



International Carbon  
Action Partnership

# EMISSIONS TRADING WORLDWIDE

*Practitioner Insights*

*Status Report 2021*

# EMISSIONS TRADING WORLDWIDE

## *International Carbon Action Partnership (ICAP) Status Report 2021*

### **EDITORIAL TEAM:**

Emma Krause, Baran Doda, Alexander Eden, Christopher Kardish, Lina Li, Stephanie La Hoz Theuer, William Acworth, Julia Groß, Maia Hall, Constanze Haug, Martina Kehrer, Kai Kellner, Ernst Kuneman, Andrés Olarte Pena, Jana Elbrecht, Victor Alejandro Ortiz Rivera.

### **CITE AS:**

ICAP. (2021). Emissions Trading Worldwide: Status Report 2021. Berlin: International Carbon Action Partnership.

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:

Raquel Breda dos Santos (Brazil), Gustavo Saboia Fontenele e Silva (Brazil), Inaiê Takaes Santos (PMR Consultant, Brazil), Jason Gray (California), Shelby Livingston (California), Amy Ng (California), Rajinder Sahota (California), Stephen Shelby (California), Mark Sippola (California), Mavis Chan (Canada), Simon Tudiver (Canada), Francisco Dall'Orso (Chile), Juan Pedro Searle (Chile), Qiang Li (Chongqing Carbon Emissions Trading Center), Linjun Xie (Chongqing Carbon Emissions Trading Center), Germán David Romero Otálora (Colombia), Beatriz Yordi (European Commission), Julia Ziemann (European Commission), Alexander Handke (Germany), Michael Themann (Germany), Sirui Xiao (China Emissions Exchange, Guangzhou), Guangxing Yang (China Hubei Emission Exchange), Dida Gardera (Indonesia), Yosuke Mori (Japan), Aiman Esekina (Kazakhstan), William Space (Massachusetts), Suriel Islas Martínez (Mexico), María de la Paz Ortiz (Mexico), Zineb Bouzoubaa (New York City), Kate Gouin (New York City), Ross MacWhinney (New York City), Lindsey-Paige McCloy (New York City), Vanessa Chalk (New Zealand), Scott Gulliver (New Zealand), Paula Hemmer (North Carolina), John Cooper (Nova Scotia), Sachi Gibson (Nova Scotia), Jason Hollett (Nova Scotia), Michelle Miller (Nova Scotia), Andrew Webber (Nova Scotia), Brittany White (Nova Scotia), Colin McConnaha (Oregon), Syeda Hadika Jamshaid (Pakistan), Sarah Pinter (Pennsylvania), Glenda Daco (Philippines), Jonathan Beaulieu (Québec), Pierre Bouchard (Québec), Julie Côté (Québec), Hugo Desrosiers (Québec), Steve Doucet-Héon (Québec), Thomas Duchaine (Québec), Stéphane Legros (Québec), Chang-hwan Lee (Republic of Korea), Sungwoo Lee (Republic of Korea), Kyeongah Ahn (Republic of Korea), Younghyun Lee (Republic of Korea), William Lamkin (RGGI), Brian Woods (Vermont), Marat Latypov (Sakhalin), Jin Li (Shanghai Environment and Energy Exchange), Xing'an Ge (China Shenzhen Emissions Exchange), Qi Wang (China Shenzhen Emissions Exchange), Zhibin Chen (SinoCarbon), Guoqiang Qian (SinoCarbon), Sophie Wenger (Switzerland), Anothai Sangthong (Thailand), Cheng Liu (Tianjin Climate Exchange), Satoshi Chida (Tokyo Metropolitan Government), Takuya Ozawa (Tokyo Metropolitan Government), Jian Zhou (Tsinghua University), Engin Mert (Turkey), Tuba Seyyah (Turkey), Olga Yukhymchuk (Ukraine), Joe Cooper (United Kingdom), Henry Dieudonné-Demaria (United Kingdom), Charlie Lewis (United Kingdom), Chris Shipley (United Kingdom), Huy Luong Quang (Vietnam), Bill Drumheller (Washington).

The ICAP Secretariat is grateful to the German Federal Ministry for Environment, Nature Conservation and Nuclear Safety (BMU) 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.

# CHINA

## World's largest ETS goes live

Chen Zhibin and Qian Guoqiang → SinoCarbon Innovation & Investment Co., Ltd

In response to the COVID-19 pandemic, China has chosen green development to achieve economic recovery and high-quality growth. After President Xi Jinping's pledge in September 2020 to peak China's CO<sub>2</sub> emissions before 2030 and achieve carbon neutrality by 2060, attention on climate policy has reached new highs and turned to domestic implementation. The Chinese government is formulating an action plan for peaking its CO<sub>2</sub> emissions, with targets and preparation at the provincial level. A low emission development path in line with the peaking target will be mainstreamed into the 14th Five-Year Plan for National Economic and Social Development this year. The national ETS, a key pillar of China's vision for low-carbon development, made a breakthrough at the end of 2020 and early 2021. After releasing the final allocation plan for the power sector and a document providing the legal and administrative arrangements for China's national ETS, the Ministry of Ecology and Environment (MEE) officially announced the start of the first compliance cycle in January 2021, ending in December 2021.

### NATIONAL ETS STARTS FIRST COMPLIANCE CYCLE

Details on the implementation of surrender obligations are not yet clear, but MEE's announcement means this will certainly take place in 2021. Two outstanding issues remain. First, emissions of covered entities and their allowance levels need to be confirmed. Provincial authorities are required to calculate and pre-allocate allowances for 2019 and 2020 to covered entities. Secondly, MEE needs to launch the national registry and trading platform. According to the national allocation plan, entities will likely need to comply for both 2019 and 2020.

The implementation of the national ETS will follow the Work Plan for Construction of the national ETS (Power Sector), which was released in 2017 by the National Development and Reform Commission before responsibility was shifted to MEE. The national ETS was prepared based on experiences of the past years, in particular China's eight regional pilots.

### DESIGN AND GOVERNANCE OF THE NATIONAL ETS

#### A three-tiered governance structure

MEE acts as the national competent authority setting the rules and overseeing the system, with joint oversight of trading activities with other regulators, while its subsidiaries at the provincial level oversee the implementation of these rules and the municipal-level authorities take on some management duties locally.

#### Monitoring, reporting, and verification (MRV)

The MRV framework of the national ETS builds on the experience of historical emissions data collection in past years, with some adjustments to integrate the carbon market into the existing environmental governance structure and mechanisms. Two draft technical documents on MRV were released in December 2020. The "Guidelines on Enterprise Greenhouse Gas Emissions Accounting and Reporting – Power Generation Facilities" build on two existing technical guidelines and aim to establish the MRV foundation for the national ETS. The "Guidelines for Enterprise Greenhouse Gas Verification (Trial)" build on a previous document from 2016 and provide further details on verification.

#### System coverage

The power sector is the first covered by China's national ETS, with others to be added gradually during the coming Five-Year Plan, such as steel, aluminum, and other industrial materials. The threshold for coverage under the ETS is 26,000 tons of CO<sub>2</sub> annually for one company (including indirect emissions), resulting in 2,245 covered entities (see Figure 1). The scope of compliance obligation is the direct and indirect CO<sub>2</sub> emissions from power generation, which amounts to 4 billion MtCO<sub>2</sub> and accounts for around 40% of national carbon emissions. For comparison, the eight regional pilots cover about 1.27 billion MtCO<sub>2</sub>, around 30% of the national ETS.

#### Cap-setting

The national ETS adopts a bottom-up approach to cap-setting (see Figure 2). Based on the allocation plan, provincial Ecology and Environment Bureaus (EEBs) calculate the allowances of the covered entities within their jurisdiction and report them to MEE, which confirms the allowances of each province and sums them to get the cap of the national ETS.

Figure 1: Number of covered entities in each province

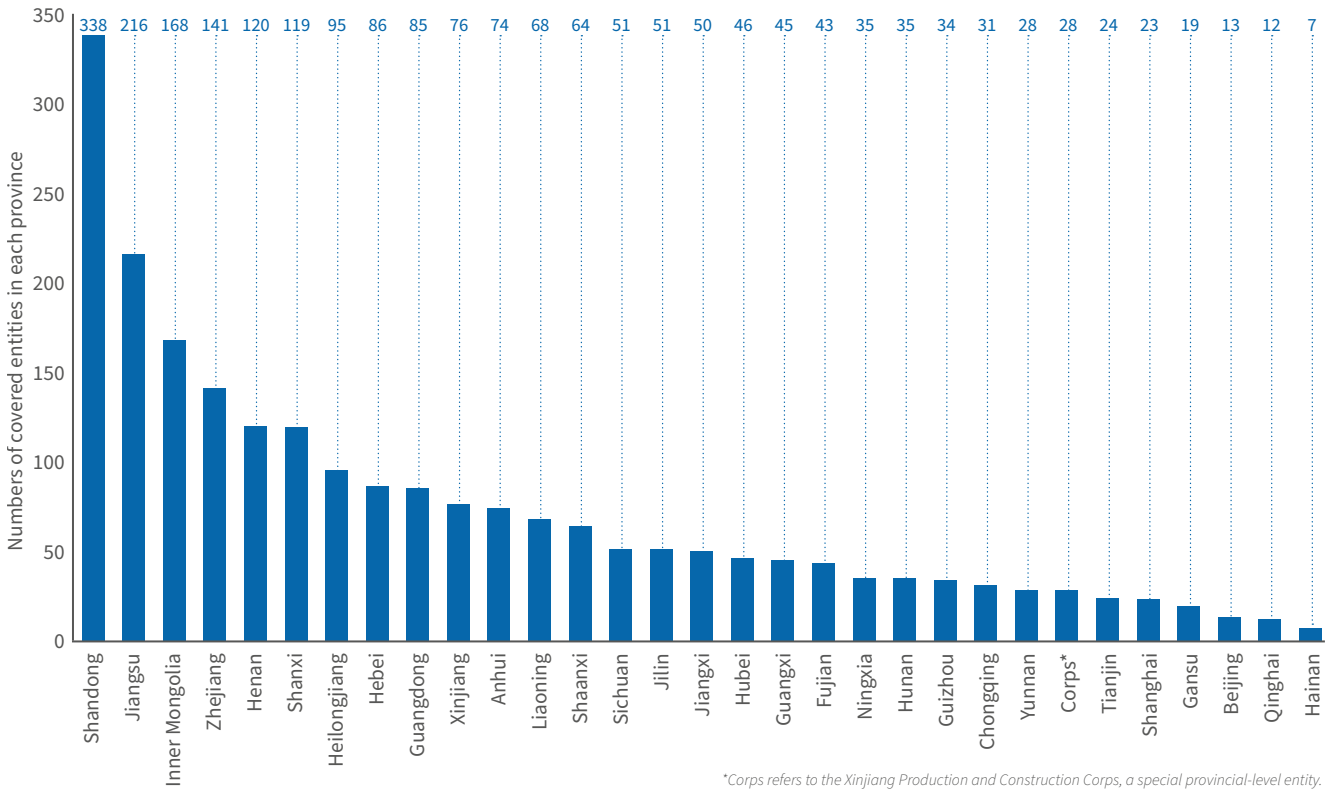
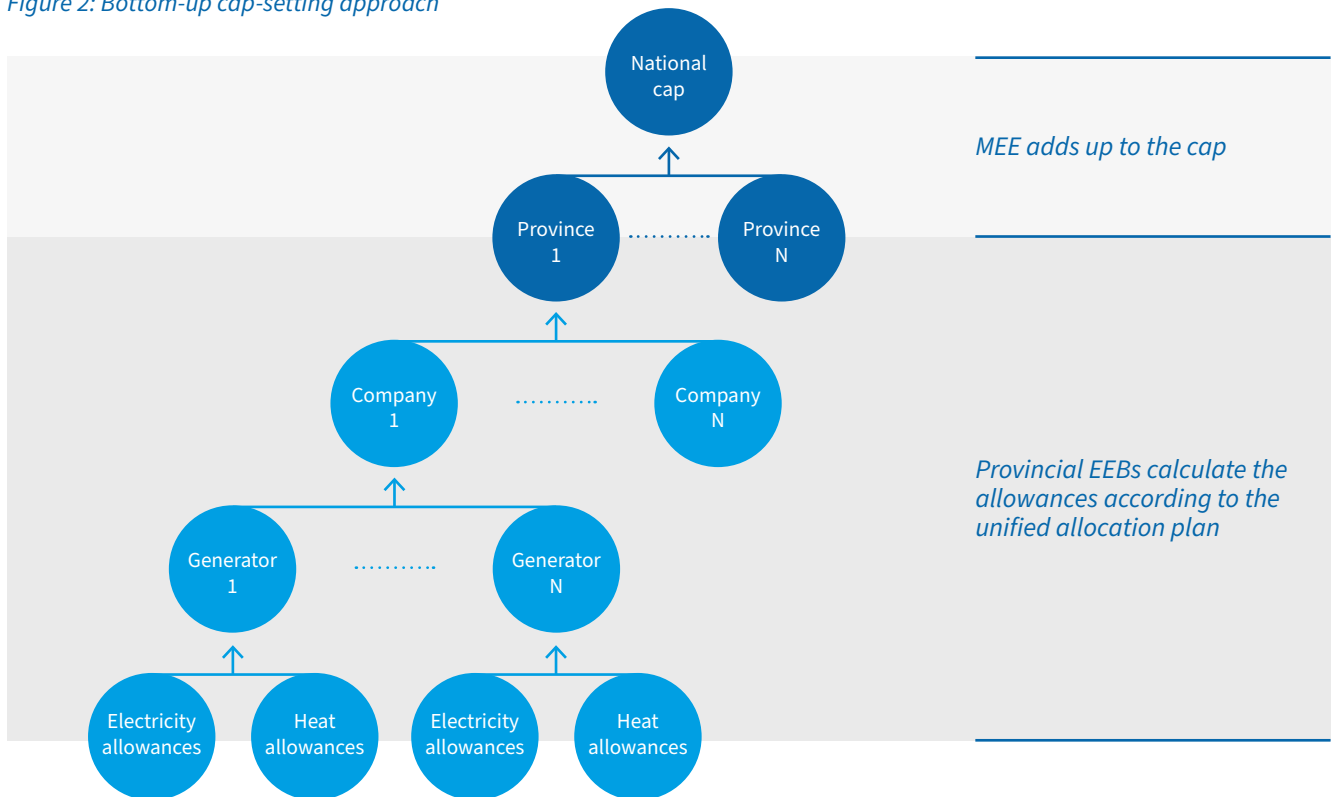


Figure 2: Bottom-up cap-setting approach



## Allowance allocation for 2019 and 2020

The allocation plan provides 100% free allocation for 2019 and 2020 at benchmark levels with a correction factor. The allocation plan adopts benchmarking as the main allocation approach and includes processes for pre-allocation based on 2018 data and ex-post adjustments (final allocation) after the verification of 2019 and 2020 emission data. Auctioning will be introduced gradually, but there is not yet a timeline.

There are four distinct benchmarks based on type of power generation (see Table 1). In addition, an adjustment factor is used that allocates more allowances for entities operating at output below 85% (see Table 2). This is designed to help less efficient facilities transition to the ETS.

### The allowance formula for one generator

$$A = A_e + A_h$$

$A$ —Total CO<sub>2</sub> allowance of the generator (unit: tCO<sub>2</sub>)

$A_e$ —CO<sub>2</sub> allowance of the electricity supply (unit: tCO<sub>2</sub>)

$A_h$ —CO<sub>2</sub> allowance of the heating supply (unit: tCO<sub>2</sub>)

### The formula for electricity supply

$$A_e = Q_e \times B_e \times F_c \times F_r \times F_f$$

$Q_e$ —Electricity supply (unit: MWh)

$B_e$ —Benchmarks of electricity supply (Table 1)

$F_c$ —The correction factor of the cooling mode: 1 for water cooling, 1.05 for air cooling.

$F_r$ —The correction factor of heat supply: 1-0.25×heat supply ratio.

$F_f$ —The correction factor of the load factor. For general coal-fired generators, this factor follows Table 2. For other generators, this factor is 1.

### The formula for heating supply

$$A_h = Q_h \times B_h$$

$Q_h$ —Heating supply of the generator set (unit: GJ)

$B_h$ —The CO<sub>2</sub> emission benchmarks for heating supply (Table 1)

Table 2: The correction factor of the load factor

Load factor (F)	$F_f$
$F \geq 85\%$	1.0
$80\% \leq F < 85\%$	$1 + 0.0014 \times (85 - 100F)$
$75\% \leq F < 80\%$	$1.007 + 0.0016 \times (80 - 100F)$
$F < 75\%$	$1.015(16 - 20F)$

## Registry and exchange

Hubei and Shanghai are working on the readiness of the registry and exchange system, respectively. In December 2020, MEE released the draft “Administrative Measures for the Registration, Trading, and Settlement of the National Carbon Emission Rights (Trial)”. The Provincial Ecology and Environment Bureaus already collected the information of covered entities for opening accounts in the two systems and submitted it to MEE. The first trading of emission allowances is anticipated to take place by mid-year.

## Compliance

For 2019 and 2020, compliance obligations are limited. For gas-fired plants they will be capped at the level of free allocation. Advanced gas-fired plants can sell surplus allowances. Other covered entities will need to surrender allowances of up to 20% of verified emissions above the level of free allocation. These measures aim to promote gas-fired units and reduce the overall compliance burden.

The fine for non-compliance is CNY20,000 to 30,000 (~USD 1,500 to ~USD 4,500) in total. Any gap between compliance obligation and allowances submitted shall also be deducted from the following year’s allocation. In the future, the State Council national ETS regulation will impose a penalty of 2–5 times the average market price.

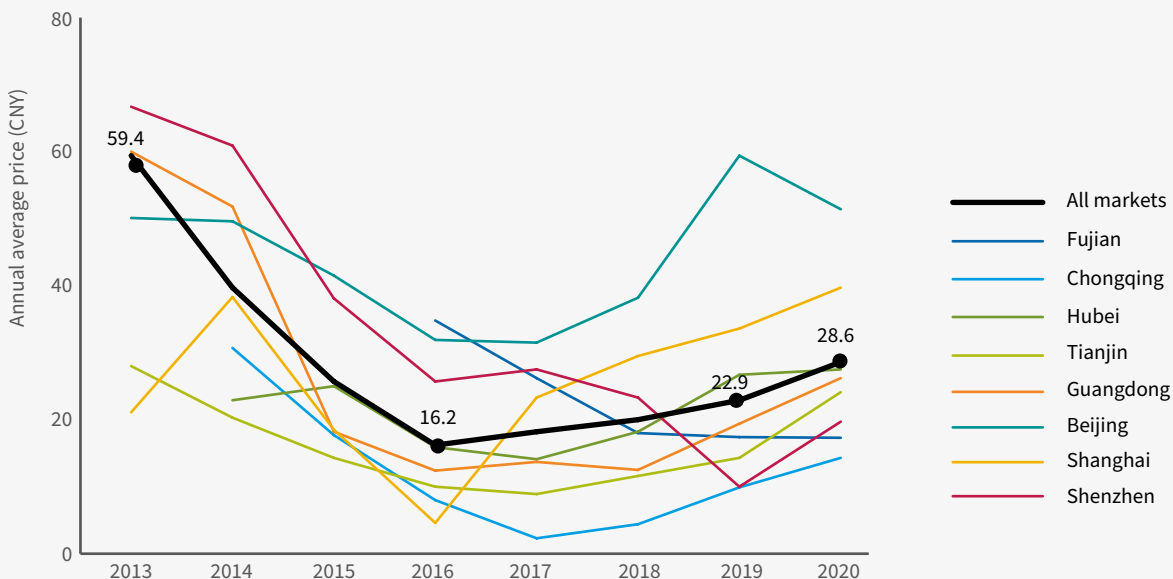
Table 1: Benchmarks for different generators for 2019–2020

Types of Generators	Benchmarks for Electricity Supply (tCO <sub>2</sub> / MWh)	Benchmarks for Heating Supply (tCO <sub>2</sub> / GJ)
Conventional coal-fired generators with installed capacity above 300 MW	0.877	0.126
Conventional coal-fired generators with installed capacity below 300 MW	0.979	0.126
Unconventional coal-fired generators	1.146	0.126
Gas-fired generators	0.392	0.059

## CONTINUOUS RUNNING OF REGIONAL MARKETS

In the past year, eight Chinese regional ETS pilots have continued their operation and policy modifications. Due to the impact of the pandemic, 2019 compliance timelines across the regional systems were postponed. As the country recovered gradually in the middle of the year, most regional pilots finished their regular ETS management tasks with a few months of delay. With the announcement of a national carbon neutrality pledge, investor confidence grew in the last quarter. Prices in 2020 were largely unaffected overall (see Figure 3), with average prices in all regional markets increasing 25% over 2019, though trading volumes were down 17%.

Figure 3: Average trading price in regional markets



According to the national allocation plan, those markets that have already allocated 2019 and/or 2020 allowances will maintain authority over the power sector for the respective year(s). All regional markets have allocated 2019 allowances, while only Guangdong, Fujian, and Tianjin have already allocated 2020 allowances. For 2021, the power sector in all regional markets will be covered in the national ETS, while other sectors will continue to fall under the regional markets until they are brought into the national system.

Three years after the political launch of China's national ETS kickstarted planning and consultations, and in the midst of a worldwide pandemic, the world's largest carbon market is now online and ready to play its role in China's vision for low-carbon development.

# EUROPEAN UNION

## The resilience test of 2020 and the road ahead

Beatriz Yordi → European Commission

The year 2019 was important for the functioning of the EU ETS. The Market Stability Reserve (MSR) became operational and began gradually removing the structural surplus of allowances built up in the system. We saw the EU ETS deliver on its environmental objective again, showing strong promise for the next trading phase running from 2021 until 2030. Emissions from stationary installations decreased by 9.1% relative to 2018 emissions. The carbon price signal remained strong, levelling at an average of almost EUR 25 (USD 28.55) per tonne CO<sub>2</sub>e. As a result, a total of EUR 14 billion (USD 16 billion) in auction revenues was distributed to Member States and largely directed to climate- and energy-related purposes.

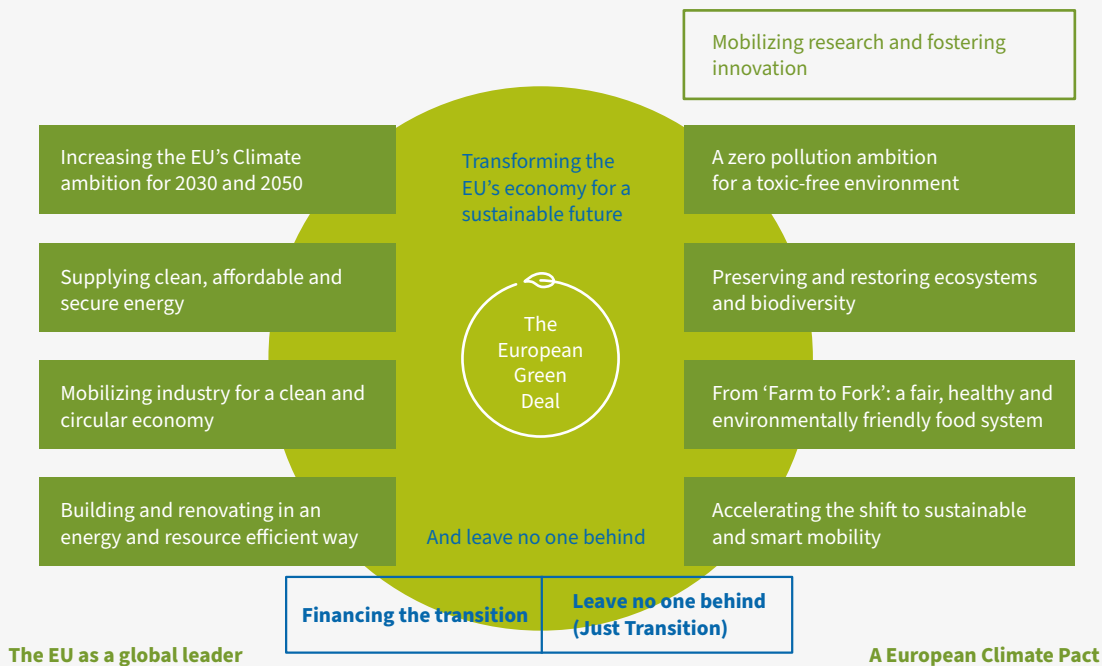
We also saw the carbon price reflected in investment decisions and strategic planning, which in turn translated into tangible results. Coal-to-gas switching and increased deployment of renewable energy capacity yielded an overall decrease of emissions in the power sector of 15%. While this largely drove 2019 emissions reductions under the EU ETS, industrial emissions experienced their biggest annual drop of the third trading phase, running from 2013 until 2020. Only emissions from the aviation sector within the European Economic Area continued to increase, albeit modestly, by 1% relative to 2018.

The year 2020, however, has painted a far more complicated picture. The COVID-19 pandemic spared no country, no sector, and no market, causing economic downturn and disrupting supply chains. Nevertheless, the EU ETS passed this resilience test. After a significant short-term dip in March/April 2020, the carbon price gradually bounced back to pre-pandemic levels and remains strong. This can be attributed to a robust carbon market framework and long-term policy certainty at the EU level.

Owing to the MSR and the 2018 ETS revisions for the fourth trading phase, the EU ETS is better equipped to deal with economic shocks than during the Great Recession just a decade ago. Should a significant imbalance of allowances arise threatening to undermine the orderly functioning of the market, the MSR adjusts the supply of allowances to be auctioned accordingly. The carbon market is also forward-looking, whereby the long-term outlook for market scarcity remains key for the carbon price development.

Here, the [European Green Deal](#)<sup>1</sup> provides an explicit long-term policy context – an action plan to becoming the first climate-neutral continent by mid-century, calling on all sectors of the economy to contribute. Presented

Figure 1: The European Green Deal – the EU’s growth and green recovery agenda



1 – <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52019DC0640&qid=1608201512919>

by the European Commission in late 2019 as the new growth strategy for the EU, the Green Deal has become the EU's recovery agenda (Figure 1). It aims to make the EU's economy sustainable, foster resilience, improve the health of our environment, and achieve this transition in a socially fair manner. This is reflected in the historic [Recovery and Resilience Facility](#)<sup>2</sup> put forward by the Commission, centered on the twin green and digital transitions, as well as announced policy initiatives.

The [Climate Law](#)<sup>3</sup> proposes a legally binding target of climate neutrality by 2050 as well as addresses the steps necessary to deliver on this objective in a gradual and responsible manner. This includes increasing the EU's 2030 emissions reduction target from 40% to at least 55% relative to 1990 levels, including emissions and removals. The proposal garnered broad support, as all Member States endorsed the initiative at the European Council's summit in December 2020. This year the Commission will come forward with an enabling policy package necessary to deliver the additional emissions reductions for 2030, including revisions to existing policy instruments like the ETS.

Carbon pricing will be instrumental in delivering on this increased climate ambition and supporting a green economic recovery – by providing an incentive for emissions reductions and low-carbon investment as well as mobilizing resources that can be re-invested in the economy in support of these objectives. Investment choices made today will define our economy in 2050, and investment is needed across all sectors in support of the EU's economic recovery. We thus need to make sure that today's choices will not jeopardize our climate ambitions. As we work towards a revision of the ETS, it will be crucial to maintain a long-term, credible carbon price signal, as projects in the ETS sectors are characterized by high capital expenditure and long payback periods.

To further enable climate-proof investments, specific policy choices in the ETS revision will have to consider not only elements of its framework, but also their bearing on sectoral decarbonization i.e. alignment with companion policies deployed under the Green Deal. The European Commission sees important benefits in expanding the use of emissions trading in the EU to new sectors, to deliver the increased climate ambition in an economically efficient manner. In effect, the ETS should be complementary to relevant sectoral companion policies already in place or in development, providing a harmonized signal for emissions abatement. It needs to incentivize producers and consumers to change their behavior and

progressively adopt low-carbon alternatives. To this end, we need the carbon price to be reflected in the prices of goods and services in a transparent way. Furthermore, any expansion of emissions trading will need to effectively mitigate and address adverse distributional impacts of carbon pricing on the most vulnerable, low-income groups. Only by doing so can we advance a transition that is truly just.

The year 2020 concluded an intensive preparatory period for the implementation of the fourth trading phase of the ETS, yet prefaced another – of developing the carbon market framework in step with EU's increased climate target. While we have 15 years of ETS experience to build on, we need to ensure that it will continue to stand the test of time and turmoil, empowering far-reaching changes in some key sectors of the EU's economy.



***Carbon pricing will be instrumental in delivering on this increased climate ambition and supporting a green economic recovery.***

2 – [https://ec.europa.eu/info/business-economy-euro/recovery-coronavirus/recovery-and-resilience-facility\\_en](https://ec.europa.eu/info/business-economy-euro/recovery-coronavirus/recovery-and-resilience-facility_en)

3 – <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52020PC0563>



# THE REPUBLIC OF KOREA

## Looking ahead from COVID-19 to a new trading phase and beyond

Sungwoo Lee, Kyeongah Ahn, and Younghyun Lee → Greenhouse Gas Inventory and Research Center of Korea (GIR)

### AN INTERVIEW

#### 1. The government approved the allocation plan for Phase 3 (2021–2025) in September 2020. What are the main regulatory changes?

Before coming to the ETS, it is important to highlight the broader context of climate policy development in the Republic of Korea over the past year. President Moon Jae-in pledged in October 2020 to embark on a carbon neutrality emissions pathway to be reached by 2050. The updated long-term target is paired with the Green New Deal framework aimed at boosting investment in low-carbon technologies and accelerating the decoupling of emissions from economic growth.

The Korea Emissions Trading System (K-ETS) is one of the Republic of Korea's main climate policy instruments and will hence play a major role in reducing emissions in line with steeper reductions projected under the new climate policy framework. It is anticipated that the targets of the ETS will be gradually expanded to achieve carbon neutrality in 2050. We may therefore expect further changes to the system in the coming years consistent with a net-zero emissions pathway. The Phase 3 Allocation Plan was approved in September 2020 and preceded by a revision to the ETS Act in August 2020, which enabled the implementation of several reforms that are key to the third trading phase, such as the broadening of market participation to non-compliance entities, which can trade allowances starting this year.

In Phase 2 (2018–2020) of the K-ETS, the liable entities were classified into six sectors and 62 sub-sectors. They were subject to free allocation (36 sub-sectors) and auctioning (26 sub-sectors) after analyzing international competitiveness, trade intensity, production cost, and other factors. More sub-sectors, 69 in total, are included in Phase 3, which means more industries will share responsibility in achieving the national emissions reduction target. With the inclusion of additional sectors in Phase 3, the K-ETS covers about 73% of national emissions. The cap was calculated in alignment with the national reduction target in 2030.

When auctioning was first introduced, 3% of the allocated amount was deducted from entities in sub-sectors subject to auctioning, those not considered at risk of carbon leakage. In Phase 3, the percentage has been increased to 10% of the allocated amount in accordance with practices in other ETSs, the “polluter pays” principle, and other K-ETS objectives.

Emission permits are allocated using either grandfathering or benchmarking. In Phase 1, three sub-sectors were subject to benchmarking, gradually increasing to 12 in Phase 3.

In Phase 3, market functions are going to be expanded by allowing additional participants and introducing derivatives. Currently, only liable entities and designated banks can trade emission permits in the exchange market, but other participants such as securities companies and individuals are expected to join the market and trade more products in Phase 3.



***In Phase 3, market functions are going to be expanded by allowing additional participants and introducing derivatives.***



## **2. Could you provide an overview of price developments in the past year, including the impact of COVID-19?**

To begin with the broader picture, prices rose steadily during Phase 2. The average price of a Korea Allowance Unit (KAU) during Phase 1 (2015–2017) was KRW 16,661 (USD 14.12) and rose to KRW 27,926 (USD 23.66) in Phase 2's second compliance year (ending September 2020), an increase of 68%.

Overall, the introduction of market makers in 2019 has played a stabilizing role for prices in the latter half of Phase 2. They act as additional sellers and buyers of allowances to ensure liquidity in the market, taking part in the market when the price sharply increases or decreases. Their introduction helped moderate prices after a drastic change in price levels in June 2019, for instance. By introducing market makers, the share of competitive, real-time trading transactions dramatically improved, indicating that their intervention is revitalizing the market.

However, price development of KAUs was more turbulent in 2020. The market reached a peak in early April 2020, when the price rose to KRW 42,400 (USD 35.92), but fell sharply from May onwards as the effect of COVID-19 on emissions for the 2020 trading year factored in. At the same time, it became clear that emissions for 2019 had decreased more than initially projected, thereby exerting downward pressure on allowance demand ahead of the compliance deadline. KAU prices recovered to KRW 20,000 (USD 16.95) in August 2020 and climbed back to KRW 30,500 (USD 25.84) in December before closing the year at KRW 23,000 (USD 19.49).

## **3. What is the expected impact of Phase 3 changes on market dynamics and emissions?**

Increased participants and products will bring more stability to trading conditions and flexibility to trading volumes. Those developments are expected to invigorate the market and further enhance its functioning as well as bringing about continued and greater reductions in GHG emissions.

***Increased participants and products will bring more stability to trading conditions and flexibility to trading volumes.***

As the introduction of market makers helped revitalize the K-ETS and improve market functioning in Phase 2, we expect similar effects from the introduction of derivative products and third-party transactions in Phase 3. The participation of securities companies and individuals in financial institutions other than the covered entities will be allowed. Within a certain limit, financial institutions will be able to trade themselves, while individuals will be allowed to trade on consignment. In addition, by introducing futures trading, the aim is to enhance price discovery and expand the predictability of the market.

# NEW ZEALAND

## *Achieving major structural changes to the NZ ETS during a global pandemic*

Vanessa Chalk → New Zealand Ministry for the Environment

### NEW ZEALAND EMISSIONS TRADING SCHEME LEGISLATIVE REFORMS

Significant reforms to the New Zealand Emissions Trading Scheme (NZ ETS) were passed into law on 16 June 2020, culminating nearly five years of policy development and public consultation. The legislative reforms encompass major structural changes to the NZ ETS that are designed to support domestic emissions reduction targets by setting an emissions cap on the NZ ETS, introducing New Zealand emissions unit (NZU) auctioning, and developing new NZU price control mechanisms. The broad array of reforms also includes changes to accounting methods for calculating unit allocation to foresters and the removal of the fixed price option (FPO), a type of price ceiling that allowed participants to pay NZD 25 (USD 16.23) cash per tonne of carbon instead of surrendering units.

The reforms<sup>1</sup> were passed despite the major widespread challenges of COVID-19, which included the delay of the New Zealand election by a month and short-term restrictions to the capacity of Parliament to address non-urgent matters. The major opposition party called for implementation of the [Climate Change Response \(Emissions Trading Reform\) Amendment Act 2020](#)<sup>2</sup> to be delayed by 12 months to take the effects of COVID-19 into account, and there was pressure from some NZ ETS participants to relieve them of their 2019 ETS obligations. These requests were not acted on by the government.

### COVID-19 IN NEW ZEALAND

The virus in New Zealand was predominantly contained by a full lockdown on 25 March 2020 that was phased out in stages after four weeks. While the New Zealand economy officially fell into recession and experienced a record fall in GDP of over 11%, it bounced back by 14% in the July–September 2020 quarter, the strongest quarterly growth in GDP on record in New Zealand. This is despite some industries still not returning to pre-lockdown levels, such as tourism, which previously directly contributed nearly 6% to New Zealand's total GDP.

Emissions from transport and industrial activities are expected to have dropped due to the lockdown, but this will not be confirmed until the 2020 national greenhouse gas inventory is published in 2022. Therefore, predicting the long-term impacts of COVID-19 and the swiftly fluctuating economy on future emissions and NZ ETS participants is particularly challenging.

### IMPACTS ON THE NZ ETS

The reporting deadline for participants to submit emissions returns for the 2019 compliance period (for activities over the calendar year) was 31 March 2020, a week after the full lockdown period began. This meant some participants were physically unable to fulfill their obligations due to the COVID-19 restrictions, for example foresters who needed access to their land to verify activity. Those participants were encouraged to apply for an extension so they could undertake the reporting once restrictions were lifted. Extensions were sought for 49 emissions returns this year. This is a small increase from the previous year, when 30 extension applications were made.

The deadline for unit surrender for the 2019 emissions compliance period was 31 May 2020, soon after the full lockdown ended. Participants were encouraged to voluntarily disclose to the regulator if they anticipated being unable to meet their unit surrender obligation due to COVID-19 or the lockdown. If participants made this advanced voluntary disclosure, the NZ ETS compliance authority had the discretion to consider a reduction in the penalty fine they would ordinarily receive for their noncompliance by up to 100%. The potential reduction in the penalty fine is separate from the unit surrender obligation, which remained unchanged by this voluntary disclosure.

The rate of unit surrender noncompliance was expected to increase for the 2019 period as participants faced the financial strain of the COVID-19 lockdown immediately prior to the compliance date. However, this did not eventuate, as COVID-19 did not significantly impact participants' compliance.

An area that COVID-19 did appear to impact was use of the FPO. The proportion of emitters choosing to pay cash to the government for emission units (which are then immediately transferred back to the government and surrendered), dropped significantly. In 2019, 50% of emissions obligations were met using the NZD 25 (USD 16.23) per emission unit FPO. This dropped to just 21% in 2020, despite near identical prices of the NZU at the time surrenders were due (NZD 24.70 in 2019 vs. NZD 25.00 in 2020). This was presumably caused by a reluctance to spend cash in the uncertain economic times if participants already had NZUs available to use, and less confidence in the future rise of the NZU price. Another influence may have been the drop in

1 – <https://www.mfe.govt.nz/overview-reforming-new-zealand-emissions-trading-scheme>

2 – <https://www.legislation.govt.nz/bill/government/2019/0186/latest/whole.html>

NZU prices during the lockdown, and participants may have used that opportunity to purchase sufficient units for compliance below the FPO price.

## IMPACTS ON THE NZU PRICE

At the end of 2019, a public consultation document was released that proposed the government's preferred options for the future NZU auction supply and prices controls. This included an NZD 50.00 (USD 32.47) price trigger for the cost containment reserve. This likely contributed to a rapid price jump from just below NZD 25.00 to NZD 29.00 (USD 18.83) by the end of January 2020 (see Figure 1).

During the COVID-19 lockdown, the NZU price dropped briefly to a low of NZD 22.10 (USD 14.35) at the end of March but recovered very quickly, climbing back to NZD 25.00 by mid-May, above NZD 30.00 (USD 19.48) at the start of June, and over NZD 35.00 (USD 22.73) in September. This is despite an NZD 35 FPO available for all 2020 emissions.

The significant and increasing trajectory of the NZU price indicates that, despite a swiftly fluctuating economy, participants and investors see the implementation of an emissions cap and removal of the FPO as factors that will significantly increase the competitive demand of accessing units.

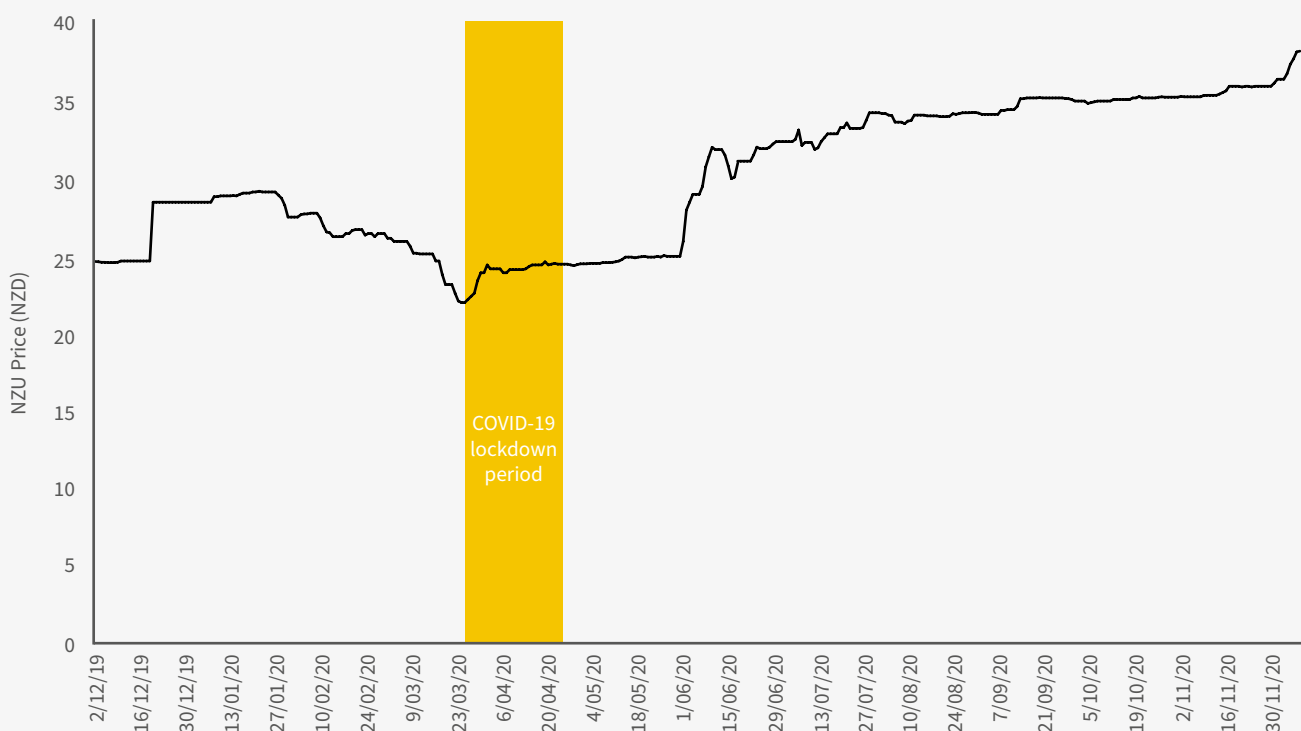
## NEXT STEPS FOR THE NZ ETS

The NZ ETS operation and NZU price held up well throughout the uncertain times of COVID-19 in 2020. However, the impact that COVID-19 will have on the New Zealand economy and how this may flow through to emissions will play a role in the review and development of future NZ ETS settings regulations. This will occur through choices under the NZ ETS five-year rolling cycle framework.

Future unit supply and auction price control settings are always required to be announced five years in advance to maintain predictability and stability. However, the announced settings must also be reviewed every year and take into consideration any relevant circumstantial changes or adjustments for significant or adverse events, such as COVID-19. This will help to mitigate the risk of substantial oversupply of units. Review of future settings is also required to take place if either the cost containment reserve trigger price or auction reserve price is reached. Other improvements are being considered for future reviews, including changes to forestry accounting, market governance arrangements, and the current approach to free unit allocation to emissions-intensive, trade-exposed businesses.

The reformed scheme officially came into effect on 1 January 2021, and the first government NZU auction took place on 17 March, with 4.75 million units available. With those structural changes in place, New Zealand has laid the foundations for deeper climate ambition as it continues to recover from the impacts of the pandemic and in the critical decades ahead.

Figure 1: NZU prices from late 2019–2020



# RGGI

## Resilience and market stability through program design

William Space → Massachusetts Department of Environmental Protection / Brian Woods → Vermont Agency of Natural Resources

The COVID-19 pandemic has focused attention on how carbon markets respond to change. The Regional Greenhouse Gas Initiative (RGGI) includes design elements that adjust allowance supply when unexpected demand shocks occur. In most years since the program launched in 2009, these elements have influenced allowance prices, making the program more resilient to factors such as unanticipated changes in fuel prices and federal climate policy.

RGGI’s original design included several program elements intended to address the possibility that unanticipated or extraordinary events could increase demand for allowances, such as the loss of a nuclear power plant. To accomplish this, two stages of “trigger events” were defined in the regulation based on observed 12-month average allowance prices. At stage one limits on offset allowance supply and use for compliance were automatically relaxed. At stage two limits on offset allowances were further relaxed and the three-year compliance period was extended by one year. While it was important for the initial program design to acknowledge possible high demand for allowances under certain conditions, ultimately these mechanisms were never invoked. Consistent with the experience of many ETs, the initial regional cap was conservatively established, and subsequent domestic economic conditions resulted in an allowance market that was oversupplied during the first two compliance periods (2009–2014).

In fact, this mismatch between supply and demand was so large that prices might have fallen to zero but for another design element: the minimum reserve price. This minimum bid price, which increases by 2.5% per year, was included in the first RGGI auctions based on advice from auction experts that it could deter buyer-side collusion. However, the mechanism ended up serving the equally important purpose of keeping allowance prices from dropping to zero. The minimum reserve price supported the allowance price over a period of several years, preserving the viability of the market and maintaining allowance revenue, and has remained in place through two program reviews.

Beginning in 2014, the trigger event design elements were replaced with a much simpler mechanism called a cost containment reserve (CCR). This mechanism immediately introduces a fixed quantity of additional allowances into each auction if there is sufficient demand above a set CCR trigger price. Market participants benefit from a more predictable price signal, and observed prices suggest that the CCR likely played a role in price formation and transparency over a period of several years. Based partly on the success of the CCR, a corresponding emission containment reserve (ECR) took effect this year. The ECR functions as a mirror image of the CCR, as it immediately removes allowances from an auction if there is not sufficient demand at prices above the ECR trigger price. The expectation that the ECR will support prices after 2020 appears to have already pushed allowance prices into

Figure 1: RGGI’s market stability design elements have been revised at each program review

- |   |   |  |   |
|---|---|--|---|
| <ul style="list-style-type: none"> <li>• Extended Compliance Periods</li> <li>• International Credit Cancellations</li> </ul> | <ul style="list-style-type: none"> <li>• Five Offset Project Categories</li> <li>• Minimum Auction Reserve Price</li> </ul> | <ul style="list-style-type: none"> <li>• Five Offset Project Categories with state option to implement</li> <li>• Minimum Auction Reserve Price</li> <li>• Cost Containment Reserve</li> </ul> | <ul style="list-style-type: none"> <li>• Three Offset Project Categories with state option to implement</li> <li>• Minimum Auction Reserve Price</li> <li>• Cost Containment Reserve</li> <li>• Emission Containment Reserve</li> </ul> |
|---|---|--|---|

2009–2014

2015–2020

2021–2030

the range established by the ECR-CCR trigger prices. The CCR and ECR trigger prices are informed by modeling and represent allowance prices that could be realized in scenarios beyond the high and low emissions cases that were examined during program design.

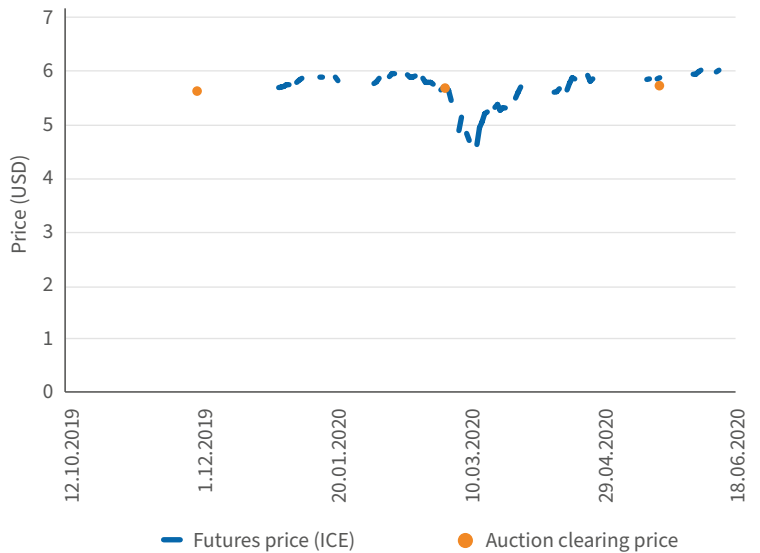
A market may be considered resilient if it responds to demand shocks without price spikes or crashes. Figure 2 shows that, in most years, RGGI allowance prices appear to have been influenced by at least one price-based design element. This history shows how these design elements have in fact made the program more resilient and enhanced market stability.

#### How the ECR and CCR support market stability

- In the near term, the ECR and CCR can automatically adjust allowance supply to compensate for demand shocks. For example, the pandemic may affect near-term allowance demand for compliance entities.
- In the longer term, the ECR and CCR reduce the likelihood of allowance prices below or above the corresponding trigger prices. This deters trading of allowances at prices outside this range and creates a more stable market for compliance.

The RGGI market response to economic conditions of the COVID-19 pandemic provides a recent example of the resiliency of the market (see Figure 3). Early 2020 pre-pandemic allowance prices in the futures and allowance markets were relatively stable, averaging USD 5.77. Imposition of coronavirus management measures in the US in early March resulted in a drop in futures prices to USD 4.69, followed by a rapid recovery by early April. By the June 2020 auction the futures market had stabilized and prices had returned to their pre-pandemic levels. This response reflected short-term uncertainty that was

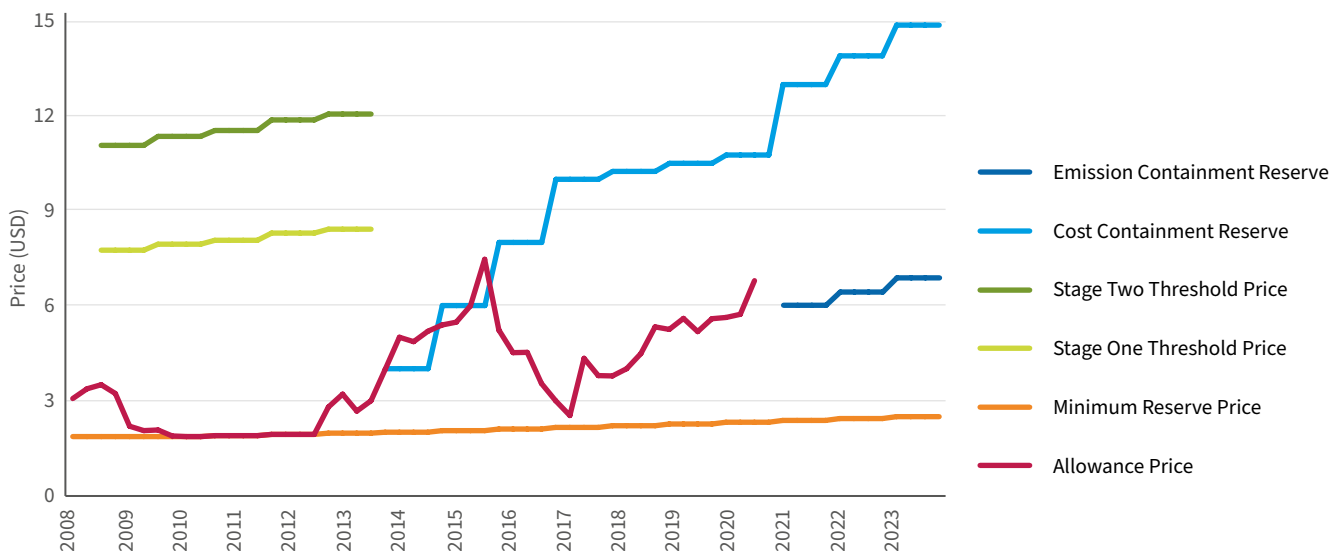
Figure 3: RGGI market prices January-June 2020



followed by data showing that demand for electricity was not going to be affected nearly as much as was the case for liquid transportation fuels. While it is not possible to know what the market response would have been absent the existing and pending stability measures, it is clear from this example that RGGI can and does exhibit the characteristics of a functional, resilient carbon market.

In developing RGGI's newest design element, the ECR, RGGI staff drew on the EU ETS Market Stability Reserve (MSR) mechanism. In particular, the CCR/ECR combination builds on the MSR experience in its use of similar design elements to address high and low allowance demand, which contrasts with the original RGGI program design. In a similar manner, the RGGI history presented here may offer lessons that can help other programs innovate to become more resilient.

Figure 2: RGGI's market stability design elements have strengthened market performance



# UNITED KINGDOM

## A net-zero cap-and-trade market

Charlie Lewis → UK Department for Business, Energy and Industrial Strategy

The new UK Emissions Trading Scheme came into force on 1 January 2021, increasing the climate ambition of the UK's carbon pricing policy. The UK was a pioneer of emissions trading when it set up the first cap-and-trade scheme in 2002 and will continue to be a world leader in carbon pricing as the government builds towards hosting the United Nations Climate Change Conference of the Parties (COP26) in Glasgow at the end of the year.

In 2019 the UK was the first major economy to legislate for net-zero emissions, with a target of 2050. The UK ETS will be among the first cap-and-trade markets aligned with net zero, and is a crucial step in achieving this goal. From day one, the cap on emissions was reduced by 5% compared to the UK's notional share of the European Union (EU) ETS cap.

The UK government and devolved administrations will consult on aligning the ETS cap with the net-zero target. The consultation follows the advice recently published by the UK's independent Climate Change Committee (CCC) on the UK's carbon budget for 2033–2037. The UK has already accepted the CCC's advice on its 2030 Nationally Determined Contribution (NDC), in December 2020 committing to a more ambitious target of at least 68% below 1990 emissions.

### THE SCALE OF THE CHALLENGE

The UK government and devolved administrations are united in their determination to address climate change. The UK ETS was designed by the UK government jointly with the Scottish government, Welsh government, and Northern Ireland executive.

The scale of the challenge in the UK is clear, but so are the opportunities presented by the transition to a green economy and the recovery from the COVID-19 pandemic. Policy action has spurred rapid decarbonization in the power sector, with emissions from electricity generation in 2019 down by 72% from 1990 levels (see Figure 1).<sup>1</sup>

Industrial emissions have also halved, but the remaining reduction required for industry to be consistent with net zero is equivalent to taking all the cars in the UK off the road.<sup>2</sup> Overall, the UK has in the last 30 years grown its GDP by 75% while cutting emissions by 43% (see Figure 2).<sup>3</sup> Growth and decarbonization, now more than ever, can and must go hand in hand.

Figure 1: Emissions from power stations, UK, 1990–2019 (MtCO<sub>2</sub>e)

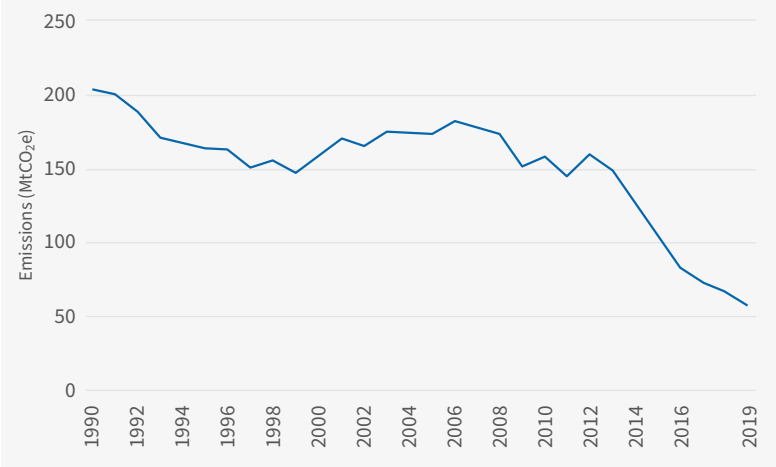
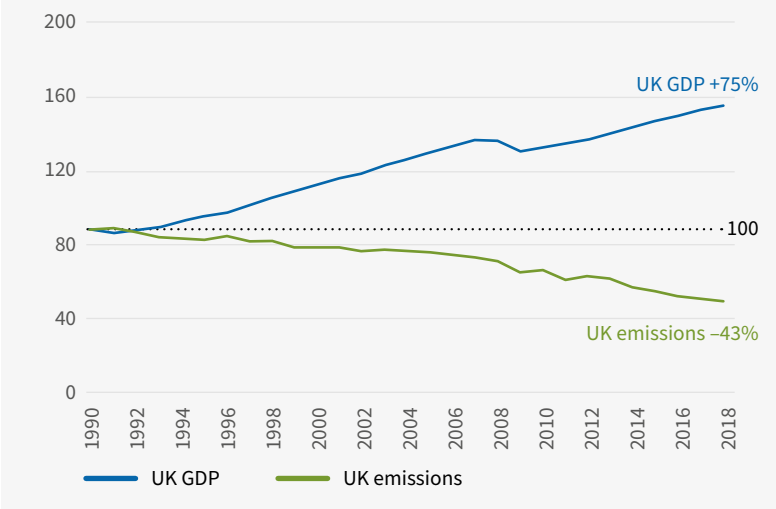


Figure 2: UK GDP and emissions, 1990–2018\*



\* Note: both GDP and emissions are indexed to 1990 values.

### THE UK ETS

The UK government had also consulted on a carbon emissions tax but will not progress with this option. The government felt the UK ETS, with a cap on emissions aligned with a net-zero target, and the continuity it offers participants, provides a better basis for businesses to decarbonize.

The scope of the UK ETS is initially the same as the EU system. This provides continuity of emissions trading for affected businesses—especially important, as those same businesses will have to fulfil 2020 EU ETS compliance obli-

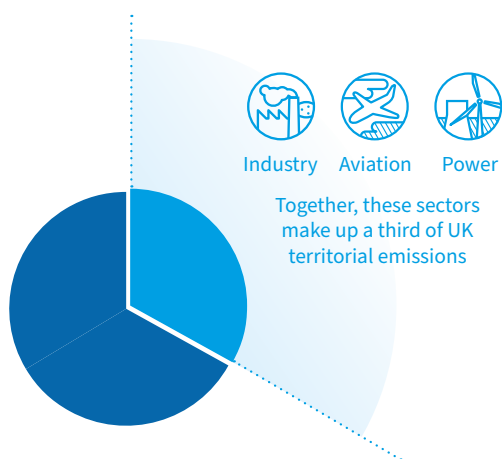
1 – The 2019 figures are provisional estimates. BEIS (2020), 'Provisional UK greenhouse gas emissions national statistics 2019': <https://www.gov.uk/government/statistics/provisional-uk-greenhouse-gas-emissions-national-statistics-2019>

2 – BEIS energy and emissions projections, based on committed policies. <https://www.gov.uk/government/collections/energy-and-emissions-projections>

3 – Office of National Statistics, BEIS Greenhouse Gas Inventory.

gations in the first quarter of 2021. A third of UK territorial emissions are covered by the new scheme (see Figure 3).

Figure 3: UK ETS sectors and emissions covered



However, with the new UK ETS the UK will be able to expand carbon pricing across the economy and encourage innovation in emerging decarbonization technologies. There is a case for expanding carbon pricing, especially in the context of a net-zero emissions target. We have committed to exploring expanding the UK ETS to other sectors that are currently not included. This will also include how the UK ETS could incentivize deploying greenhouse gas removal technologies.

The UK also recognizes the risk of carbon leakage and will seek to ensure that the UK ETS does not lead to offshoring of emissions. Initially, free allocation of emissions allowances under the UK ETS will be calculated using the same methodology as Phase IV of the EU ETS, which the UK has been involved in designing, to provide a smooth transition for participants. However, the UK will be reviewing free allocation to ensure the system is best suited to UK participants and is fair and equitable.

## SUPPORTING DECARBONIZATION

The introduction of a UK ETS sends a strong signal to businesses. It will help mobilize the scale of capital investment necessary to deploy clean energy technologies and to capture new trade opportunities in the energy transition. As a trading system, it will promote cost-effective decarbonization, allowing businesses to cut carbon where it is cheapest to do so.

Alongside the UK ETS, the UK government is also supporting businesses in industry, power, and across the economy to decarbonize. In November 2020, the prime minister unveiled the UK's Ten Point Plan for a Green Industrial Revolution. The plan recognizes the support that will be needed across the economy if sectors are to reach the levels of decarbonization required to achieve net zero by 2050.

In total the plans set out will mobilize GBP 12 billion (USD 15.4 billion) of government investment, and potentially three times as much from the private sector, to create and support up to 250,000 green jobs.

The government is investing GBP 1 billion (USD 1.3 billion) up to 2025 to facilitate the deployment of Carbon Capture, Utilization, and Storage in two industrial clusters by the mid-2020s, with a further two by 2030, and consulting on how to incentivize greenhouse gas removals. The UK is also providing up to GBP 500 million (USD 641 million) for low-carbon hydrogen production across the decade, aiming for 5 gigawatts of capacity by 2030, and increasing the ambition of our Industrial Clusters Mission, a public-private initiative aimed at decarbonizing areas with heavy concentrations of emissions-intensive industries.

In December, the UK's Energy White Paper put in place a strategy for the wider energy system that will transform energy, support a green recovery, and provide a fair deal for consumers.

The UK government's Industrial Decarbonisation Strategy will be published in spring 2021, setting out how energy-intensive industries can thrive in the transition to net zero.

## INTERNATIONAL COOPERATION

The UK government recognizes the importance of international cooperation on carbon pricing and the important role international carbon markets can play. While the UK ETS currently operates as a standalone scheme, the UK is open to linking the UK ETS internationally in principle.

The UK's free trade agreement with the EU demonstrates continued commitment to carbon pricing as an effective tool to fulfil climate change objectives. It confirms that both the UK and the EU shall have in place an effective system of carbon pricing, which covers emissions from electricity and heat generation, industry, and aviation. The UK and EU have agreed to cooperate on carbon pricing, including considering linking their respective carbon pricing systems, although neither side is under any obligation to do so.

## LOOKING AHEAD

As part of its incoming COP presidency, the UK is urging all parties to come forward with ambitious, updated NDCs. Net-zero commitments by the EU, China, Japan, and Republic of Korea in 2020 are very welcome. As in the UK, delivering on these commitments will require radical change and decisive action.

The UK is already taking the necessary steps, including launching the UK ETS as a keystone of its climate policy. 2021 will be a critical year for climate action, and the UK's presidency of COP26 in Glasgow in November provides the opportunity to drive further ambitious action on climate change and unite the world on a path to achieving the goals of the Paris Agreement.



# LIST OF ACRONYMS

<b>AB</b>	Assembly Bill	<b>EEB</b>	Ecology and Environment Bureau
<b>AFOLU</b>	Agriculture, Forestry and other Land Use	<b>EEX</b>	European Exchange
<b>AIC</b>	Allowances in Circulation	<b>EITE</b>	Emission-Intensive and Trade-Exposed
<b>ANSI</b>	American National Standards Institute	<b>EO</b>	Executive Order
<b>APCR</b>	Allowance Price Containment Reserve	<b>ERU</b>	Emissions Reduction Units
<b>ARP</b>	Auction Reserve Price	<b>EQB</b>	Environmental Quality Board
<b>ASSET</b>	Advanced Technologies Promotion Subsidy Scheme with Emission Reduction Targets	<b>EQC</b>	Environmental Quality Commission
<b>BAU</b>	Business as Usual	<b>ERU</b>	Emissions Reduction Unit
<b>BMU</b>	Bundesministerium für Umwelt, Naturschutz und nukleare Sicherheit (German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety)	<b>ESR</b>	European Effort Sharing Regulation
<b>BPU</b>	Board of Public Utilities	<b>ETS</b>	Emissions Trading System or Emissions Trading Scheme
<b>CAD</b>	Canadian Dollar	<b>EU</b>	European Union
<b>CAR</b>	Clean Air Rule	<b>EU ETS</b>	European Union Emissions Trading System
<b>CARB</b>	California Air Resources Board	<b>EUR</b>	Euro
<b>CBAM</b>	Carbon Border Adjustment Mechanism	<b>FFCER</b>	Fujian Forestry Certified Emission Reduction
<b>CBIO</b>	Brazilian decarbonization credits	<b>FPO</b>	Fixed Price Option
<b>CCC</b>	Climate Change Committee	<b>FY</b>	Fiscal Year
<b>CCER</b>	Chinese Certified Emission Reduction	<b>FYP</b>	Five Year Plan
<b>CCM</b>	Cost Containment Mechanism	<b>GBP</b>	British Pound Sterling
<b>CCR</b>	Cost Containment Reserve	<b>GDP</b>	Gross Domestic Product
<b>CCS</b>	Carbon Capture and Storage	<b>GHG</b>	Greenhouse Gas
<b>CDM</b>	Clean Development Mechanism	<b>GIR</b>	Greenhouse Gas Inventory and Research Center of Korea
<b>CEP</b>	Clean Energy Plan	<b>GIZ</b>	Deutsche Gesellschaft für Internationale Zusammenarbeit (German Corporation for International Cooperation)
<b>CER</b>	Certified Emission Reduction	<b>GJ</b>	Giga Joule
<b>CFCs</b>	Chlorofluorocarbons	<b>GtCO<sub>2</sub>e</b>	Giga Tonnes of Carbon Dioxide equivalent
<b>CH<sub>4</sub></b>	Methane	<b>GVA</b>	Gross Value Added
<b>CHF</b>	Swiss Franc	<b>HB</b>	House Bill
<b>CLEF</b>	Carbon Leakage Exposure Factor	<b>HCFCs</b>	Hydrochlorofluorocarbons
<b>CNY</b>	Chinese Yuan Renminbi	<b>HFCs</b>	Hydrofluorocarbons
<b>CO<sub>2</sub></b>	Carbon Dioxide	<b>HFC-23</b>	Fluoroform
<b>COP26</b>	26th Conference of the Parties	<b>ICAO</b>	International Civil Aviation Organization
<b>CORSIA</b>	Carbon Offsetting and Reduction Scheme	<b>ICAP</b>	International Carbon Action Partnership
<b>COVID-19</b>	2019 novel coronavirus	<b>IEA</b>	International Energy Agency
<b>CPA</b>	Carbon Pricing in the Americas	<b>IMF</b>	International Monetary Fund
<b>CPS</b>	Carbon Price Support	<b>INECC</b>	National Institute for Ecology and Climate Change
<b>DEBS</b>	Direct Environmental Benefits	<b>INDC</b>	Intended Nationally Determined Contribution
<b>DEE</b>	Department of Ecology and Environment	<b>IPCC</b>	Intergovernmental Panel on Climate Change
<b>DEMNR</b>	Department of Energy, Minerals, and Natural Resources	<b>ITMOs</b>	Internationally Transferred Mitigation Outcomes
<b>DENR</b>	Department of Environment and Natural Resources	<b>JCM</b>	Joint Crediting Mechanism
<b>DEP</b>	Department of Environmental Protection	<b>JI</b>	Joint Implementation
<b>DEQ</b>	Department of Environmental Quality	<b>JPY</b>	Japanese Yen
<b>DHC</b>	District Heating and Cooling	<b>KAZ ETS</b>	Kazakhstan Emissions Trading Scheme
<b>DRC</b>	Development and Reform Commission	<b>KAU</b>	Korean Allowance Unit
<b>EC</b>	European Commission	<b>KCU</b>	Korean Credit Unit
<b>ECCC</b>	Environment and Climate Change Canada	<b>K-ETS</b>	Korea Emissions Trading System
<b>ECR</b>	Emissions Containment Reserve	<b>KOC</b>	Korean Offset Credit
<b>EEA</b>	European Economic Area	<b>KRW</b>	South Korean Won
		<b>KRX</b>	Korea Exchange
		<b>kWh</b>	Kilowatt hour

<b>KZT</b>	Kazakhstani Tenge	<b>Q1/Q2/Q3/Q4</b>	Quarter 1/Quarter 2/Quarter 3/Quarter 4
<b>LDCs</b>	Least Developed Countries	<b>RBOB</b>	Reformulated Blendstock for Oxygenate Blending
<b>LNG</b>	Liquefied Natural Gas	<b>RCI</b>	Residential/Commercial/Industrial emissions
<b>LPG</b>	Liquefied Petroleum Gas	<b>RENAMI</b>	Registro Nacional de Acciones de Mitigación (National Mitigation Actions Registry)
<b>LULUCF</b>	Land Use, Land-Use Change and Forestry	<b>Renare</b>	Registro nacional de reducción de emisiones de GEI (National Emission Reductions Registry)
<b>MassDEP</b>	Massachusetts Department of Environmental Protection	<b>RENE</b>	Registro Nacional de Emisiones (Mexico National Emissions Register)
<b>MBI</b>	Market-based Instrument	<b>RGGI</b>	Regional Greenhouse Gas Initiative
<b>MEE</b>	Ministry of Ecology and Environment	<b>RGGI COATS</b>	RGGI CO <sub>2</sub> Allowance Tracking System
<b>MEP</b>	Ministry of Environmental Protection	<b>R&amp;D</b>	Research and Development
<b>MMC</b>	Mine Methane Capture	<b>SAM</b>	Supply Adjustment Mechanism
<b>MOE</b>	Ministry of Environment	<b>SB</b>	Senate Bill
<b>MOEF</b>	Ministry of Economy and Finance	<b>SCC</b>	Standards Council of Canada
<b>MOF</b>	Ministry of Finance	<b>SEMARNAT</b>	Secretaría del Medio Ambiente y Recursos Naturales (Ministry of Environment and Natural Resources of Mexico)
<b>MONRE</b>	Ministry of Natural Resources and Environment	<b>SF<sub>6</sub></b>	Sulfur Fluoride
<b>MOS</b>	Mayor's Office of Sustainability	<b>SO<sub>2</sub></b>	Sulfur Dioxide
<b>MOU</b>	Memorandum of Understanding	<b>SOE</b>	State-owned Enterprise
<b>MOST</b>	Ministry of Strategy and Finance	<b>tce</b>	Tonne of Coal equivalent
<b>MRV</b>	Monitoring, Reporting and Verification	<b>TCI</b>	Transportation and Climate Initiative
<b>MSR</b>	Market Stability Reserve	<b>TCI-P</b>	Transportation and Climate Initiative Program
<b>MtCO<sub>2</sub>e</b>	Million Tonnes of Carbon Dioxide equivalent	<b>tCO<sub>2</sub></b>	Tonne of Carbon Dioxide
<b>MW</b>	Megawatt	<b>tCO<sub>2</sub>e</b>	Tonne of Carbon Dioxide equivalent
<b>MWe</b>	Megawatt equivalent	<b>TEPA</b>	Taiwanese Environmental Protection Administration
<b>MWh</b>	Megawatt hour	<b>TGO</b>	Thailand Greenhouse Gas Management Organization
<b>N<sub>2</sub>O</b>	Nitrous Oxide	<b>TIER</b>	Technology Innovation and Emissions Reduction Regulation
<b>NO<sub>x</sub></b>	Nitrogen Oxide	<b>TMG</b>	Tokyo Metropolitan Government
<b>NAMA</b>	Nationally Appropriate Mitigation Actions	<b>TMS</b>	Target Management System
<b>NDC</b>	Nationally Determined Contribution	<b>TNAC</b>	Total Number of Allowances in Circulation
<b>NDRC</b>	National Development Reform Commission	<b>TRP</b>	Technical Reserve Price
<b>nEHS</b>	Nationales Emissionshandelssystem (German National ETS)	<b>Turk-SIM</b>	Turkish ETS simulation game
<b>NER</b>	New Entrants Reserve	<b>UK</b>	United Kingdom
<b>NF<sub>3</sub></b>	Nitrogen Trifluoride	<b>UK ETS</b>	UK Emissions Trading Scheme
<b>NMED</b>	New Mexico Environment Department	<b>UNDP</b>	United Nations Development Program
<b>NO<sub>x</sub></b>	Nitrogen Dioxide	<b>UNFCCC</b>	United Nations Framework Convention on Climate Change
<b>NYC</b>	New York City	<b>US</b>	United States
<b>NZ</b>	New Zealand	<b>USD</b>	US Dollar
<b>NZ ETS</b>	New Zealand Emissions Trading Scheme	<b>US EPA</b>	US Environment Protection Agency
<b>NZD</b>	New Zealand Dollar	<b>V-ETS</b>	Thailand Voluntary Emissions Trading Scheme
<b>NZU</b>	New Zealand Unit	<b>WCI</b>	Western Climate Initiative
<b>NZX</b>	New Zealand Exchange	<b>ZEV</b>	Zero Emissions Vehicle
<b>OBPS</b>	Output-Based Pricing System		
<b>OTC</b>	Over-the-Counter		
<b>PCF</b>	Pan-Canadian Framework on Green Growth and Climate Change		
<b>PDR</b>	People's Democratic Republic		
<b>PFCs</b>	Perfluorocarbons		
<b>PHCER</b>	Pu Hui Certified Emission Reductions		
<b>PMI</b>	Partnership for Market Implementation		
<b>PMR</b>	Partnership for Market Readiness		
<b>PNCTE</b>	Programa Nacional de Cupos Transables de Emisión de Gases de Efecto Invernadero (National Program of Greenhouse Gas Tradable Emission Quotas)		
<b>PoMuC</b>	Climate Change Policy Program		

# IMPRINT

## Publication Date

March 2021

## Design

Simpelplus  
www.simpelplus.de

## Printing

Druckhaus Sportflieger

## Photos

Cover & Back: Dan Fador, Pixabay, content in order of appearance: Iswanto Arif, Unsplash; RDLH, Pixabay; Socialsudo, Unsplash; Free-Photos, Pixabay; Couleur, Pixabay

## Disclaimer

This report was prepared by the ICAP Secretariat. The findings and opinions expressed in this report are the sole responsibility of the authors. They do not necessarily reflect the views of ICAP or its members.

The data used in this report reflects the global state of play at the time of writing in early 2021. Although the information contained in the report was assembled with the utmost care, updated and/or additional information may have been released by the time of printing. The ICAP Secretariat cannot be held liable for the timeliness, correctness, or completeness of the information provided. For any corrections, additions, or other comments on the content of this report, including relevant citations, please contact the ICAP Secretariat at [info@icapcarbonaction.com](mailto:info@icapcarbonaction.com).

## Rights and permissions

All rights reserved. The content of the work created by the ICAP Secretariat and the work itself are subject to German copyright law. Third party contributions are marked as such. Duplication, revision, distribution, and any kind of use beyond the limits of copyright require the written consent of the authors. The duplication of parts of the work is only permitted if the source is mentioned.

## Attribution

Please cite the work as follows: ICAP. (2021). Emissions Trading Worldwide: Status Report 2021. Berlin: International Carbon Action Partnership.

All queries on rights and permissions should be addressed to:

International Carbon Action Partnership (ICAP)  
Köthener Strasse 2  
10963 Berlin  
Germany

[www.icapcarbonaction.com](http://www.icapcarbonaction.com)  
[info@icapcarbonaction.com](mailto:info@icapcarbonaction.com)



International Carbon  
Action Partnership

---

[www.icapcarbonaction.com](http://www.icapcarbonaction.com)