In the rest of ICAP Status Report 2023 you can find a wealth of information about these individual systems that are already in force as well as many others that are under development or consideration.



* Beijing, Chongqing, Shanghai and Tianjin are provincial-level municipalities in the Chinese administrative system.

JURISDICTIONS MAKING UP

55%



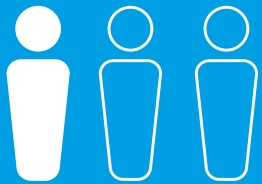
OF GLOBAL GDP ARE USING EMISSIONS TRADING

1



ALMOST 1/3 OF THE GLOBAL POPULATION
LIVES UNDER AN ETS IN FORCE

3



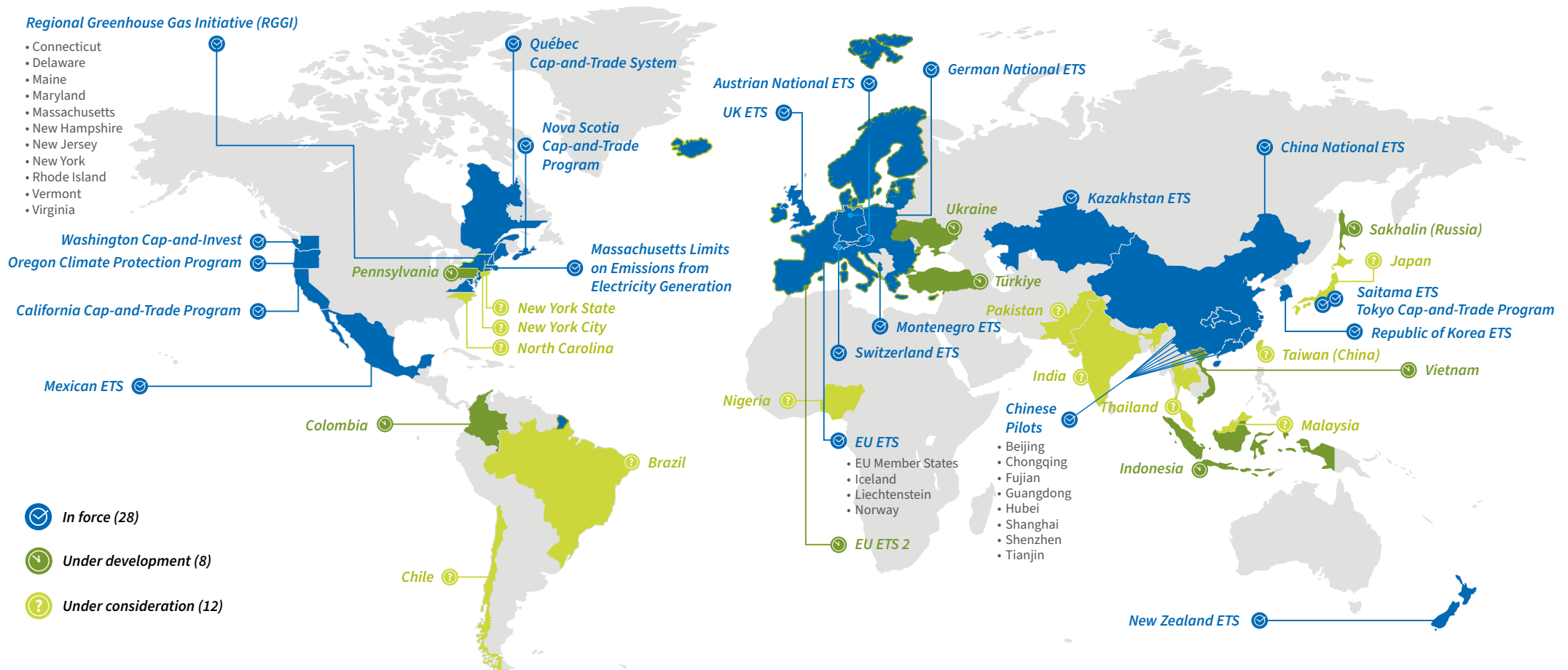
17%

OF GLOBAL GHG EMISSIONS ARE COVERED BY AN ETS

EMISSIONS TRADING WORLDWIDE

THE CURRENT STATE OF PLAY IN CAP-AND-TRADE

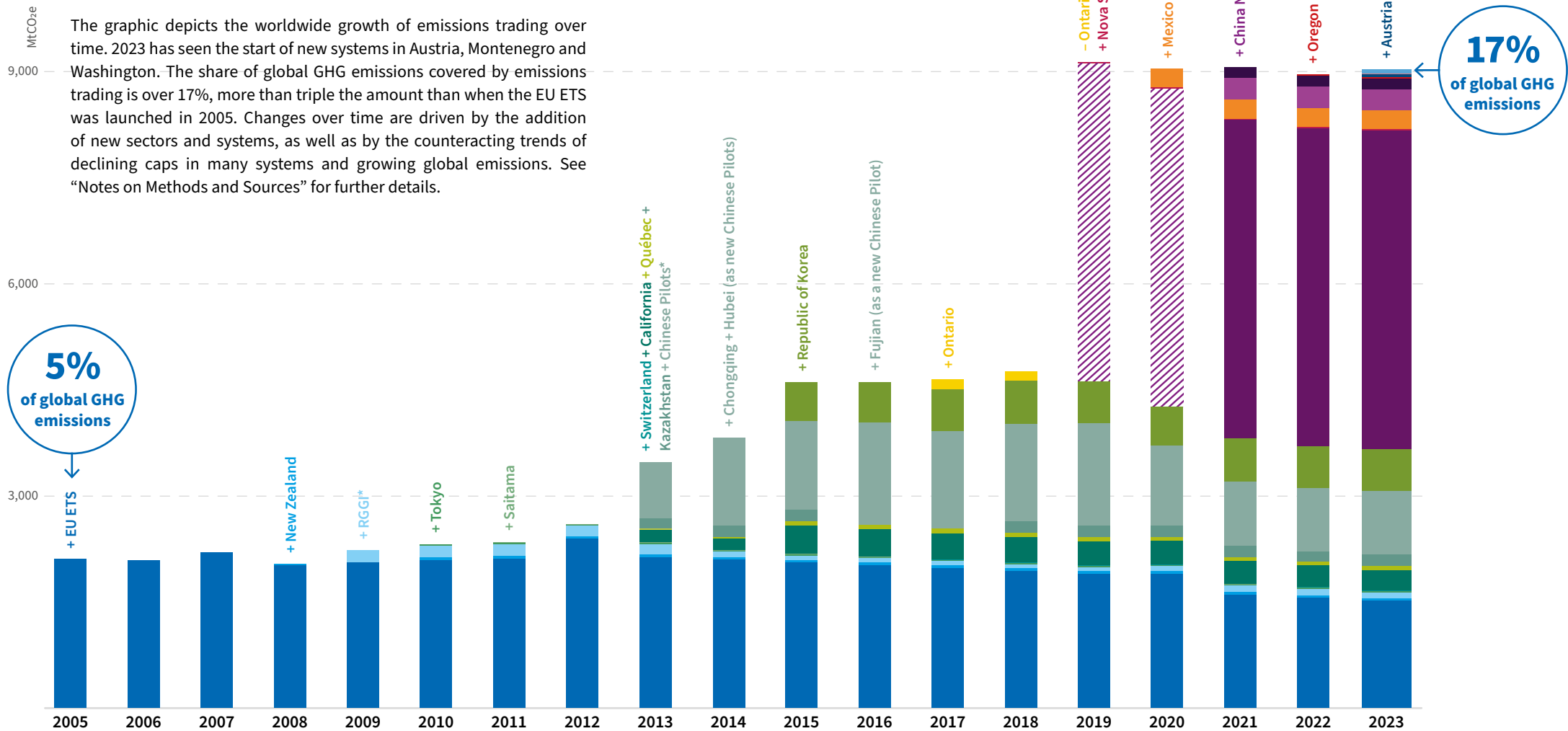
The ICAP ETS world map depicts emissions trading systems currently in force, under development or under consideration. As of January 2023, there are 28 ETSs in force. Another eight are under development and expected to be in operation in the next few years. These include ETSs in Colombia, Indonesia, and Vietnam. Twelve jurisdictions are also considering the role an ETS can play in their climate change policy mix, including the first African jurisdiction depicted in the map: Nigeria. If a jurisdiction has multiple systems in force, it is depicted in blue, with the borders of the jurisdiction representing the layered systems (e.g. Germany and Guangdong). If, however, it has a system in force but is also developing an additional system, it is depicted in blue but also features a green border (e.g. the EU).



GLOBAL EXPANSION OF ETS

THE SHARE OF GLOBAL GHG EMISSIONS UNDER AN ETS TRIPLED SINCE 2005

The graphic depicts the worldwide growth of emissions trading over time. 2023 has seen the start of new systems in Austria, Montenegro and Washington. The share of global GHG emissions covered by emissions trading is over 17%, more than triple the amount than when the EU ETS was launched in 2005. Changes over time are driven by the addition of new sectors and systems, as well as by the counteracting trends of declining caps in many systems and growing global emissions. See “Notes on Methods and Sources” for further details.



* RGGI includes New Jersey (as of 2020) and Virginia (as of 2021).

* Beijing, Guangdong, Shanghai, Shenzhen, Tianjin

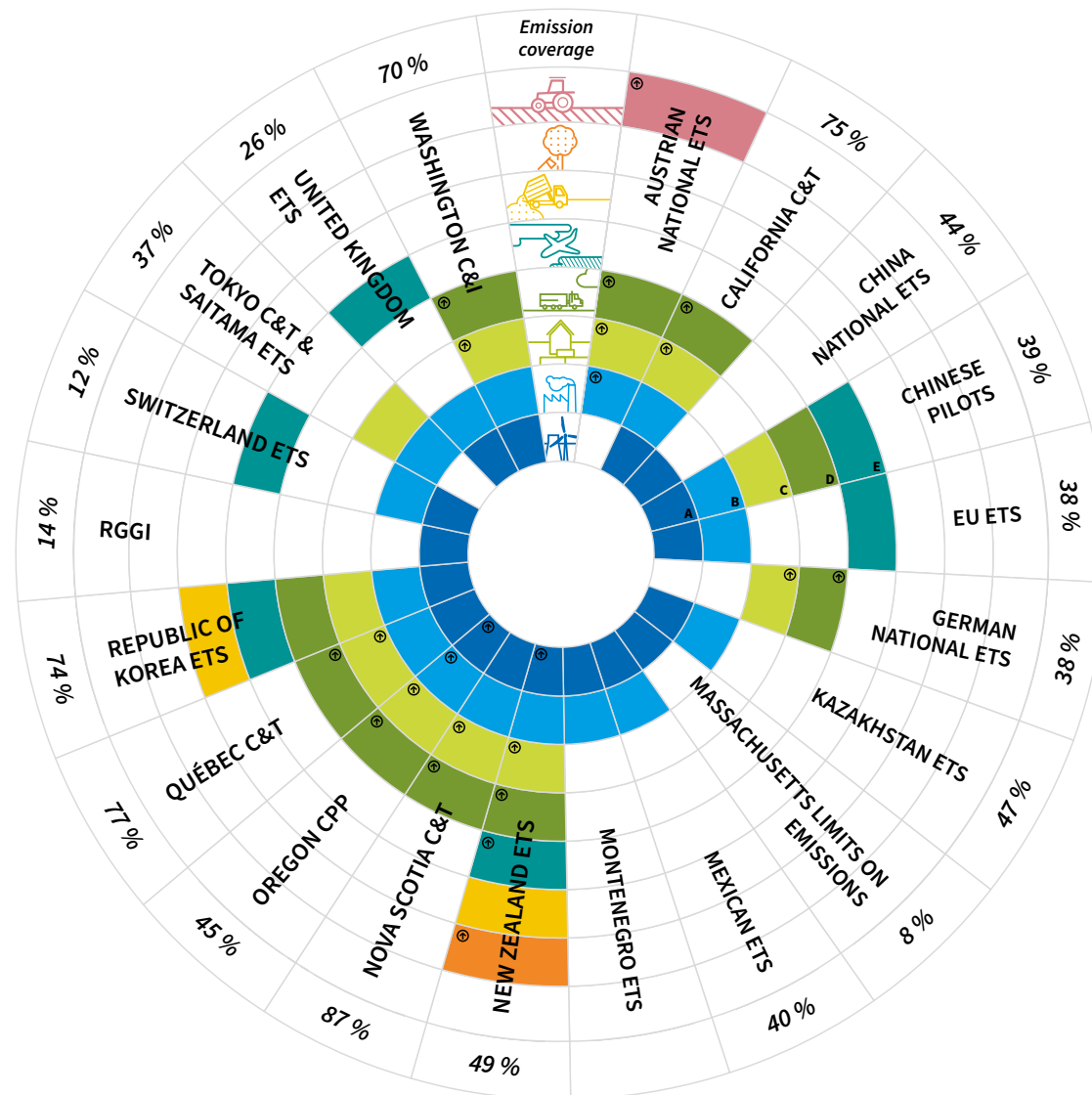
* The Chinese National ETS came into force in 2021 but has retroactive compliance obligations in 2019 and 2020, indicated above by the striped bar

** In 2021, the UK launched its own ETS which required an adjustment in the EU ETS cap.

SECTOR COVERAGE

SECTORS COVERED BY EMISSIONS TRADING ACROSS SYSTEMS

The graphic shows sectors (types of economic activity) covered by an ETS in force in 2023. Systems are listed clockwise alphabetically, with the numbers in the outermost ring indicating the share of aggregate emissions covered by the system as per the most recent available data. Upstream coverage in a sector is indicated with an arrow. Sectors are considered covered when at least some entities in the sector have explicit compliance obligations. Typically, not all facilities in the sector are regulated because of limits like inclusion thresholds. In addition, not all gases or processes of a given sector may be covered. The jurisdictions' respective factsheets provide more information on system coverage. The graphic includes only sectors which are covered by at least one ETS. See "Notes on Methods and Sources" for further details.



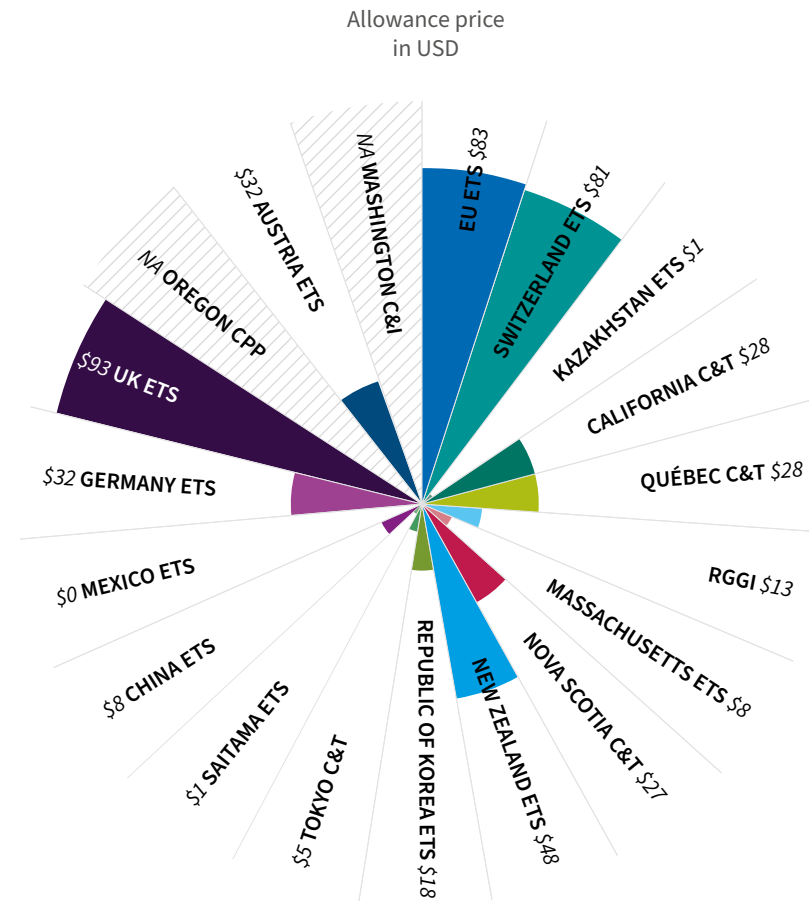
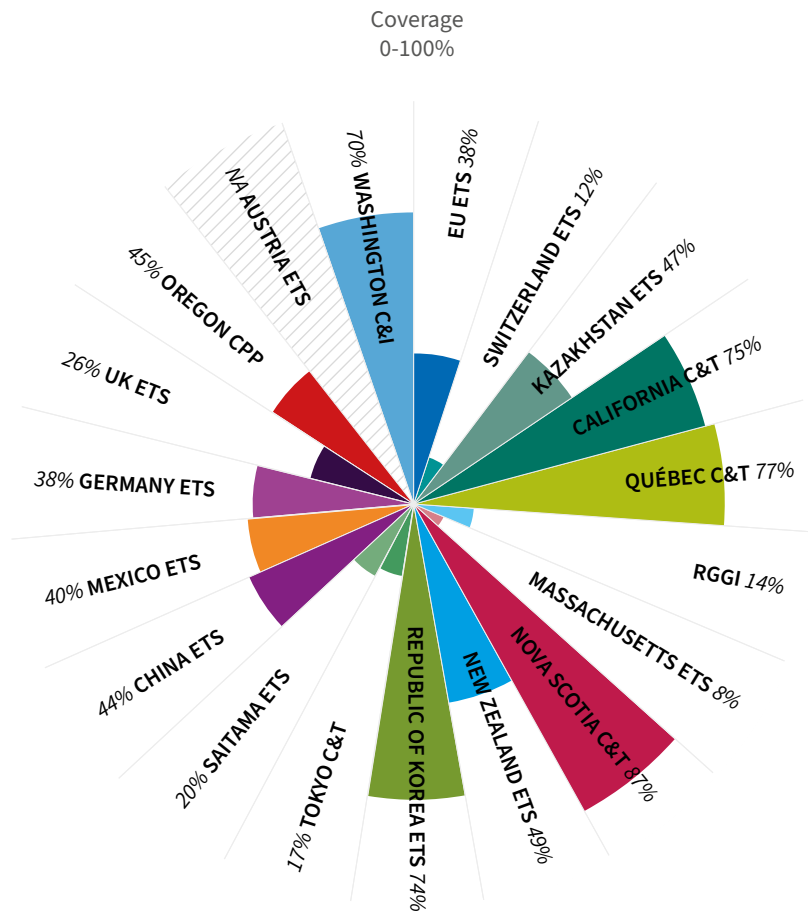
- A** The Fujian ETS covers the electricity grid
- B** Beijing, Chongqing, Fujian, Guangdong, Hubei, Shanghai, Shenzhen, Tianjin
- C** Beijing, Shanghai
- D** Beijing, Shanghai, Shenzhen
- E** Fujian, Guangdong, Shanghai

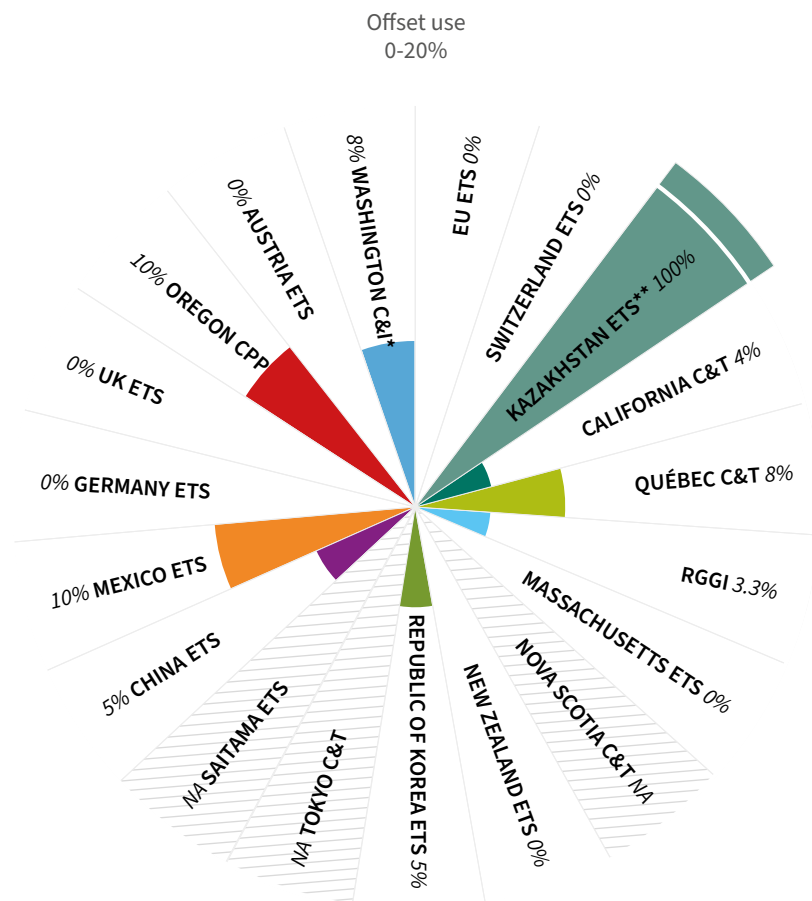
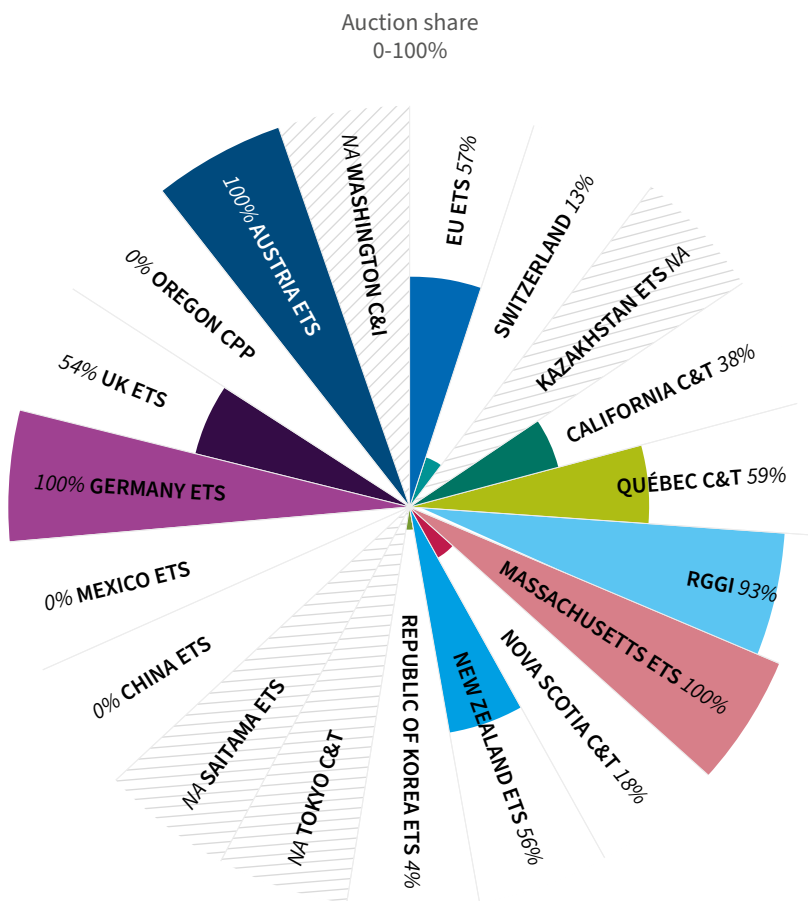
⤴ indicates which sector is covered upstream

DIFFERENT SHAPES OF ETS

A COMPARATIVE LOOK AT KEY METRICS IN SELECTED SYSTEMS

Each of the graphs below presents a different metric across ETSs in force. **Coverage** shows the share of the jurisdiction's GHG emissions covered under the ETS. **Allowance price** is measured in USD per metric tonne of CO₂e and averaged over 2022. **Auction share**, expressed as a share of the 2022 cap, denotes the share of allowances that were auctioned and generated revenues for the jurisdiction's government. **Offset use** indicates the share of a compliance entity's obligations that can be met using approved offsets. See "Notes on Methods and Sources" for further details.





* Up to 5% from projects not located on federally recognized tribal land, plus an additional 3% from projects located on federally recognized tribal land
 ** The Kazakhstan ETS is represented out of scale in this infographic.

Coverage

Percentage of jurisdiction's emissions covered under the system (in %).

Allowance price

The weighted average price for allowances across 2022, for one metric tonne of CO₂e emissions (in USD).

Auction share

Proportion of allowances that is not allocated for free, but must be acquired either at auction or otherwise (in %).

Offset use

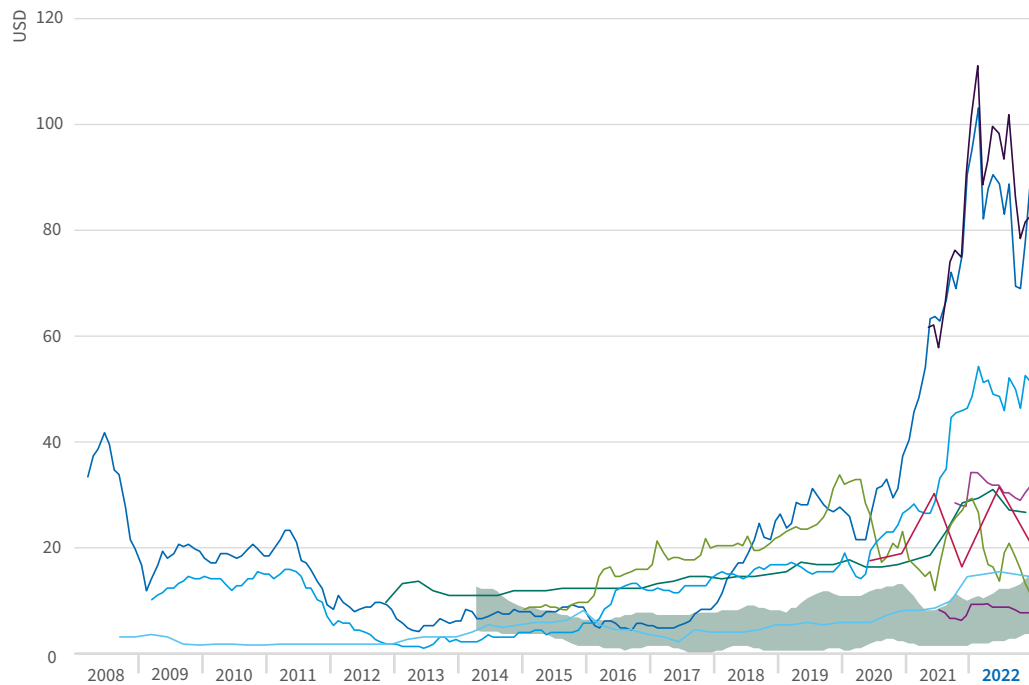
Share of compliance obligation that can be met using approved offsets.

ALLOWANCE PRICES AND REVENUES

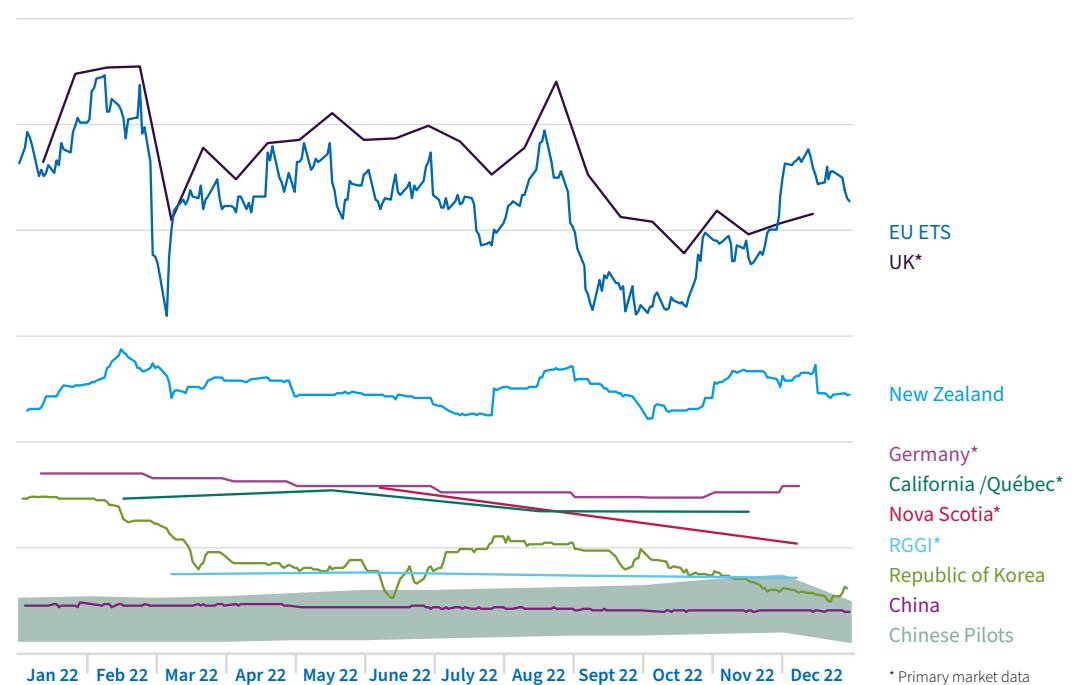
2022 IN A LONGER HISTORICAL CONTEXT

The upper panels of this infographic use data from the ICAP Allowance Price Explorer to visualize developments in allowance markets in a long historical context since 2008 (left panel) and in 2022 (right panel). Both the short- and long-term price developments are driven by changes in current and expected future scarcity of allowances, 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. The shaded areas indicate the range of prices observed in the Chinese pilot ETs. The panel on the next page displays information on revenues raised by governments at auctions of allowances over time. The amount of revenue collected depends on the jurisdiction's size, ETS coverage, share of auctioned allowances and allowance prices. Over time, increases in allowance prices and the introduction of new systems has led to an increase in revenues raised from the auction of allowances. In all panels, observations in non-USD currencies are converted to USD using exchange rate data from the IMF. See "Notes on Methods and Sources" for further details.

2008-2022



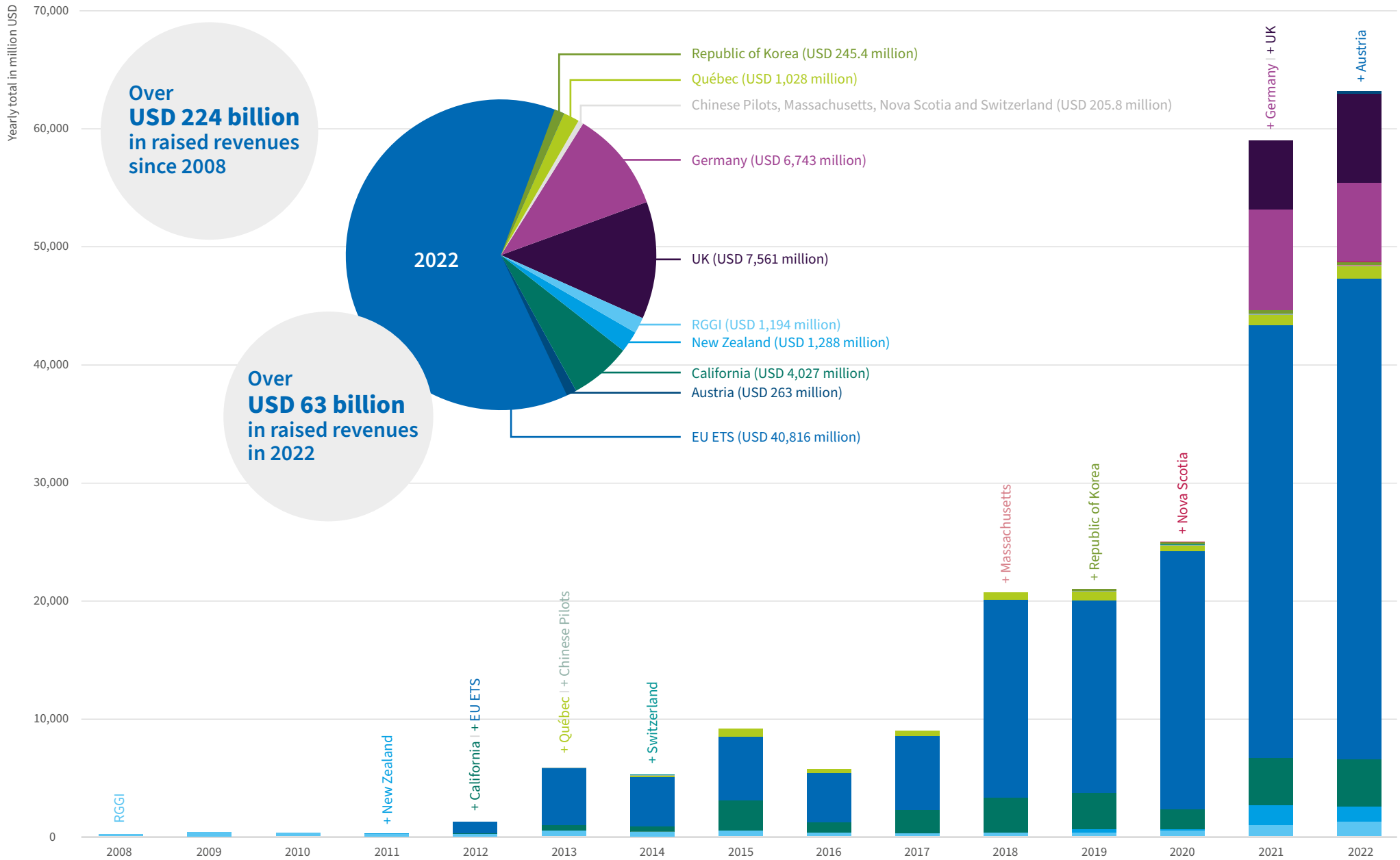
2022



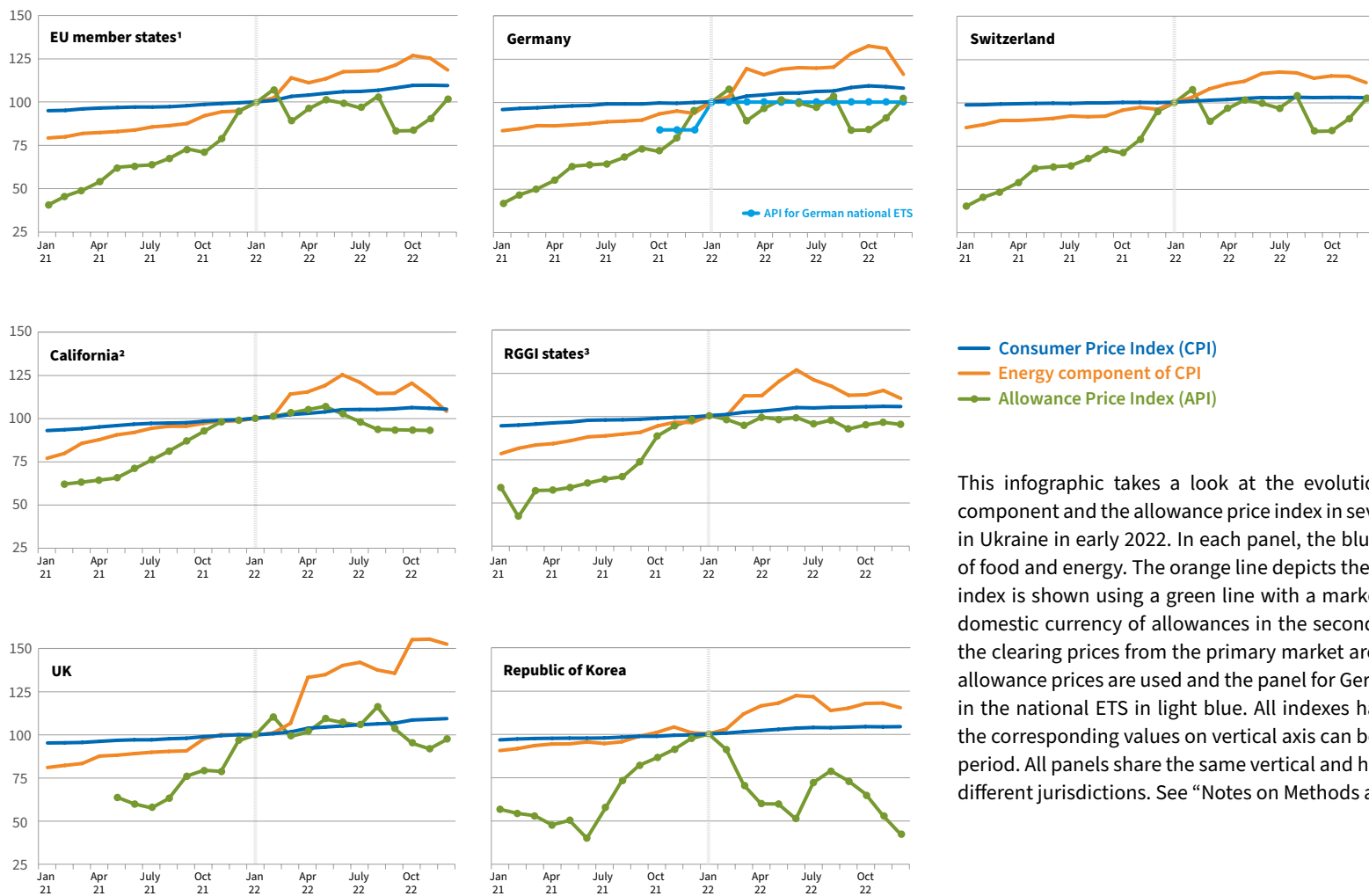
- EU ETS
- UK*
- New Zealand
- Germany*
- California /Québec*
- Nova Scotia*
- RGGI*
- Republic of Korea
- China
- Chinese Pilots

* Primary market data

YEARLY REVENUES RAISED BY EACH SYSTEM



CONSUMER, ENERGY AND ALLOWANCE PRICES IN 2021 AND 2022



Allowance price increases seen in 2021 have not continued at the same rate in 2022.

Energy prices rose significantly in 2022, particularly in the first half of the year, while allowance prices were broadly stable in most jurisdictions.

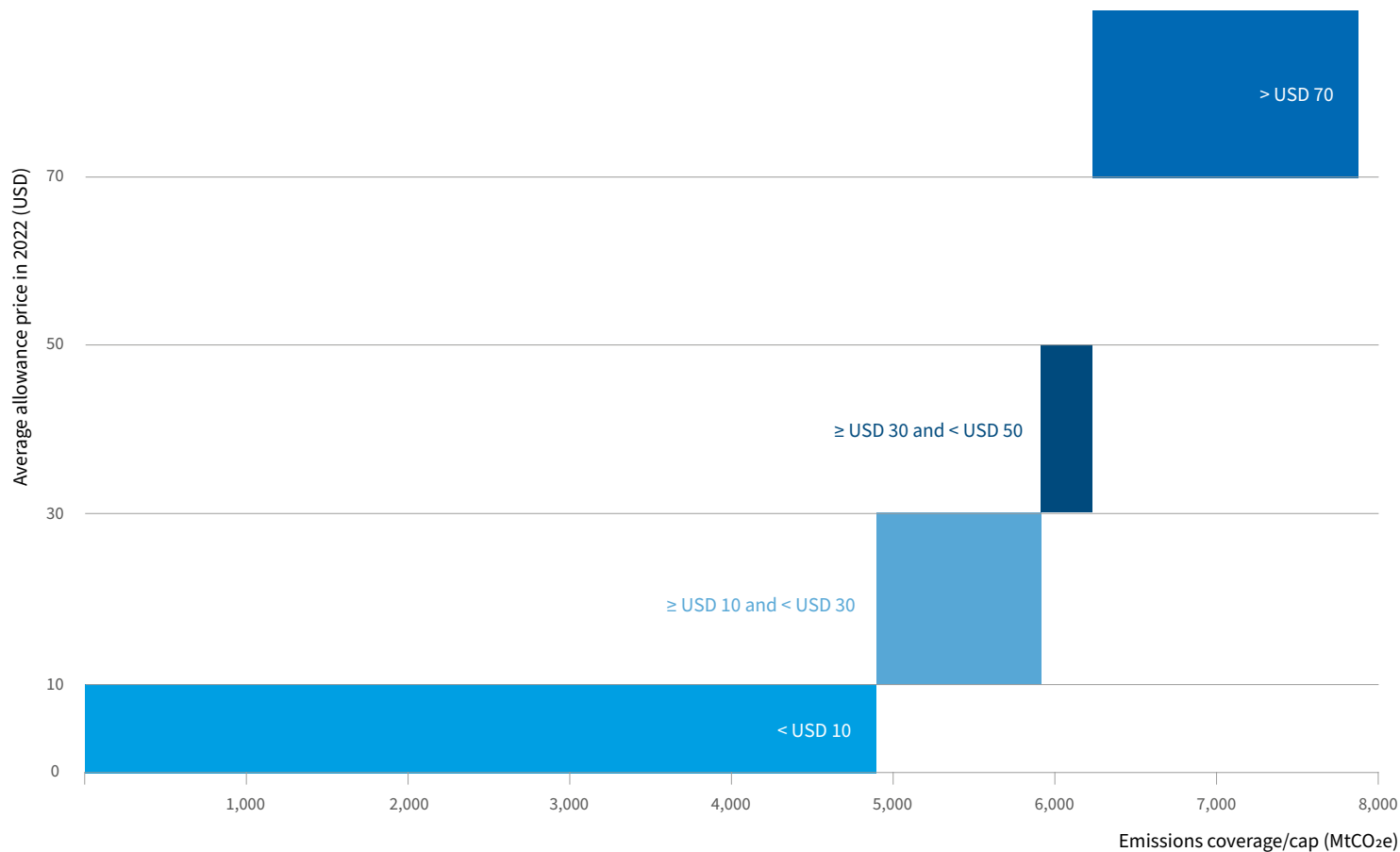
— Consumer Price Index (CPI)
 — Energy component of CPI
 — Allowance Price Index (API)

This infographic takes a look at the evolution of the consumer price index (CPI), its energy component and the allowance price index in seven jurisdictions before and after the start of the war in Ukraine in early 2022. In each panel, the blue line is the CPI in the jurisdiction, including prices of food and energy. The orange line depicts the energy component of the CPI. The allowance price index is shown using a green line with a marker. It corresponds to the monthly average prices in domestic currency of allowances in the secondary market except in the case of California, where the clearing prices from the primary market are shown. For Switzerland and Germany, the EU ETS allowance prices are used and the panel for Germany additionally displays the prices of allowances in the national ETS in light blue. All indexes have been rebased to equal 100 in January 2022 so the corresponding values on vertical axis can be interpreted as percent change relative to the base period. All panels share the same vertical and horizontal axes to aid comparison of price changes in different jurisdictions. See “Notes on Methods and Sources” for further details.

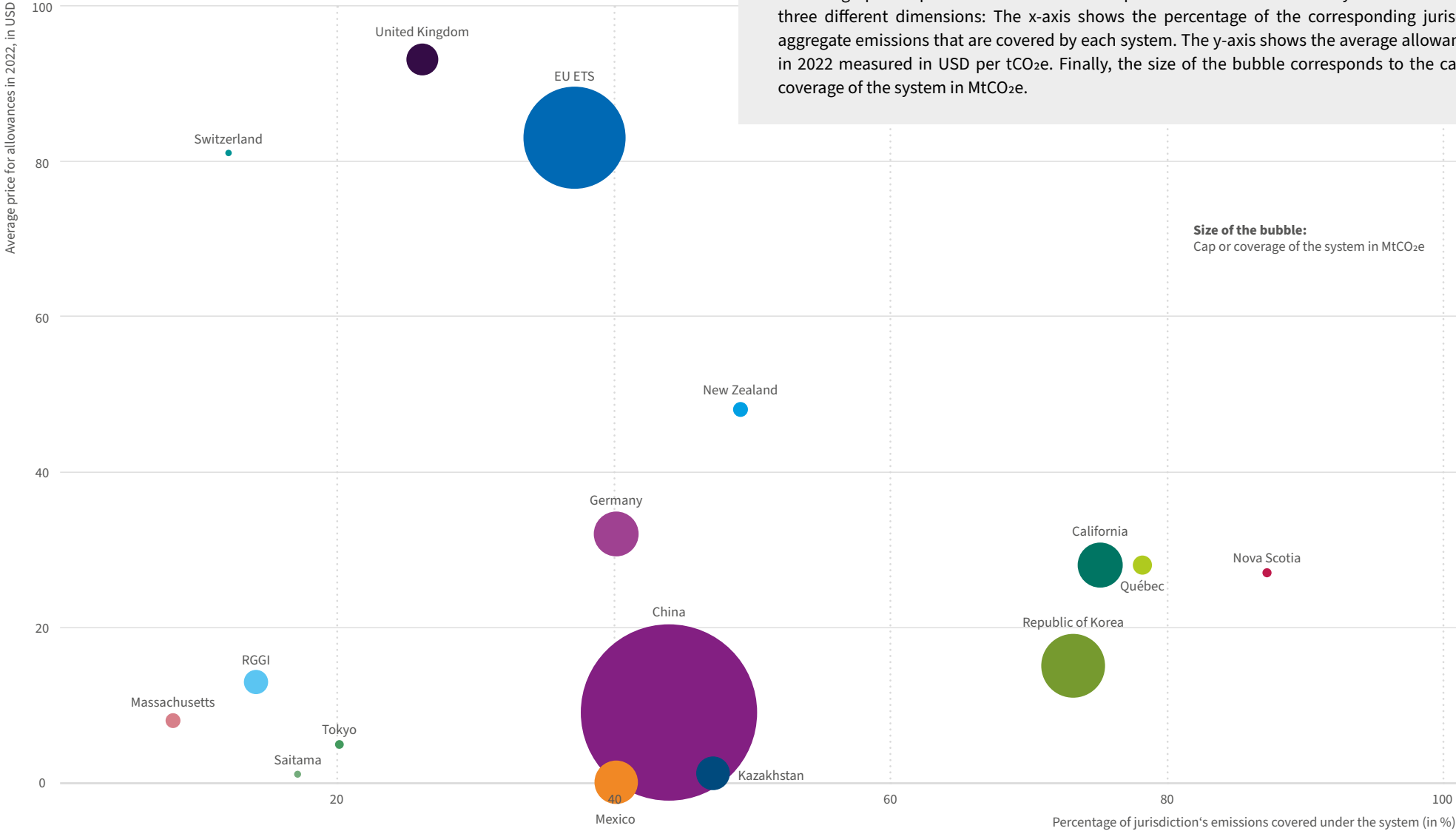
1 CPI and and energy component of CPI correspond to values for the EU 27 member states.
 2 CPI and the energy component of CPI in California correspond to values in the West urban region.
 3 CPI and the energy component of CPI in RGGI states correspond to values in the Northeast urban region.

PRICES OF COVERED EMISSIONS

This infographic shows the range of allowance prices in 2022 in ETs in force, and the volume of emissions that ETS with those price levels cover. Most ETS-covered emissions are in systems where average prices were below USD 10 in 2022. About one sixth of ETS-covered emissions were in systems where average prices in 2022 were between USD 10 and USD 50. There was no system where prices were in USD 50 to USD 70 range, while the EU, Swiss and UK ETs featured average prices over USD 70. Over one fifth of ETS-covered emissions are in systems where the 2022 average allowance price was above USD 70. Differences in allowance prices are driven by, among others, changes in current and expected future scarcity of allowances in each system, variations in general economic conditions, system design and policy reforms.



ETS IN PERSPECTIVE



ABOUT

THE INTERNATIONAL CARBON ACTION PARTNERSHIP

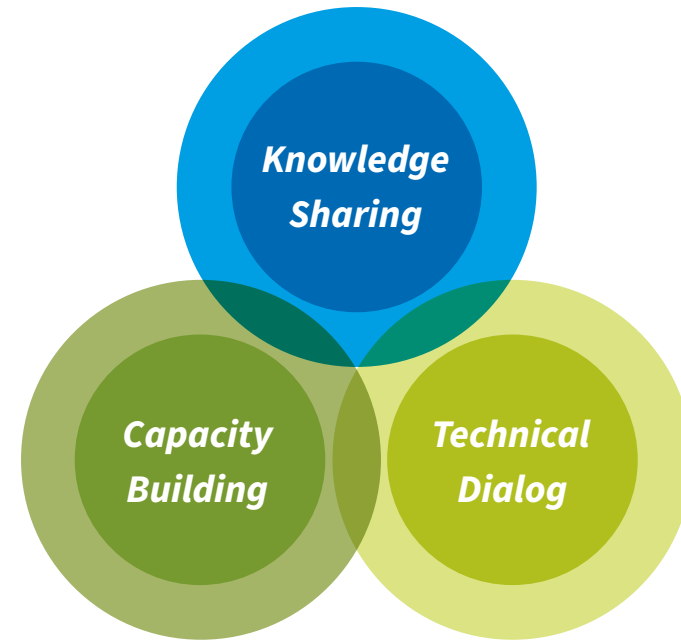
Founded in 2007, the International Carbon Action Partnership (ICAP) brings together policy-makers from all levels of government that are operating an emissions trading system (ETS) or are taking steps to introduce one. ICAP provides a unique platform for governments to share their practical experiences of emissions trading and the latest ETS knowledge. ICAP membership currently counts 33 members and 7 observers. ICAP celebrated its 15-year anniversary in October 2022.

ICAP'S OBJECTIVES

- Highlight emissions trading as a key policy tool to address climate change.
- Facilitate the development, implementation, and refinement of ETSs around the world.
- Build and strengthen partnerships amongst governments to share best practices and lessons learned.

MEMBERS (AS OF MARCH 2023)

Arizona, Australia, British Columbia, California, Denmark, the European Commission, France, Germany, Greece, Ireland, Italy, Maine, Manitoba, Maryland, Massachusetts, the Netherlands, New Jersey, New Mexico, New York, New Zealand, Norway, Nova Scotia, Ontario, Oregon, Portugal, Québec, Spain, Sweden, Switzerland, the Tokyo Metropolitan Government, Vermont, the United Kingdom, and the State of Washington



OBSERVERS

Japan, Canada, Kazakhstan, the Republic of Korea, Mexico, Singapore, and Ukraine

THREE PILLARS OF ICAP'S WORK

Technical Dialog: ICAP provides a platform for its Members and Observers to exchange knowledge on and discuss ETS design and implementation. This workstream focuses on key aspects of emissions trading, drawing on the rich experience of ICAP jurisdictions and facilitating dialog on ETS issues among experts and others interested in carbon markets.

Knowledge Sharing: ICAP acts as a unique repository of information on emissions trading, promoting it as an important policy instrument to address climate change. ICAP is the main knowledge hub for those who want to learn more about emissions trading and access information about the latest ETS developments worldwide.

Capacity Building: ICAP builds capacity on the design, implementation, and operation of ETSs around the world by offering training courses to policymakers and other stakeholders on all aspects of emissions trading. Almost 1,000 participants from over 70 countries have participated in these courses over the years.

THE STORY OF ICAP

HOW ICAP BEGAN: THE INITIAL YEARS

The [International Carbon Action Partnership](#) was born in 2007, with a view to help foster cooperation on international climate change issues and related foreign policy. A group of governments quickly got behind the idea and a political declaration was signed among founding members in Lisbon in the same year.

ICAP quickly began to garner attention and soon welcomed additional memberships from governments around the world. ICAP's first steps were taken in the Kyoto era – where linking seemed a conceivable way to build a global carbon market “under the Kyoto cap” and where an organization like ICAP could facilitate and accelerate this effort. For this reason, ICAP's Technical Dialog work began with a particular focus on any and every technical aspect of ETS that might facilitate alignment among systems and future linkages, such as MRV, allocation, scope, and coverage.

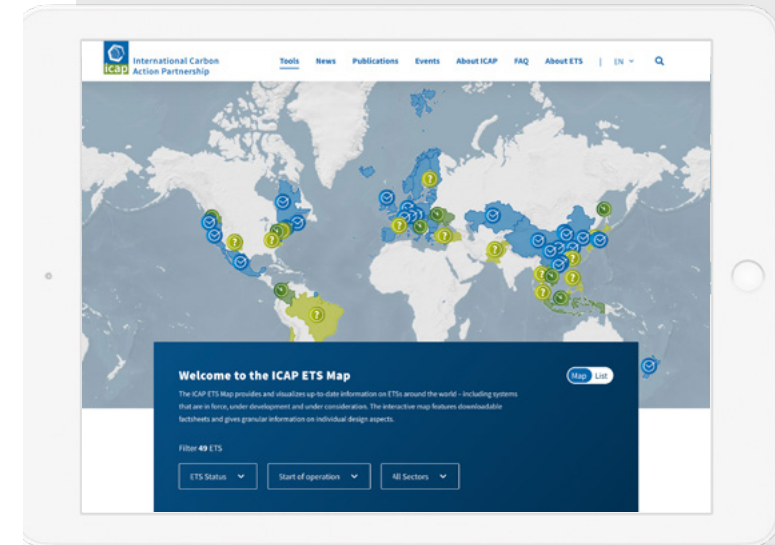
In this period, ICAP engaged with jurisdictions in the Asia-Pacific region – notably from South Korea, Australia, New Zealand, Kazakhstan, China, and national and subnational systems in Japan. Early dialog with these regional frontrunners at the time was an important signal of true international cooperation and laid the foundations for the diverse set of members and observers that make up ICAP today.

Since 2009, Capacity Building and outreach on the fundamental features of ETS have been a core workstream for ICAP. The first editions of the ETS Summer Academy – an initiative that continues to this day – also took place that year. It is now one of ICAP's most coveted capacity building courses and over time has helped foster a global community of ETS practitioners: the ICAP alumni. After 2011, Technical Dialog and Knowledge Sharing beyond ICAP's membership became increasingly important. An initial version of ICAP's [ETS Map](#) that visualizes up-to-date information on global ETSs was launched in 2012. Today, it is an interactive tool that features downloadable factsheets and granular information on all existing ETSs. This first knowledge product provided an important basis to later expand ICAP's role as a unique repository of information on emissions trading. All publications, ETS news, events, and other materials are available on the [ICAP website](#).

NEXT: AN ERA OF GROWTH

In 2013-2020, ICAP grew and changed significantly, along with the number of ETSs worldwide. More systems sprang up and existing systems leapt forward, implementing reforms, and deepening their markets. Discussions and exchange on the technical elements of ETS became much more tangible, as theory turned to practice, and systems went from design to implementation. ICAP's Technical Dialog workstream thus grew in prominence and is now made up of workshops, webinars, and reports.

At the same time, there arose an appetite for ETS in emerging economies. This brought with it new questions, such as how an ETS might work in [jurisdictions with a regulated power sector](#). The realization of the practical challenges of [linking](#), with system designs strongly rooted in domestic economy considerations, also meant that previous hopes of transatlantic linking and the construction of a single, global carbon market became less feasible.



ETS Map



Allowance Price Explorer

But global cooperation and exchange remained all the more relevant in a world where models of ETS implementation – with view to scope, allocation, and cap-setting – varied significantly from continent to continent. Renewed vigor around the potential of emissions trading as a key instrument to tackle climate change meant that those in the field relished the opportunity to learn from their peers. ICAP’s Capacity Building programs and training courses also began to reflect the accumulation of practical experiences. ICAP responded to the growing need not just for conveying ETS basics but for opening a channel for seasoned ETS practitioners to pass on their knowledge to a new generation of ETS designers working to launch systems in the Global South. The ICAP alumni from these training courses, both in person and virtual, now comprise almost 1,000 practitioners from over 70 countries – keeping in touch, working together, and exchanging when they meet at international climate events.

ICAP’s role as an ETS knowledge hub also began to evolve in this time. In 2014, the first edition of the annual **Emissions Trading Worldwide Status Report** was published. This has become a critical market resource and our flagship publication. In 2015, together with the World Bank’s Partnership for Market Readiness, ICAP brought together practical lessons on ETS design and implementation in an **ETS Handbook**, sparked by demand from policymakers. Our series of **ETS Briefs** was also initiated in 2015 and provide simple, up-to-date explainers on the basics of emissions trading. We also expanded our **ETS News** reporting in this time, and in 2019 launched our **Allowance Price Explorer**.

To this day, ICAP remains a safe and neutral forum for governments to openly exchange on ETS design and engage in advanced Technical Dialog. ICAP continues to forge collaborations with other carbon pricing initiatives around the world.

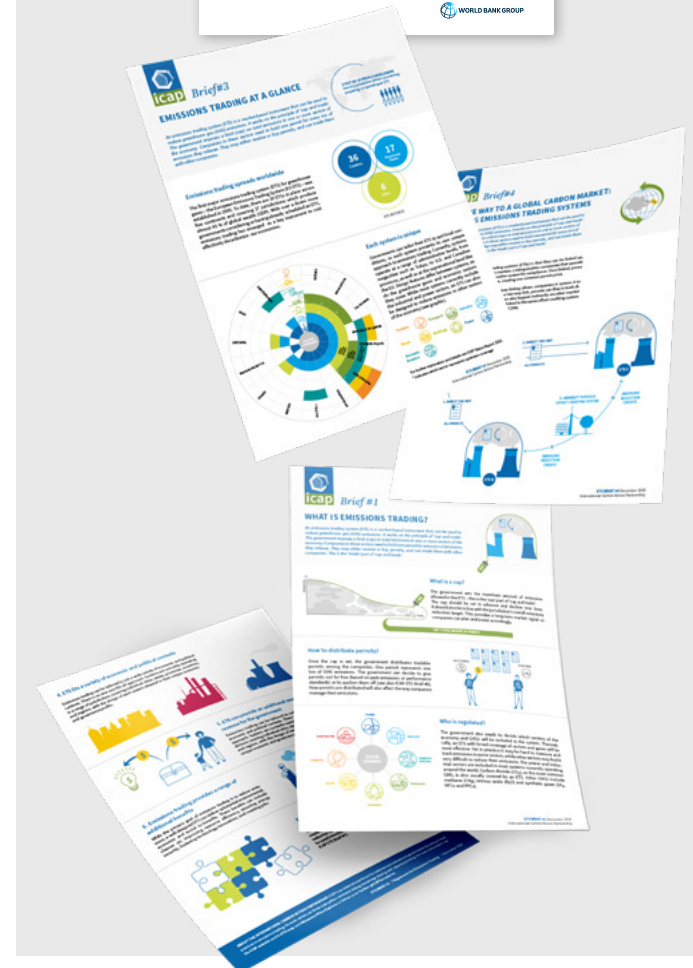
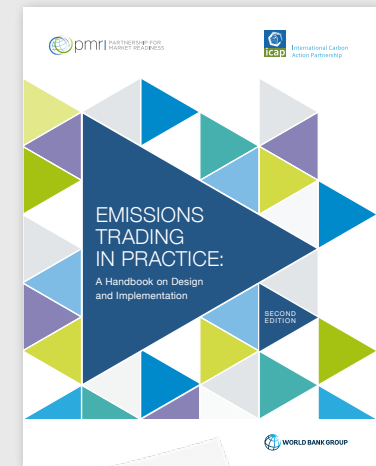
THE CURRENT ERA AND A VIEW AHEAD

Now, 15 years since ICAP’s inception, we find ourselves once again at a crossroads. Established systems from the last decade are maturing. They are largely stable and reliable, and have shown resilience to financial crises, a pandemic, and now a global energy crisis. At the same time, new systems are coming online, especially in the Latin American and Asia-Pacific regions.

The objectives of policymakers have shifted towards aligning these policy instruments with long-term, ambitious climate targets. We look towards the future and ask such questions as: **how will ETS work in a net zero scenario?** What role will removals play? Other important topics include dialogs on **competitiveness and carbon leakage**, emissions trading and international cooperation, **offsetting**, and ETS and Article 6.

The EU’s plans for a carbon border adjustment mechanism also provides a sharp impetus for ETS and other carbon pricing instruments, which have become more diverse. Among the jurisdictions currently considering an ETS, very few are designing ‘traditional’ cap-and-trade like the first wave of systems. The next generation of ETSS, predominantly implemented in developing countries, will feature alternative design elements or will be a hybrid of various mechanisms. These will need to be carefully crafted to be able to help jurisdictions meet objectives in their own unique situations. The world is increasingly complex, and emissions trading is flexible enough to meet this complexity. Looking ahead, ICAP will continue to delve into these dynamic topics to affirm the role of ETSS in achieving net zero emissions.

The ICAP Secretariat is deeply committed to its mission to help governments across the globe engage with each other and create robust and effective ETSS that can spur us along the road to climate neutrality. We want to thank all the members, observers, partner organizations, and individuals that have supported ICAP’s work over the last 15 years – we truly look forward to the next 15.



15 YEARS of
ICAP

**40 MEMBERS
& OBSERVERS**

**22 Countries
16 Provinces and States
1 Union
1 City**

**AROUND 1,000
PARTICIPANTS**
to ICAP capacity building activities



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ARTICLES

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170

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IMPRINT

Publication date

March 2023

Design

Simpelplus

www.simpelplus.de

Photos

Cover: Myriams-Fotos, Pixabay

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