International Carbon Action Partnership

EMISSIONS TRADING WORLDWIDE

STATUS REPORT 2024

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INTERNATIONAL CARBON ACTION PARTNERSHIP STATUS REPORT 2024

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FOREWORD

ADVANCING EMISSIONS TRADING SYSTEMS: CHALLENGES AND OPPORTUNITIES ON THE PATH TO DEEP DECARBONIZATION

Another eventful year has passed, and the urgency of addressing the climate crisis looms larger than ever before. Record high temperatures, extreme weather events, and other growing impacts serve as frequent reminders that the climate challenge is with us now: it can no longer be treated as a problem for the future. We find ourselves moving ever closer to the milestone years of 2030 and 2050, when many countries have set emissions reduction goals. Reaching these goals demands swifter and more ambitious action than ever. Analyses have shown that, in this critical decade, we must strengthen domestic and international policy frameworks to dramatically accelerate our efforts to address climate change. We also know some amount of climate change is already incorporated into our future. But there is still time to avoid the worst impacts if we act with all the tools we have, including emissions trading.

Against this backdrop, carbon pricing has proven to be a key instrument in the climate policy tool kit. Carbon pricing is complex. Sharing experience and wisdom on emissions trading has major benefits, both to those with schemes in place, and to those who are in the development process. We must align our efforts towards our common goal: limiting global warming to 1.5°C and ensuring a more sustainable future for humankind and our planet.

The International Carbon Action Partnership (ICAP) serves as the ideal forum for fostering such continued cooperation, bringing governments from across the globe together to engage on ETS design, implementation, and alignment. As we celebrate the 11th edition of our flagship annual Emissions Trading Worldwide Status Report, we are witnessing systems emerge around the world at an increasing pace. As of today, there are 36 systems in force around the world, with another 22 at various stages of consideration and development. They cover 18% of GHG emissions worldwide. This proliferation is particularly noticeable in parts of the world which are home to key emerging economies, like Mexico and Brazil in Latin America and China, India and Indonesia in the Asia-Pacific region. We continue to monitor these exciting developments closely.

This rapid expansion of ETS adoption has led to some divergence from the traditional cap-and-trade blueprint and brought about a new generation of systems that feature hybrid or new design elements. As the suite of emissions trading programs evolves, it is increasingly clear how carbon pricing via an ETS can be adapted to meet a variety of challenges and opportunities that are specific to geographical, economic, and political contexts and priorities. In response to this evolution, ICAP has expanded the scope of our annual Status Report to better reflect the dynamic and diverse landscape of emissions trading policies around the globe. This year, while preserving our focus on domestic compliance systems, we have included a greater number of intensity-based systems and other types of ETS that were not previously captured in the scope of the report. All of these variations of emissions trading can help bring about the changes necessary to dramatically reduce GHG emissions. Carbon pricing shifts investment towards greener alternatives and encourages technological innovation; and revenues from auctioning can be used to fund research, development, and deployment of emerging technologies, to help decarbonize sectors across the economy, and to protect vulnerable communities to ensure that no one is left behind in the transition to a clean economy.

"As we look towards new challenges on the road to net-zero GHG emissions, we reflect on the past year with gratitude and admiration for the commitment and creativity shown around the world."

RAJINDER SAHOTA

Co-chair of the International Carbon Action Partnership and Deputy Executive Officer

California Air Resources Board

DIRK WEINREICH

Co-chair of the International Carbon Action Partnership and Head of Division, 'Climate Legislation, Emissions Trading'

Federal Ministry for Economic Affairs and Climate Action, Germany

As we look towards new challenges on the road to net-zero GHG emissions, we reflect on the past year with gratitude and admiration for the commitment and creativity shown around the world as policymakers, the private sector, and civil society respond to the greatest challenge of our time. Emissions trading retains its role as a critical policy instrument in this regard. It has again shown its resilience to external shocks and its ability to ride out bumpy terrain. It supports reduction pathways and helps set tangible milestones on the way to net-zero emissions by mid-century.

And so, we proudly present you with the Emissions Trading Worldwide Status Report 2024. We hope that, as every year, it serves as a valuable resource for policymakers, practitioners, and all those working tirelessly to combat climate change. Together, with shared experiences and renewed urgency, we at ICAP stand behind our commitment to help pave the way for a sustainable, low-carbon future for generations to come.

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01 EXECUTIVE SUMMARY

EMISSIONS TRADING IN NUMBERS

36
Emissions Trading Systems are in force

Covering

9.9 $GtCO_2e$

or over

18%
of global GHG emissions

USD **74** Billion raised in 2023

Totaling almost

USD **303** Billion since 2007

14 ETSs are currently under development

And **8** more are under consideration

Almost **1/3** of the global population lives under an ETS in force

Jurisdictions making up

58%

of global GDP are using emissions trading

TRENDS AND OUTLOOK

A SUMMARY OF GLOBAL ETS DEVELOPMENTS, TRENDS, AND FUTURE PROSPECTS

After experiencing the hottest year on record in 2023, our planet crossed the 1.5°C threshold on a 12-month average for the first time in January 2024. While the world grapples with the escalating impacts of climate change, the urgent need for effective mitigation strategies has never been clearer. As governments around the world move to implement climate policy frameworks, emissions trading systems (ETS) emerge as pivotal tools in the global fight against climate change, offering a market-based approach to reducing greenhouse gas emissions.

MORE AND MORE GOVERNMENTS WORLDWIDE ARE CHOOSING TO ADOPT ETSs, BUT CHALLENGES REMAIN

Governments worldwide are increasingly embracing emissions trading as a key part of their policy response to the climate crisis. Currently, 36 systems are in force globally, with an additional 22 in various stages of consideration and development. The systems currently in force collectively cover 18% of global GHG emissions. Jurisdictions making up 58% of global GDP have an ETS in place and roughly one-third of the global population lives under an ETS in force.

The global momentum behind the development and implementation of new ETSs is particularly striking in emerging economies. In Latin America, Brazil has taken significant steps by proposing a draft law for the implementation of an ETS, while Argentina mulls the adoption of an carbon market for its energy sector. Mexico is operating a pilot program, which is expected to move to full implementation over the course of 2024. Chile and Colombia have gained experience from the implementation of carbon taxes and are now at different stages of considering and preparing for the implementation of an ETS.

Across the Asia-Pacific region, India has outlined a pathway towards establishing a carbon market framework, which includes a compliance ETS alongside voluntary crediting activities, while Indonesia has recently launched an ETS covering the power generation sector. Vietnam is planning to launch an ETS pilot in the coming years and several other countries in the region, including Malaysia, Pakistan, the Philippines, and Thailand, are at different stages of considering or developing an ETS. Additionally, Türkiye is making plans to initiate a pilot ETS over the course of 2024, further emphasizing the global momentum towards emissions trading.

Similarly, developed economies have demonstrated their commitment to emissions trading. Canada, for example, has unveiled plans for a federal cap-and-trade system specifically designed for the oil and gas industry, complementing the output-based pricing systems in place at the federal level and in several provinces. Meanwhile, the European Union has announced the introduction of a distinct ETS for buildings, road transport, and additional sectors, complementing the EU ETS coverage. The new system is scheduled to commence operations in 2027. Australia has reformed its climate policy framework, turning the Safeguard Mechanism into a baseline-and-credit system, and Japan has launched the GX-ETS, a voluntary system expected to transition to a compliance ETS in the coming years.

"The global momentum behind the development and implementation of new ETSs is particularly striking in emerging economies"

At the subnational level in the US, Washington State launched a cap-and-invest program in 2023, New York State and Colorado are actively working to develop and launch new systems, and Maryland is considering an economy-wide system.

Despite the notable progress, setbacks have arisen due to complex political settings, as evidenced by challenges in the Regional Greenhouse Gas Initiative, in Pennsylvania, North Carolina, and Oregon. These setbacks underscore the importance of finding effective solutions to emerging challenges, especially in fostering social acceptance of carbon pricing. Overcoming these obstacles will be pivotal in achieving the goal of net zero by mid-century.

INNOVATIVE SYSTEM DESIGNS ARE EMERGING

The design and development of new ETS is giving rise to a generation of hybrid and innovative systems, sometimes deviating from the traditional cap-and-trade blueprint. This shift showcases the adaptability of emissions trading to diverse challenges and opportunities specific to geographical, economic, and political contexts. Notably, intensity-based emissions trading systems are on the rise, including the Chinese national ETS, and the output-based pricing systems in place in Canada both at the federal and subnational level, with several others being developed or considered.

This new wave of ETSs also incorporates fresh design elements, blending various carbon pricing instruments as seen in Indonesia's "cap-tax-and-trade system" or mixing compliance and voluntary features, as seen in Japan and India, where voluntary systems are implemented as a first step towards the development of compliance ETSs over time.

In response to these transformations, ICAP has broadened the scope of its annual Status Report to reflect the evolving emissions trading landscape. While maintaining focus on compliance systems, this year's report includes a greater number of intensity-based systems and other ETS types not previously covered. The carbon pricing landscape is further explored in the Infographics section. These diverse variations play a crucial role in promoting ETS uptake in new geographies by tailoring and adapting the concept to local priorities and circumstances.

ESTABLISHED ETSS ARE IMPROVING, EXPANDING AND ALIGNING WITH NET-ZERO TARGETS

In 2023, governments pledged not only to introduce new ETSs but also to strengthen existing ones, aligning them with the goal of achieving net zero by mid-century. Examples abound, ranging from China's implementation of stricter benchmark values for coal-fired power generation to ongoing consultations and reforms in California, Québec, the UK and South Korea, among others. Perhaps the most notable example of this sweeping wave of reforms to global ETSs is the finalization of the European Union's comprehensive "Fit for 55" reforms in the first half of 2023, which resulted in an extensive overhaul of the EU ETS. The reform package included a steeper reduction rate, the expansion to the maritime sector and a strengthened Market Stability Reserve, among other important elements.

Reforms to these systems anticipate some of the key themes that will characterize the ETS discussion in the coming years, chief among them alignment with net-zero targets and the role of emissions trading in a net zero context. Net zero alignment holds deep ramifications for all dimensions of an ETS. The key areas that regulators around the world are exploring include: the role of emissions trading in a net zero policy mix; the role (if any) of removal credits and negative emissions; cap setting, including the design and functioning of positive, zero, net-zero and net-negative caps; market dynamics, market stability and liquidity under these cap scenarios; and the future of carbon leakage and competitiveness protection.

"Governments pledged not only to introduce new ETSs but also to strengthen existing ones"

An additional key dimension that belongs to the list above is sector coverage. The role that an ETS can play in a net-zero scenario directly depends on what sectors it covers and whether those sectors are expected to have residual emissions, zero emissions or negative emissions. Not surprisingly, ETS sectoral expansion is a key focus for governments globally. In Europe, the "Fit for 55" reforms include provisions for the inclusion of maritime transport into the EU ETS and for the establishment of a separate EU ETS 2 to cover emissions from buildings, road transport and additional sectors not covered by the original system. The UK is also considering bringing additional sectors into its ETS, likely beginning with maritime transport. Sectoral expansion is also a priority in China, marking the next step in the development of the national ETS. Similar examples can be found in North America too.

PRICES HOLD, GUARANTEEING ANOTHER YEAR OF RECORD REVENUES

Against a backdrop of global economic and political instability, allowance prices showed different trends in different systems, as displayed in the Infographics section, marking no particular trend overall. Allowances prices in the EU and UK ETSs reached record levels in the first half of 2023 to then decrease, more markedly in the UK and in the EU, in the second half. North American systems, such as those in place in California, Québec and Washington State, instead showed overall price gains over the course of the year. Price developments in other systems worldwide did not show significant upwards or downward trends, remaining unvaried overall. It is also worth noting that the post-pandemic era has been characterized by significantly higher inflation rates in many jurisdictions than in the past. This may have distorted the carbon price signal in jurisdictions and introduced more noise around it since the allowance price values included this report are nominal.

Relatively high price levels in several systems, coupled with an increasing use of auctioning as an allocation method, resulted in yet another record year for the collection of auctioning revenues. Global ETS revenues in 2023 reached USD 74 billion, as shown in the Infographics section. Although most of these revenues come from systems with higher ETS prices and broader emissions coverage, notably from the EU ETS, additional drivers are also contributing to the overall increase. For instance, there is a growing preference for auction-based allocation methods compared to free allocation in the design of new systems. The US state of Washington adopted auction-based allocation from the inception of its system, and the reinvestment of auctioning proceeds is so central that the system is labelled as "cap-and-invest". This is not an isolated example, but it is rather a recurring feature in new systems. The EU proposed a 'Social Climate Fund' to be populated with auctioning proceeds as an integral part of the EU ETS 2 and New York State plans to adopt a similar auction-based approach in its forthcoming program.

Emissions trading revenues globally provide a crucial funding source for additional mitigation efforts and aid to affected communities impacted by high costs of living. Jurisdictions worldwide, from California to New Zealand, allocate ETS proceeds to low-carbon technology development and supporting at-risk populations. The EU has over a decade of experience with using revenue proceeds to fund innovation, the modernization of infrastructure and additional mitigation efforts. Canada and Austria have implemented redistribution mechanisms, directing almost all ETS revenue back to households for direct financial relief.

This trend is expected to continue and expand in coming years, as ETS revenues are set to play a key role in compensating for the distributional impacts of the carbon price and in maintaining public support for ETSs.

ADVANCING THROUGH INTERNATIONAL COOPERATION

Looking ahead, the imperative to reach net-zero emissions will require novel approaches to the design and functioning of ETSs. Border carbon adjustment measures could lead to an expansion of carbon pricing initiatives, particularly in exporting countries. The European Union's Carbon Border Adjustment Mechanism (CBAM) is now operational and might begin a trend whereby the EU's trade partners adopt new, or enhance their own, domestic carbon pricing instruments to reduce their exposure. There is also interest in border carbon adjustments in other key countries, with the UK, Australia, and the US making strides towards implementing these measures.

"Emissions trading offers a framework to foster cooperative efforts among jurisdictions"

Emissions trading offers a framework to foster cooperative efforts among jurisdictions, delivering mitigation impact and additional benefits well beyond the system's boundaries. This is evident in successful ETS linkages such as the EU ETS-Swiss connection, the Tokyo-Saitama collaboration within Japan, and the cross-border partnership between California and Quebec, which has already operated for a decade. Newly launched or underway systems, such as those in Washington and New York, are also eyeing linkage prospects with other ETSs as one of the key next steps in their development.

Another avenue to broaden the reach of an ETS is the use of offsets credits. There is a renewed interest in this space, with several new or upcoming systems, from Indonesia to Brazil, and from India to China, eyeing the inclusion of offset credits as part of their system design. Differently from the heyday of the CDM use in the EU ETS, most of these developments focus on domestic credits only. Out of all of the systems currently in operation that allow for the use of offset credits, the Korean ETS is the only one that accepts international credits. At the same time, most of the up-and-coming systems that expressed the intention to allow for the use of offset credits are likely to prioritize domestic credits.

Going forward, Article 6 of the Paris Agreement will represent the main avenue to generate and transfer offset credits that can be used in compliance systems internationally, but delays in its implementation might explain, together with other policy priorities, the current predominant focus on domestic credits. If these challenges are overcome, Article 6 can also play an important role in sourcing carbon removals internationally, especially for those jurisdictions that have limited options within their borders.

Further international cooperation is indispensable to effectively address emerging challenges, ensure a just transition, communicate the benefits of carbon pricing, and align systems with net-zero goals. The carbon pricing landscape is currently experiencing a significant uptick in collaborative efforts through initiatives like the Global Carbon Pricing Challenge the World Bank's Partnership for Market Implementation, the Call to Action for Paris-aligned Carbon Markets and platforms such as Carbon Pricing in the Americas.

In this dynamic context, ICAP plays a pivotal role by actively fostering international collaboration on various emerging topics. These include exploring how ETSs can align with and expedite progress towards net-zero goals, conducting thorough investigations into design options to safeguard against carbon leakage and maintain competitiveness, and exploring how to maintain and enhance support for emissions trading in society. Through these multifaceted efforts, ICAP aims to make a substantial contribution to the effectiveness of emissions trading in paving the way towards a net-zero future.

A YEAR OF ETS DEVELOPMENTS

A BRIEF OVERVIEW OF THE KEY UPDATES FROM EACH JURISDICTION

EUROPE AND CENTRAL ASIA

AUSTRIA Austria launched a new ETS for fossil fuels not already covered by the EU ETS in 2022. In 2023, covered entities started surrendering allowances quarterly, funding a "Regional Climate Bonus" introduced to offset potential price increases. The bonus provides lump-sum payments based on residents' proximity to essential amenities and public transport accessibility.

EUROPEAN UNION The EU ETS continues to be the largest system in force, in terms of trading volume and value. In the first half of 2023, the EU adopted important reforms of the EU ETS framework as part of the "Fit for 55" package, to align the system with the bloc's 2030 climate target of at least 55% net emissions reductions compared to 1990 levels. These reforms increased the ambition and expanded the scope of the EU ETS to maritime transport, and introduced a new, separate ETS for buildings, road transport and additional sectors.

GERMANY Germany launched its national ETS for heating and transport fuels in 2021. By 2023, the government successfully completed all legislative adjustments to the ETS. Starting January 2023, the system expanded to GHG emissions from coal, and from January 2024, it also encompassed fuels from waste incinerators. A late 2023 court decision drastically reduced the national budget, resulting in a greater-than-planned increase in the CO_2 price in January 2024.

KAZAKHSTAN Kazakhstan's ETS entered its 12th year of operation and work is underway to introduce auctions, while benchmarking is the only method of allocating allowances since 2021.

MONTENEGRO Although it only began in 2020, Montenegro's ETS has been affected by several changes of government in the past two years. In addition, two of the three covered installations ceased operations due to high energy prices. In response, the government set up a working group to revise the country's "Climate Law" and "ETS Decree". This process is still ongoing, with the adoption of a new Climate Law expected by mid-2024.

SAKHALIN (RUSSIA) In 2023, regulated entities submitted their first verified emissions reports for 2022. This formed the basis for setting individual caps for 35 entities in September 2023. This year is expected to mark the start of the system, covering installations in the power, oil, gas, coal mining, heavy industry and transport sectors.

SWITZERLAND In November 2023, the EU and Switzerland concluded the 2024 emission allowance transfer arrangements between their linked ETSs, introducing daily transfers from January 2024. After a revision of the "CO_2 Act" failed to pass a referendum in June 2021, the Swiss Parliament extended the current CO_2 Act to 2024.

TÜRKIYE In 2023, Türkiye made significant progress towards establishing an ETS. The country's updated NDC explicitly refers to an ETS and, during COP28, Türkiye announced the planned launch of a pilot ETS in October 2024. Concurrently, the government is drafting a climate law to define crucial ETS features, intending to present it to Parliament in 2024. Moreover, activities under the Partnership for Market Implementation (PMI) are scheduled to commence this year.

UKRAINE In October 2023, the government announced an ETS law would be submitted to the parliament in 2024. In parallel, work started on the development of the ETS implementation roadmap. This will be subject to publication and stakeholder consultation later in 2024. Meanwhile, the suspension of MRV requirements that has been in place since the start of Russia's war against Ukraine remains in place.

UNITED KINGDOM The UK ETS began operating in 2021, following the UK's departure from the EU ETS. Last year saw a package of reforms aimed at aligning the scheme with the UK's long-term emissions goals, including a 30% reduction in the number of allowances to be made available over the period 2021 to 2030. The government also announced its intention to expand the scheme to cover domestic maritime activities, waste incineration, energy from waste, and engineered greenhouse gas removals, and to phase out free allocation for aviation.

NORTH AMERICA

ALBERTA In 2023, Alberta implemented significant amendments for the 2023 forward period to its Alberta Technology Innovation and emissions Reduction Regulation (TIER), which applies to large emitters and opted-in installations. The amended TIER Regulation is in effect through 2030 and meets the Canada federal stringency requirements.

BRITISH COLUMBIA Starting in April 2024, the British Columbia OBPS (B.C. OBPS) replaces the province's carbon pricing mechanism for industrial operators which had been in place since April 2019. The OBPS follows the Canadian federal carbon price path and ensures a price incentive for industrial emitters to reduce GHG emissions through a performance-based system.

CALIFORNIA In December 2022, the Board of the California Air Resources Board (CARB) adopted the "2022 Scoping Plan for Achieving Carbon Neutrality", which sets a 48% emissions reduction below 1990 levels by 2030, surpassing the original 40% target. CARB plans to assess all major programs, including cap-and-trade, to increase stringency by 2030 and extend to 2045. In 2023, a series of workshops explored amendments to the decade-old program, including to cost-containment mechanisms, use of revenues from consigned allowances, and carbon leakage measures. Amendments may be voted on by CARB's Board by end-2024, effective from 2025.

CANADA FEDERAL The federal OBPS is in place since 2019 as one part of the federal carbon pollution pricing "backstop" system. The carbon pollution pricing "backstop" system applies to provinces and territories where the carbon pricing system for the 2023-2030 period does not meet the federal benchmark criteria of CAD 80 (UDS 59.26) per tCO_2e in 2024. In 2023, the federal government amended its federal OBPS, to increase the stringency of the output-based standards used to determine facilities' emissions limits. In December 2023, Canada has announced the development of a federal cap-and-trade system for the oil and gas sector to support its net-zero ambitions. A regulatory framework has already been published;

draft regulations will follow in 2024 and the final regulations are targeted for 2025. The emissions cap would be phased in between 2026 and 2030, and decrease over time to be consistent with Canada's 2050-emissions goal of net zero.

COLORADO In October 2023, the Colorado government introduced regulations for an ETS for in-state manufacturers, effective from 2024. The system, covering 22 facilities, includes two groups. One group is subject to absolute reduction requirements while the other is subject to intensity-based reduction requirements. A GHG credits trading system will be operational by December 2024, allowing bilateral trades and auctions. Guidelines for trading between the two groups of facilities will be published by December 2024.

MARYLAND In December 2023, Maryland's "Climate Pollution Reduction Plan" was published, describing how economy-wide policies, such as a cap-and-invest program, could be necessary for the state to achieve its emissions reduction goals. Maryland's power sector is currently regulated by RGGI, but the 2023 plan includes direction for the state to consider expanding to an economy-wide cap-and-invest program. Exploration of how the coverage of additional emissions could work is ongoing.

MASSACHUSETTS The Massachusetts ETS started operating in 2018 as a complement to RGGI: electricity generators in the state must comply with both RGGI and the Massachusetts program. Since March 2023, the system has reported decreasing prices and a wide dispersion of bid prices in the auctions.

NEW BRUNSWICK Last year marked the third year of operation since New Brunswick transitioned from the Canada Federal OBPS to a provincial system. The year saw the introduction of an industry fund, which redirects funds from credit transactions to aid emission reduction projects for OBPS participants. The selection of project participants is merit-based.

NEWFOUNDLAND AND LABRADOR 2023 marked the fifth year of operation for the Newfoundland PSS. Following Canada federal pricing trends, the 2023 PSS price rose CAD 15, reaching CAD 65 per tCO_2e.

NEW YORK STATE New York State advanced its Cap-and-Invest Program (NYCI) aiming for significant GHG reductions by 2050. In December, it released a pre-proposal outline, emphasizing cap-and-invest, reporting, and auction rules. Stakeholder engagement shaped its equitable design. The focus now shifts to developing the draft regulation and preparing for launch, ensuring the program's effective implementation with ongoing public and stakeholder feedback.

NORTH CAROLINA In 2021, the North Carolina government started a rulemaking process to establish an ETS. In 2023, the state's General Assembly approved legislation prohibiting the governor or any state agencies from requiring public utilities to participate in cap-and-trade programs. As such, barring any further legislative action to mandate a cap-and-trade program in the state, it is unlikely that North Carolina will establish an ETS.

NOVA SCOTIA The Nova Scotia OBPS began operating in 2023, replacing Nova Scotia's cap-and-trade system, which had been in place since 2019. The cap-and-trade system was phased out in 2023, officially ending after the final compliance deadline for the 2019 to 2022 trading period in December 2023. The OBPS was approved by the federal government in 2022.

ONTARIO In its second year of operation, Ontario amended its EPS program to meet federal benchmarks and extended the program from 2023 to 2030. The 2023 price reached CAD 65 per tCO_2e, aligning with Canada federal pricing levels. The province also enhanced standards for fossil fuel-based electricity generation, adjusting stringency factors to reduce facility emissions limits.

OREGON Oregon's Climate Protection Program (CPP), launched in 2022 to reduce greenhouse gas emissions and support communities, was invalidated in December 2023 by the Oregon Court of Appeals due to procedural issues. The program aimed for significant emissions reduction by 2050 through a declining cap on emissions from major sectors. Despite the setback, Oregon's environmental authorities are set to initiate a rulemaking process to correct the procedural errors and reinstate the CPP.

PENNSYLVANIA In October 2019, Pennsylvania's governor signed an executive order to start the process to develop an ETS. The regulation was published in 2022 but was also challenged by members of the Pennsylvania's legislature and by a collection of local stakeholders in front of the state's Commonwealth Court. In November 2023, the court determined that money raised from the regulation constitutes an unconstitutional tax. The decision has been appealed in front of the state's Supreme Court.

QUÉBEC Québec conducted stakeholder consultations in the latter half of the year to consider amendments to its cap-and-trade system, aiming for alignment with the 2030 target and carbon neutrality by 2050. Coordinated with California's program, Québec explored revisions to emissions caps, market controls, and other topics like market data publication and offset credits. Amendments may lead to a draft regulation by summer 2024. In 2023, the system marked its first decade of operation.

REGIONAL GREENHOUSE GAS INITIATIVE The Regional Greenhouse Gas Initiative (RGGI), which launched in 2009 is in the middle of its Third Program Review. In September 2023, the RGGI states presented the Spring Modelling Framework, which considers several illustrative allowance supply scenarios for the next years. Virginia, which joined RGGI in 2021, repealed its ETS regulation in 2023 and thus stopped participating at the end of the year.

SASKATCHEWAN 2023 marked the Saskatchewan OBPS's fifth year of operation. From January 2023, the OBPS expanded its sectoral coverage to include electricity generation and natural gas transmission pipeline sectors. The province set a lower threshold for voluntary participation in 2023. Following Canada federal pricing trends, the 2023 OBPS price rose CAD 15, reaching CAD 65 per tCO_2e.

WASHINGTON In 2023, the cap-and-invest program completed its inaugural year, witnessing settlement prices exceeding the lower threshold of USD 51.90 at May and August auctions, prompting two reserve sales in August and November. The Department of Ecology explored linking with the joint California-Québec market, holding outreach events from January to May and publishing a preliminary analysis in October, signaling intent to pursue linking in November. Two registries, the American Carbon Registry and Climate Action Reserve, became approved offset credit suppliers in March.

LATIN AMERICA AND THE CARIBBEAN

ARGENTINA In 2024, Argentina's Parliament is considering a proposal for a new Emission Trading System (ETS), initially focusing on the energy sector with plans for expansion. This ETS aims to support Argentina's emission reduction targets under the Paris Agreement. The proposal is under extensive review and discussion, with key elements like emission caps and participation thresholds yet to be clarified. This year will see significant legislative debates and consultations, shaping the future of carbon markets and ETS implementation in Argentina.

BRAZIL A new draft bill for the establishment of a Brazilian ETS is in advanced stage of consideration in congress. The bill would define the governance framework and establish the legal foundation for obligations by covered entities. Key design elements such as scope, cap and allocation would be decided in coming years.

CHILE In 2022, Chile enacted its "Framework Law on Climate Change", which contains provisions to set a system of GHG emissions limits akin to an ETS, and provides a basis for the development of market-based, fiscal, and financial instruments to address the negative impacts of GHG emissions. In November 2023, the Ministry of Environment published the Draft Rules for the Development of the GHG Emissions Limits. Moreover, the country is planning to develop an ETS for the energy sector.

COLOMBIA Throughout 2023, Colombia continued its development work on its ETS, focusing on the planning stages for the anticipated pilot phase and the system's full operationalization, expected by 2030. The year involved ongoing analysis and refinement of the ETS design by the government, prioritizing its alignment with the country's national mitigation targets.

MEXICO The Mexico ETS, the first in Latin America, started in January 2020 with a Pilot Program with two phases: a pilot phase between 2020 and 2021, and a transition phase in 2022. The system is expected to enter its operational phase by 2024. While the regulations of the operational phase are not published, those governing the Pilot Program remain in force.

ASIA PACIFIC

AUSTRALIA A major reform of the Australian Safeguard Mechanism entered into force in July 2023. The system now assigns intensity-based emissions baselines to the largest industrial emitters and allows the issuance of credits to facilities that overachieve their baseline. This in effect turns the Safeguard Mechanism into a mandatory baseline-and-credit system, with a fixed yearly decline rate for the facility-level baselines.

CHINA The China national ETS finished the second compliance cycle for 2021 and 2022 and the allowance price went up to USD 11 per tCO_2e. The Ministry of Ecology launched a new offset scheme at the end of 2023, creating a new market for domestic emission reduction projects. The State Council published a new ETS regulation in February 2024, which significantly increased the punishment for non-compliance, data fraud and market manipulation. The new regulation will support sector expansion, long-term cap setting and other ETS development in the future.

CHINESE PILOTS All Chinese regional pilots continued trading, ensuring compliance, and updating ETS management measures. In addition to their routine activities, the Hubei pilot is planning to lower the inclusion threshold in a draft management rule for public consultation. The Shanghai pilot expanded coverage to include data centers and introduced a local crediting system. Similarly, the Guangdong pilot extended coverage to ceramics, ports, and data centers.

INDIA The Indian government is advancing work to establish a domestic carbon market. According to current plans, this will include a compliance scheme covering energy-intensive industrial sectors, and a voluntary offset mechanism. The planned compliance scheme will be intensity-based and should be introduced through a phased transition from an existing energy efficiency trading scheme, starting in 2024.

INDONESIA 2023 saw the commencement of Indonesia's intensity-based ETS for the power sector, a major development in its climate strategy. The system's initial phase included a substantial segment of the power sector, impacting how emissions are managed. The groundwork was also laid for transitioning to a hybrid "cap-tax-and-trade" system by 2025, indicating a shift towards more integrated carbon management approaches.

JAPAN Japan launched the GX-ETS in April 2023, beginning as a voluntary baseline-and-credit system. Almost 570 companies making up more than 50% of national emissions participate. The GX-ETS is expected to transition to a mandatory ETS from 2026 after its first compliance deadline. JCM credits will also be eligible for use under the GX League.

MALAYSIA Malaysia continues to develop its national carbon market, with a domestic ETS being considered. A study conducted by the government in cooperation with the PMI to explore the implementation of carbon pricing instruments is expected to conclude in 2024. In November 2023, the Malaysian state of Sarawak passed a climate bill that includes provisions to introduce mandatory emissions thresholds and reporting requirements for industrial emitters.

NEW ZEALAND 2023 saw the continued development of the NZ ETS. Unit supply and auction reserve price settings for the NZ ETS for 2024 to 2028 were updated in accordance with a court order made following a successful legal challenge against the original settings, bringing the cap trajectory in line with New Zealand's net-zero targets. October elections brought in a change of government, which announced it will progress pricing of agricultural emissions by no later than 2030 and repeal a current legislative provision which would bring the sector into the NZ ETS from 2026.

PAKISTAN Pakistan continues to advance preparatory work for a domestic ETS under the World Bank's PMI program. A national registry and MRV framework are under development. Besides a domestic ETS, Pakistan aims to launch credit-based trading mechanisms linked to international carbon markets including under Article 6 of the Paris Agreement.

PHILIPPINES In May 2023, the Philippines House of Representatives advanced a bill for an ETS to reduce GHG emissions in high-emitting sectors. A technical working group has since been established to review the bill and provide recommendations in consultation with stakeholders. In parallel, the Department of Finance evaluates carbon pricing's role in the national strategy.

REPUBLIC OF KOREA In September 2023, the government released a set of new rules to increase liquidity in its ETS, Southeast Asia's first national, mandatory ETS launched in 2015. This includes revising the guidelines for verifying offset credits to reduce the burden on businesses and strengthen MRV. The holding limits of Korean Allowance Units (KAUs) for third parties was raised and the compliance cycle was aligned so that compliance deadline and banking/borrowing applications fall in August. From 2024, the restrictions on the carryover of unused allowances will be relaxed and the conversion period for offset credits prolonged. In 2024, monthly auctioned volume will depend on the previous month's auction results.

THAILAND Thailand is advancing its climate strategy with the development of the Thailand Voluntary Emissions Trading Scheme (V-ETS). In 2023, agencies conducted engagement and capacity building activities for ETS implementation with pilot organizations. Significant strides were also made towards establishing a domestic carbon market framework, including the launch of the carbon credit trading platform FTIX and regulations for carbon crediting markets. A draft "Climate Change Act", aimed at providing a legislative framework for emissions trading, is expected to be submitted for cabinet and parliamentary approval in 2024 or 2025.

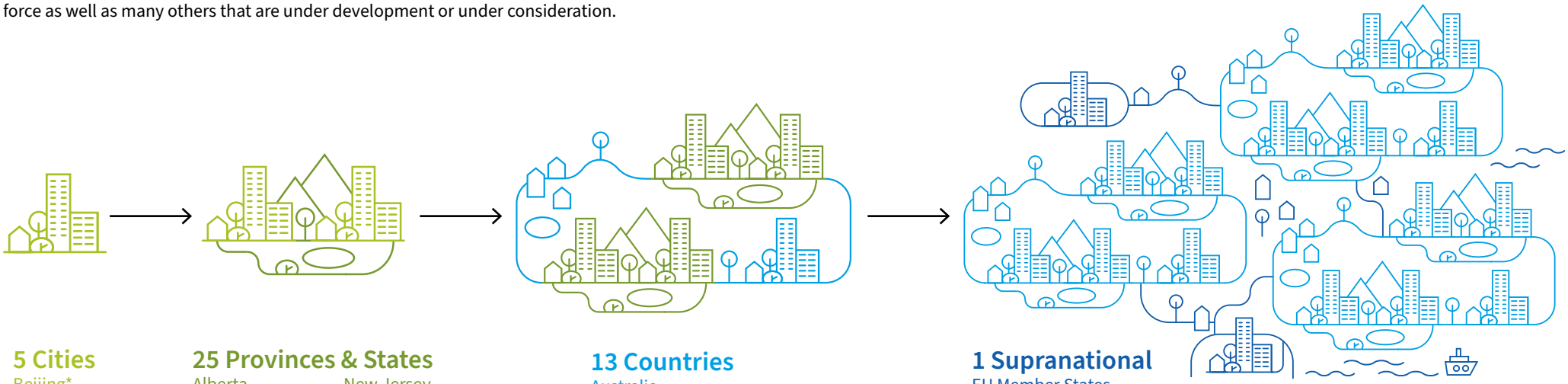
VIETNAM Vietnam's ETS development began with legislation in 2021, followed by a 2022 strategy committing to net-zero emissions by 2050. A pilot ETS is planned for 2027, with full implementation by 2030, with provisions allowing for participation under Article 6 of the Paris Agreement.

02 INFOGRAPHICS

FROM SUPRANATIONAL TO LOCAL

EMISSIONS TRADING SYSTEMS OPERATE AT EVERY LEVEL OF GOVERNMENT

Emissions trading can be implemented at several levels of government. At one end of the spectrum, city-level ETSs are in operation, for example, in Shenzhen. 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 the same jurisdiction, such as 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 the ICAP Status Report 2024 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 under consideration.



5 Cities

Beijing*
Chongqing*
Shanghai*
Shenzhen
Tianjin*

25 Provinces & States

Alberta
British Columbia
California
Connecticut
Delaware
Fujian
Guangdong
Hubei
Maine
Maryland
Massachusetts
New Brunswick
New Hampshire
New Jersey
New York
Newfoundland and Labrador
Nova Scotia
Ontario
Prefecture Saitama
Québec
Rhode Island
Saskatchewan
Tokyo
Vermont
Washington

13 Countries

Australia
Austria
Canada
China
Germany
Indonesia
Kazakhstan
Mexico
Montenegro
New Zealand
Republic of Korea
Switzerland
United Kingdom

1 Supranational

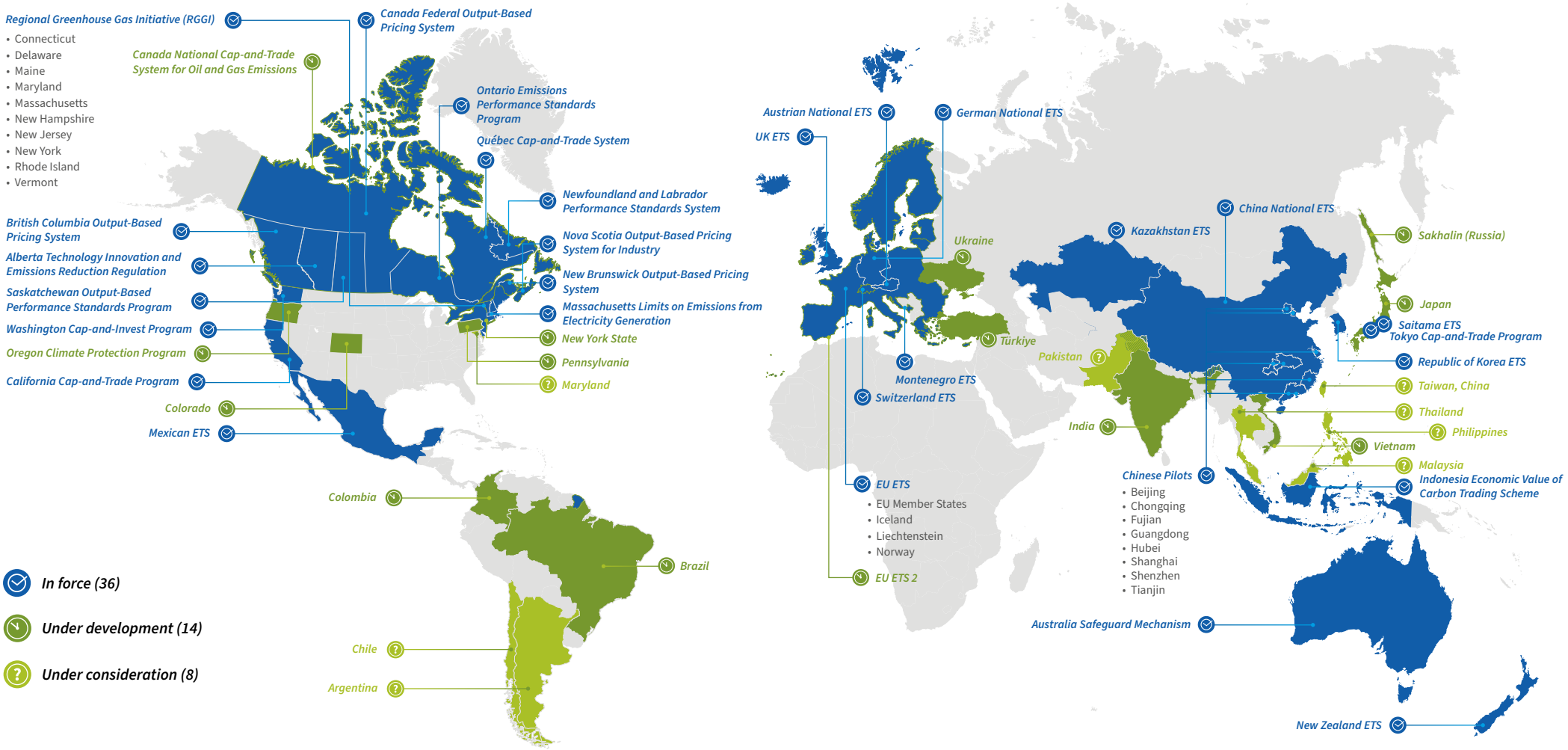
EU Member States
+ Iceland
+ Liechtenstein
+ Norway

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

EMISSIONS TRADING WORLDWIDE

THE CURRENT STATE OF PLAY IN CAP-AND-TRADE

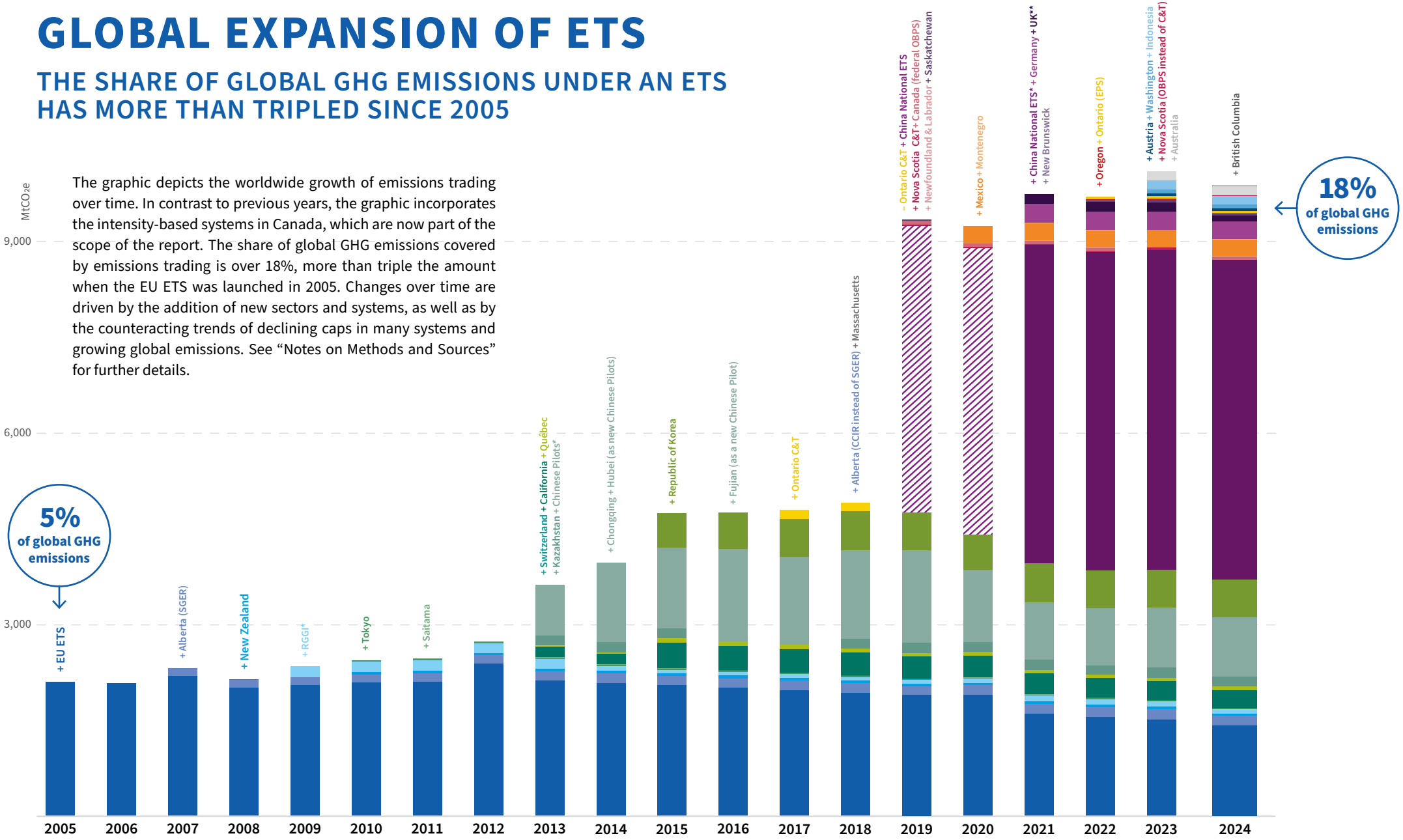
The ICAP ETS world map depicts emissions trading systems currently in force, under development or under consideration. As of January 2024, there are 36 ETSs in force. Another 14 are under development and expected to be in operation in the next few years. These include ETSs in Colombia, Türkiye, and Vietnam. 12 jurisdictions are also considering the role an ETS can play in their climate change policy mix. 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 HAS MORE THAN TRIPLED SINCE 2005

The graphic depicts the worldwide growth of emissions trading over time. In contrast to previous years, the graphic incorporates the intensity-based systems in Canada, which are now part of the scope of the report. The share of global GHG emissions covered by emissions trading is over 18%, more than triple the amount 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.



* As of 2020, RGGI includes New Jersey. Between 2021 and 2023, it also included Virginia

* Beijing, Guangdong, Shanghai, Shenzhen, Tianjin

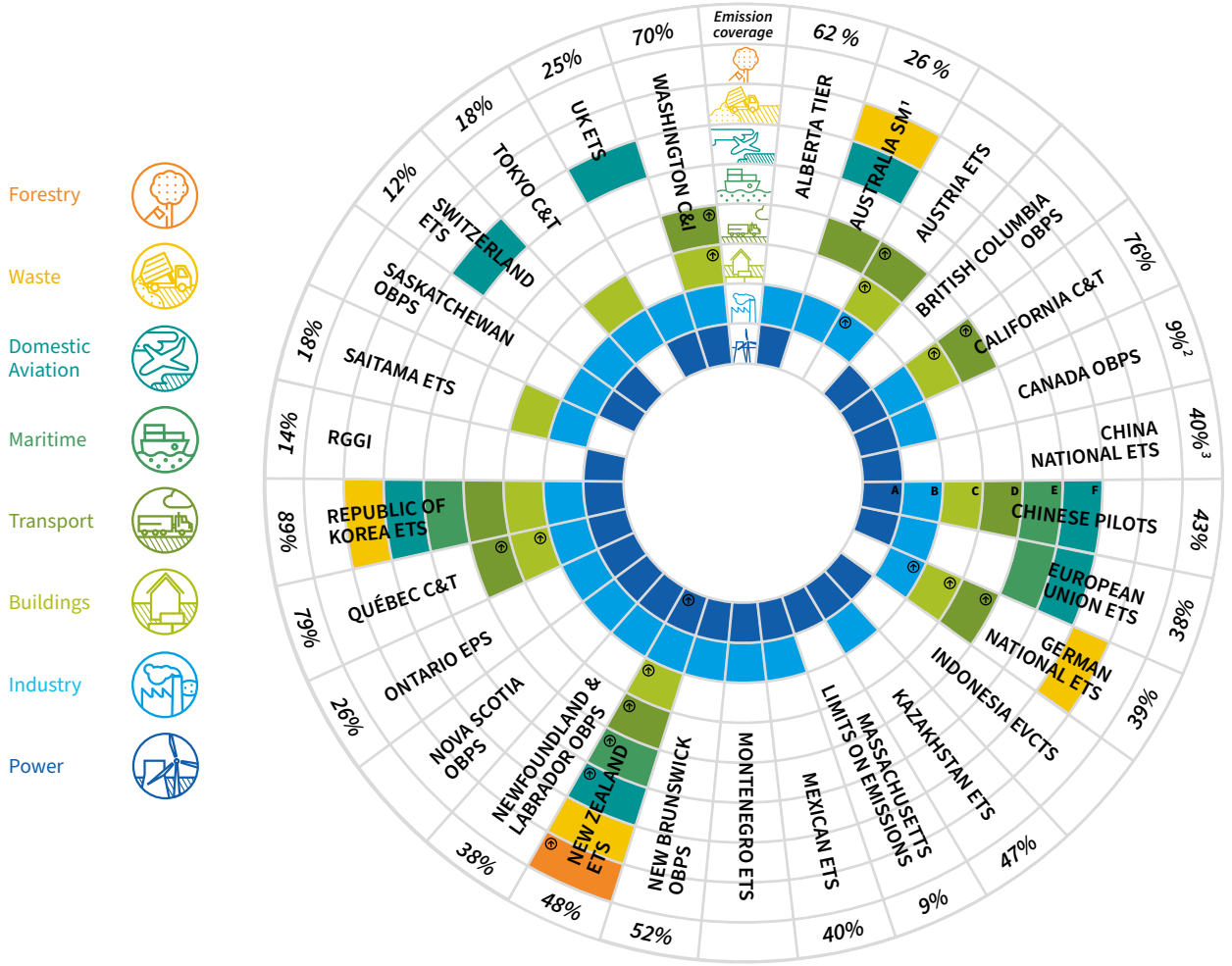
* The Chinese National ETS came into force in 2021 but has retroactive compliance obligations in 2019 and 2020, indicated above by the striped bar

** 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 2024. 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 Beijing ETS covers one power company. The Shanghai ETS covers oil-fired generators
B Beijing, Chongqing, Fujian, Guangdong, Hubei, Shanghai, Shenzhen, Tianjin
C Beijing, Shanghai, Shenzhen
D Beijing, Shenzhen
E Shanghai
F Fujian, Guangdong, Shanghai

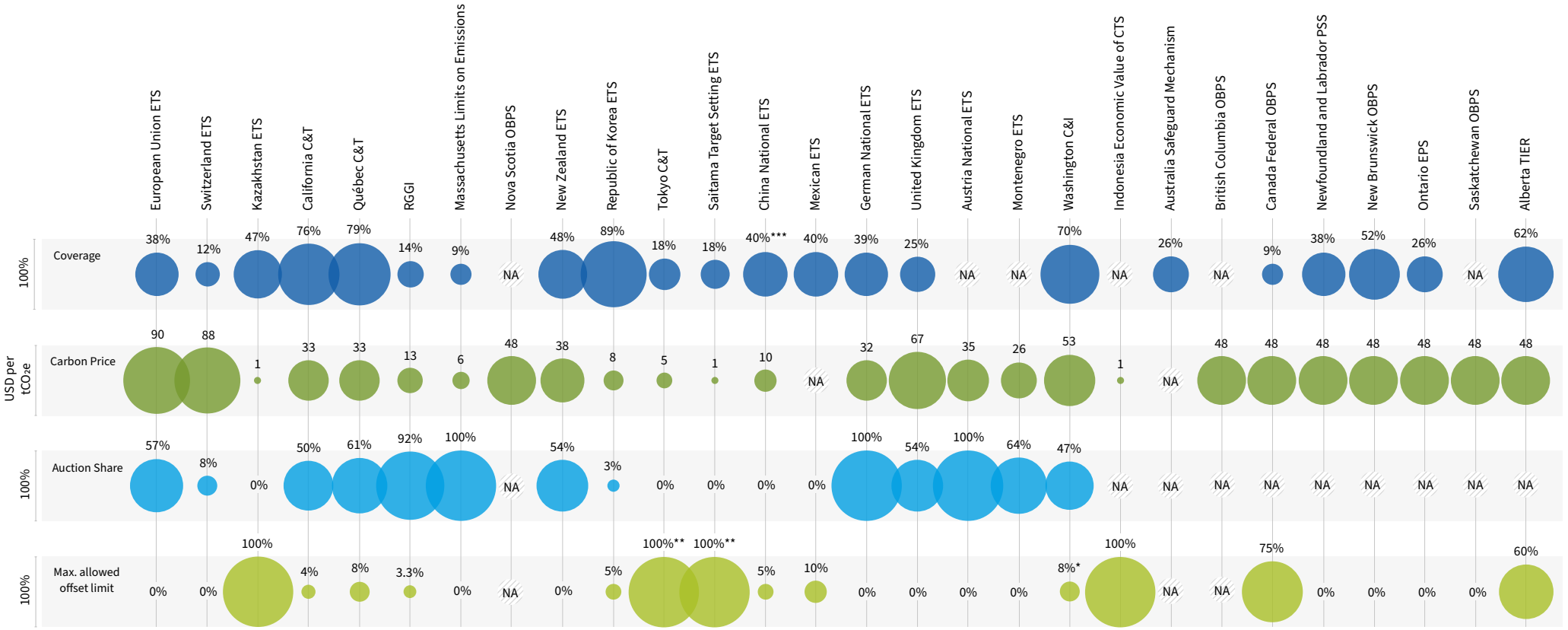
↑ indicates which sector is covered upstream

1 Only a very small share of emissions (>5%) from the waste and transport sectors are covered by the Safeguard Mechanism
2 The 2020 value is not consistent with the current application of the federal OBPS. In 2020, the federal OBPS applied in Ontario, New Brunswick, Prince Edward Island, Manitoba, Yukon, Nunavut and partially in Saskatchewan. The federal OPBS no longer applies in Ontario, New Brunswick and Saskatchewan
3 Of CO_2 emissions.

DIFFERENT DIMENSIONS OF ETS

A COMPARATIVE LOOK AT KEY METRICS FROM CARBON MARKETS

The circles below display information on different metric across ETSs in force. **Coverage** (in dark blue) shows the share of the jurisdiction's GHG emissions covered under the ETS. **Carbon price** (in dark green) is measured in USD per metric tonne of CO_2e and averaged over 2023. **Auction share** (in light blue), expressed as a share of the 2023 cap, denotes the share of allowances that have been offered for auction in the primary market. **Max. allowed offset limit** indicates the share of a compliance entity's obligations that can be met using approved offsets. The size of the circle represents the numerical value of the corresponding dimension. See "Notes on Methods and Sources" for further details.

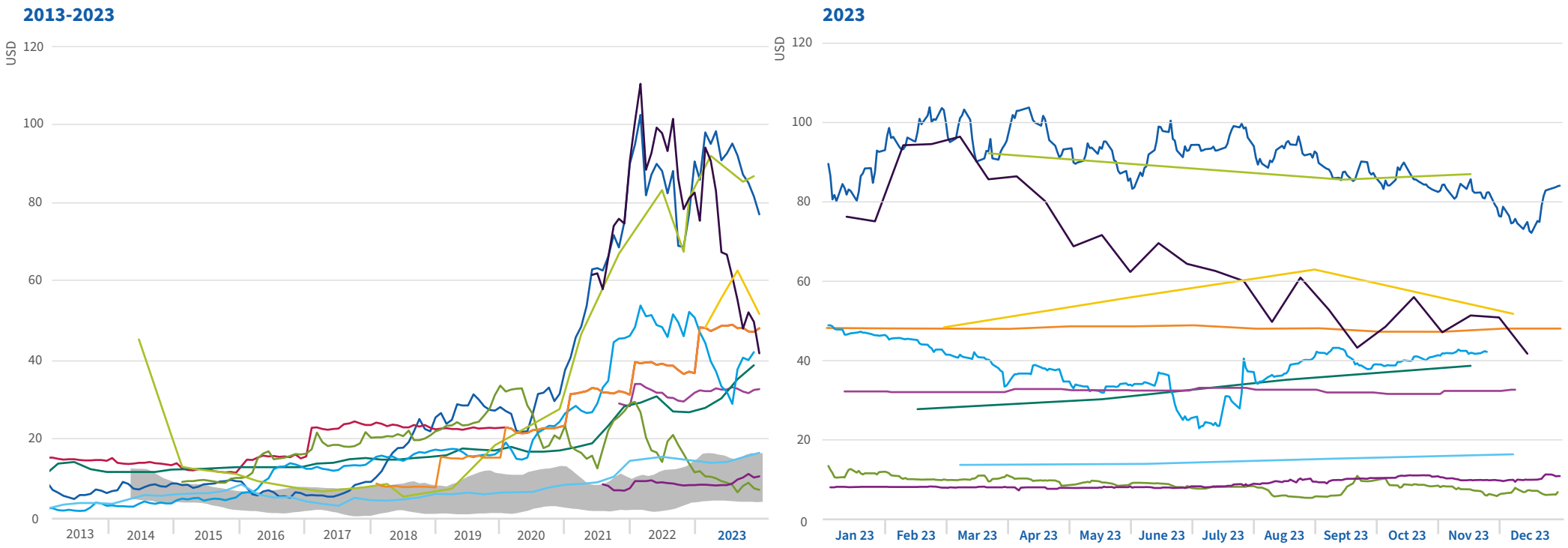


* Up to 5% of the compliance obligation can be met with offsets. An additional 3% can be met from projects located on federally recognized tribal land.
** In Saitama, quantitative limits apply for "outside Saitama" credits. In Tokyo, quantitative limits apply for "outside Tokyo" credits.
*** Of CO_2 emissions.

ALLOWANCE PRICES AND REVENUES

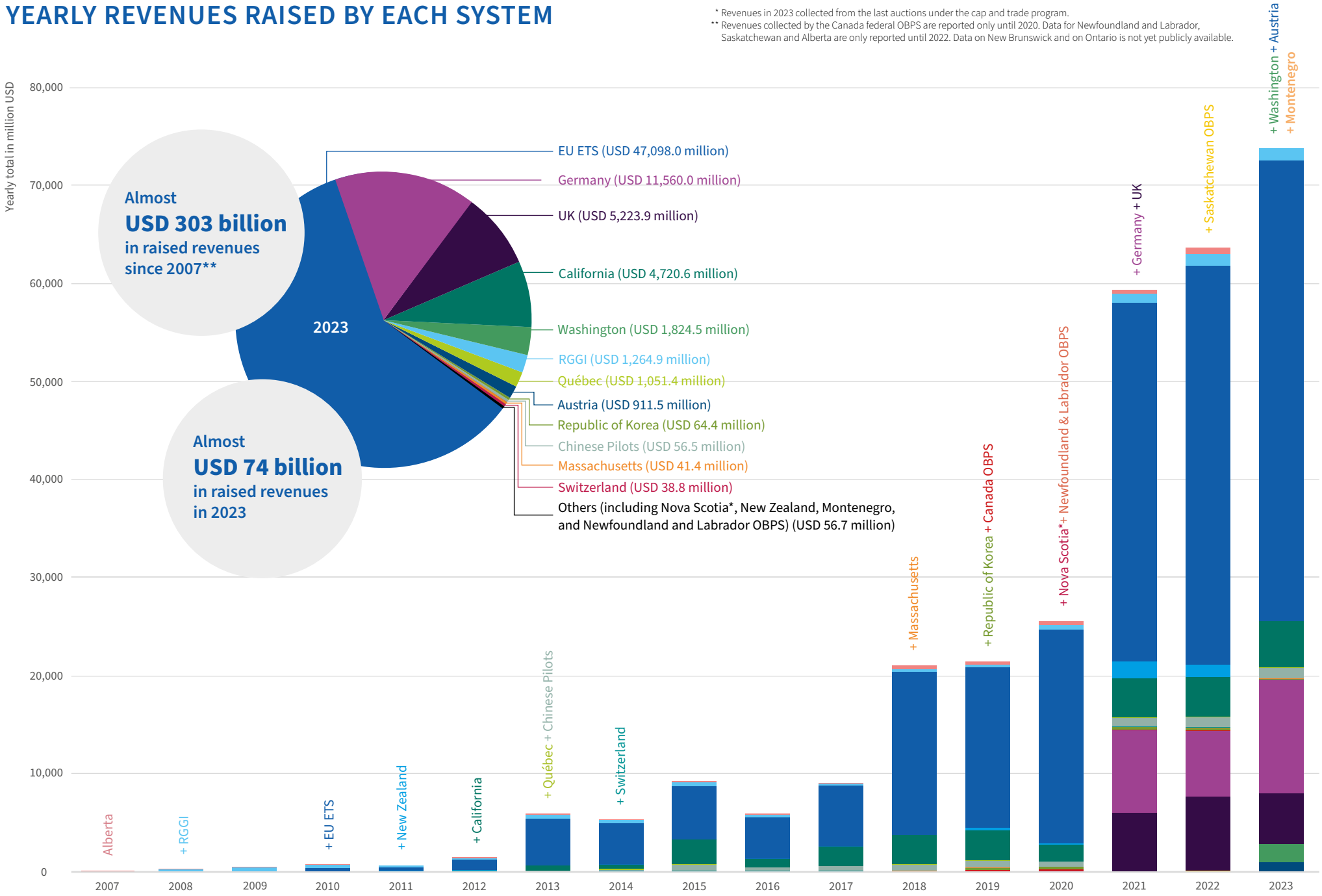
2023 IN A LONGER HISTORICAL CONTEXT

The panels in the first page of this infographic use data from the ICAP Allowance Price Explorer and the factsheets of this report to visualize developments in allowance markets in a long historical context since 2013 (left panel) and in 2023 (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 ETSs. The panel in the next page displays information on revenues raised by governments by the sale of allowances, compliance credits or equivalent compliance mechanisms. Over time, increases in carbon prices and the introduction of new systems has led to an increase in revenues raised. In all panels, observations in non-USD currencies are converted to USD using exchange rate data from the IMF. When prices are fixed, visible variations are due to variations in the exchange rates. See “Notes on Methods and Sources” for further details.



YEARLY REVENUES RAISED BY EACH SYSTEM

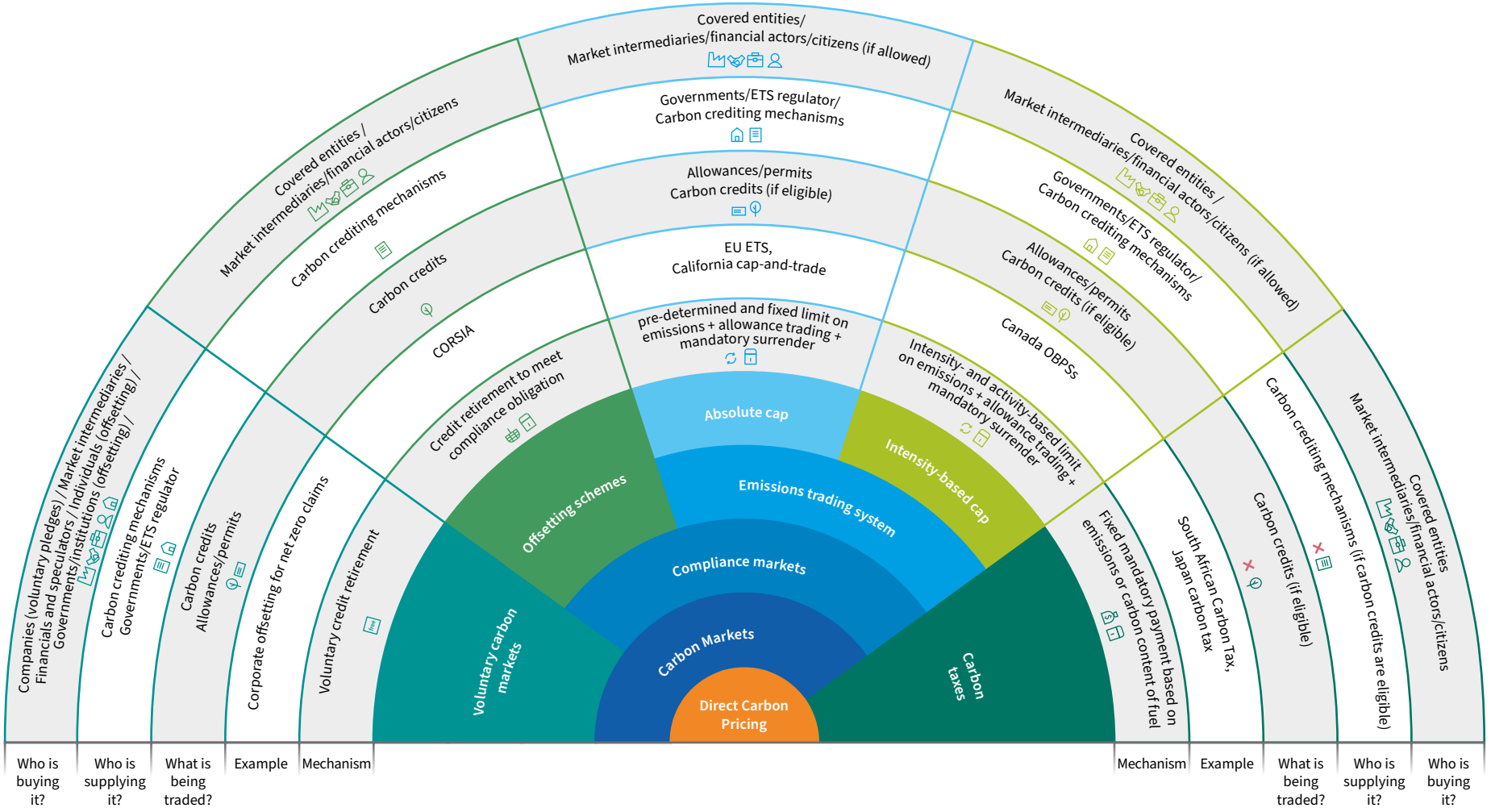
* Revenues in 2023 collected from the last auctions under the cap and trade program.
** Revenues collected by the Canada federal OBPS are reported only until 2020. Data for Newfoundland and Labrador, Saskatchewan and Alberta are only reported until 2022. Data on New Brunswick and on Ontario is not yet publicly available.



TYPOLOGY OF CARBON PRICING

DIFFERENT TOOLS TO ACHIEVE A SINGLE OBJECTIVE

Direct carbon pricing instruments encompass a diverse range of policies and mechanisms aimed at internalizing the external costs of carbon emissions. They are designed to create economic incentives for reducing greenhouse gas emissions and transitioning towards a low-carbon economy. This infographic presents a typology of different direct carbon pricing instruments, departing from the distinction between carbon taxes and carbon markets. Carbon markets can be categorized as being either voluntary or compliance. The latter in turn encompasses offsetting schemes (such as CORSIA), and emissions trading systems (ETSs), the scope of this report. ETSs can be further categorized based on whether they have an absolute or an intensity-based cap or emissions limit. Direct carbon pricing instruments can be understood by their mechanism, what (if anything) is being traded, who is supplying it and who is buying it, Understanding the nuances and implications of each carbon pricing instrument is essential for effective climate policy design and implementation.



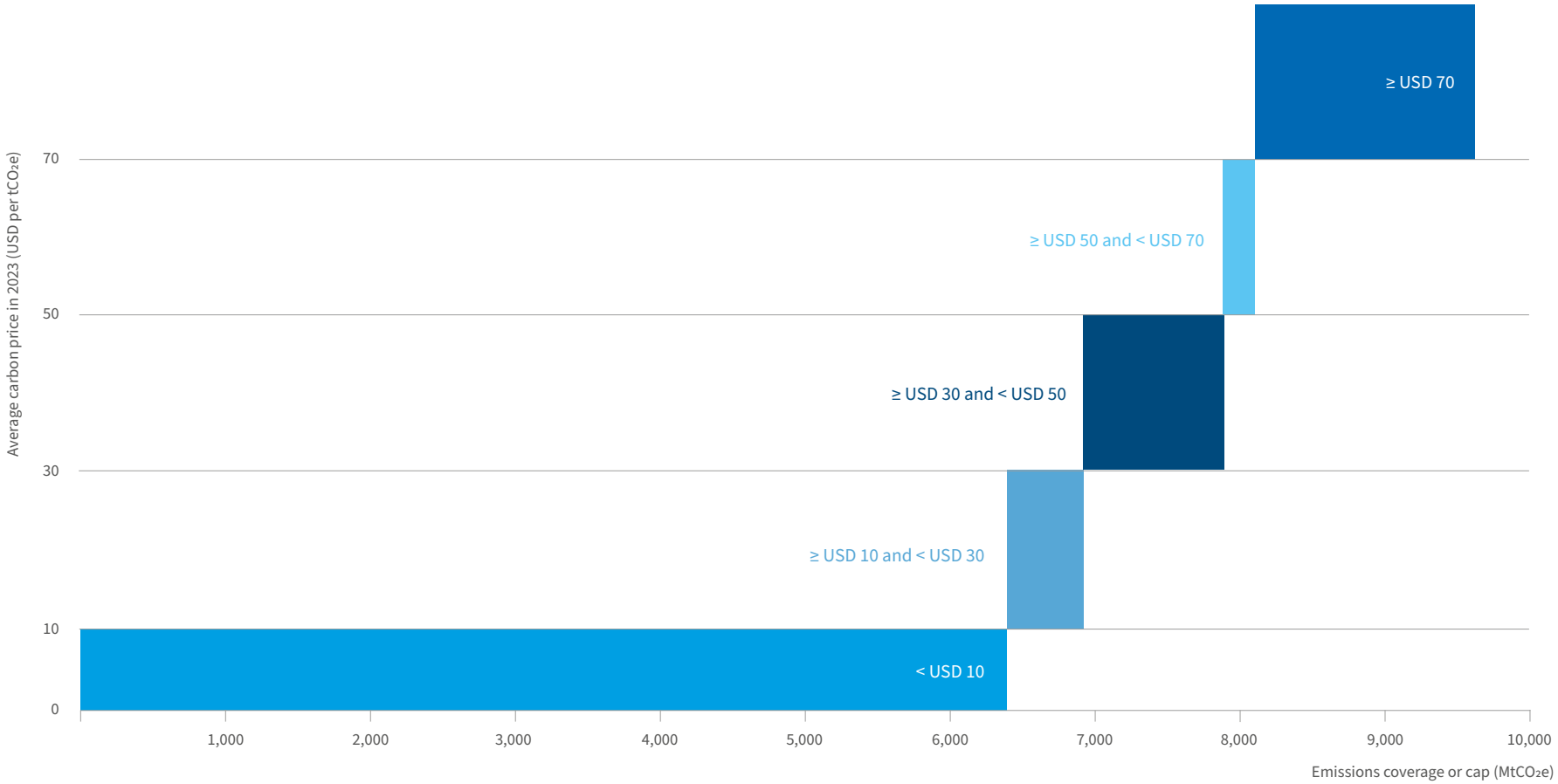
USE OF ETS REVENUE

EMISSIONS TRADING REVENUES FULFILLING SOCIETAL OBJECTIVES

ETSs collect revenue by the auction of allowances, selling of credits or collection of payments into funds. This revenue can and is being used in a number of way, reflecting jurisdictional priorities, as shows by the infographic. Some jurisdictions channel collected revenues towards their general budget, while others prefer to earmark revenues for specific uses. This includes jurisdictions that use auction revenues to fund climate mitigation and low carbon innovation. Revenues are also being used to provide assistance to individuals, households and businesses, and in pursuit of other developmental objectives, such as education and health. The amount of revenue collected depends on the jurisdiction's size, ETS coverage, allocation and compliance mechanisms, and the level of the carbon price. Uses of revenues collected in ETSs presented here are not exhaustive. The corresponding factsheets provide more information on how different jurisdictions use revenues collected from their ETSs.

PRICES OF COVERED EMISSIONS

This infographic shows the range of carbon prices in 2023 in ETSs in force, and the volume of emissions that systems with those price levels cover. Around two-thirds of ETS-covered emissions are in systems where prices averaged below USD 10 in 2023. About one-sixth of ETS-covered emissions were in systems where average prices in 2022 were between USD 10 and USD 70, whereas around another sixth were in systems with an average allowance price above USD 70 (the EU ETS and Switzerland). 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.



03 FACTSHEETS

EUROPE AND CENTRAL ASIA

NORTH AMERICA

LATIN AMERICA & THE CARIBBEAN

ASIA-PACIFIC

AUSTRIA

AUSTRIAN NATIONAL EMISSIONS CERTIFICATE TRADING SYSTEM

- **National carbon pricing introduced in 2022, covering fuel consumption upstream**
- **Fixed price per tonne CO_2e from 2022 to 2025**
- **Auctioning foreseen from 2026 onwards**

ETS DESCRIPTION

Austria launched its national emissions certificate trading system (Nationales Emissionszertifikatehandelsgesetz – NEHG) for fossil fuels not already covered by the EU ETS in October 2022.

Although the NEHG does not establish a carbon tax, the carbon pricing instrument follows in central parts the logic of existing energy taxes (fuel tax, coal tax, and natural gas tax). Thus, if a certain event is taxable under the existing energy taxes regime, an obligation to buy allowances arises under the NEHG. Taxable events are the production, import, or release of energy products from a tax warehouse in Austria or the supply of coal and natural gas to consumers. In practice, only a limited number of energy distributors and oil companies are subject to the NEHG 2022, while the majority of (end) consumers are not directly liable.

The NEHG aims to cover emissions outside the EU ETS, encompassing predominantly emissions in the buildings and transport sectors. Between 2022 and 2025, the system will operate with an annually increasing fixed price and a flexible cap, such that more allowances will be available for entities if needed.

The NEHG is being phased in gradually. The system has been designed in line with the reduction targets for non-EU ETS sectors as defined by the "European Effort Sharing Regulation" (ESR). The system may eventually transfer into the EU ETS 2 (see the 'EU ETS 2' factsheet for more).

YEAR IN REVIEW

In 2023, the NEHG successfully completed its inaugural year. Covered entities began surrendering national emission allowances on a quarterly basis, beginning in March.

A portion of the resulting revenues was directed to consumers through the "Regional Climate Bonus", which commenced payout in autumn (see 'Allowance Allocation' section). This bonus was introduced as part of the "Eco-Social Tax Reform" in October 2022 to offset potential price increases from the system. It provides an annual lump-sum payment that is automatically distributed to people who were resident in Austria for at least six months in 2023. The payment, ranging from a minimum of EUR 110 (USD 118.9) to a maximum of EUR 220 (USD 237.9), is determined by the proximity of essential amenities, such as schools and pharmacies, and accessibility to public transport. However, the Austrian legislature has not foreseen a direct earmarking of the revenues resulting from the NEHG for the Regional Climate Bonus.

SECTORS

- INDUSTRY
- BUILDINGS
- TRANSPORT

CAP

No cap in the introduction and transition phases

GREENHOUSE GASES

Several gases

ALLOCATION

Fixed price until 2025; auctioning foreseen from 2026 onwards

AVERAGE 2023 PRICES

Fixed price: EUR 32.50 (USD 35.14)

TOTAL REVENUE

EUR 843 million (USD 911.5 million) since the beginning of the program
EUR 843 million (USD 911.51 million) in 2023

EMISSIONS & TARGETS OF AUSTRIA

GHG EMISSIONS (EXCL. LULUCF), 2021

(in $MtCO_2e$, share of total in %)

Energy	52.1	(67.3%)
Industrial processes	17.0	(21.9%)
Agriculture	7.2	(9.3%)
Waste	1.2	(1.6%)
Total	**77.5**	

Energy industries	8.9	(11.4%)
Manufacturing industries and construction	10.9	(14.1%)
Transport	21.9	(28.3%)
Commercial, institutional, and residential	9.1	(11.7%)
Other energy	1.4	(1.7%)

GHG REDUCTION TARGETS

By 2030: 48% reduction from 2005 (EU Regulation 2023/857)

By 2040: Climate neutrality (foreseen to be established in the current legislative program; not legally binding)

ETS COVERAGE & PHASES

COVERED EMISSIONS

Verified emissions data for coverage are not yet available for 2023.

PHASES

PHASE ONE: Five years (2022-2026), including:
Introduction phase (2022-2023)
Transition phase (2024-2025)
Market phase (starting 2026)

CAP

There is no cap foreseen for the introduction and transition phase. For the market phase, the cap and annual reduction factor are still to be determined.

SECTORS AND THRESHOLDS

The NEHG 2022 covers all distributors (producers/importers) of fossil fuels used in the transport, buildings, and agriculture, as well as from small industries. This essentially concerns the following fossil fuel sources: petrol, gasoil (diesel), heating oil, natural gas, liquefied gas, coal, and kerosene. Fuels in admixture with biogenic fuels receive a lower emissions factor than purely fossil fuels.

Aviation and navigation in international inland waters as well as certain fuels like sustainable LNG are exempt from the surrender of allowances during the fixed-price phase.

Provisions are in place to avoid unnecessary double burdens for installations covered by the EU ETS. Emissions that arise from a fuel delivered to and used in an EU ETS installation must be reported by said installation and can then be exempted from the NEHG 2022. The exemption can be granted in advance, although a subsequent refund is also possible.

In addition, companies that are particularly affected by the NEHG 2022 (e.g., in the transport sector) can also apply for a partial refund of the carbon price to avoid “hardship” cases. The NEHG 2022 also foresees compensatory measures for economic sectors that are at particular risk of relocating their production to countries with less stringent climate policies (carbon leakage) and for firms facing additional costs in the agricultural and forestry sectors.

INCLUSION THRESHOLDS: Trading participants that place less than one tonne of CO_2e emissions per year into circulation are exempt from the obligations.

POINT OF REGULATION

Upstream

TYPE OF ENTITIES

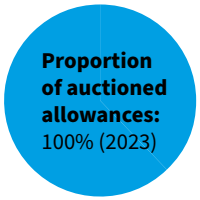
Entities releasing fuels for consumption (e.g., fuel distributors)

NUMBER OF ENTITIES

450

ALLOWANCE ALLOCATION & REVENUE

ALLOWANCE ALLOCATION



Introduction and transition phases (2022-2025): The number of available allowances is not limited. Allowances are sold for an annually increasing fixed price:
2022: EUR 30 (USD 32.44)
2023: EUR 32.50 (USD 35.14)
2024: EUR 45 (USD 48.66)
2025: EUR 55 (USD 59.47)

Market phase (starting January 2026): Auctioning of allowances starts in 2026 with free price determination.

USE OF REVENUES

Assistance for individuals, households, and businesses

Revenues are partly recycled to consumers via the Regional Climate Bonus (see 'Year in Review').

FLEXIBILITY & LINKING

BANKING AND BORROWING
Banking is not allowed during the introduction and transition phase.

OFFSET CREDITS
The use of offset credits is not allowed.

LINKS WITH OTHER SYSTEMS
The NEHG 2022 may eventually transfer into the EU ETS 2 (see the 'EU ETS 2' factsheet for more).

COMPLIANCE

COMPLIANCE MECHANISM
Covered entities must surrender one allowance per tCO_2e emitted for all their covered emissions.

COMPLIANCE PERIOD
One calendar year. Covered entities have until the end of July to surrender allowances to cover the reported emissions of the previous year.

MRV
REPORTING FREQUENCY: Annual self-reporting in the form of an emissions report (Treibhausgasemissionsbericht) based on electronic templates is to be submitted by the end of June. During the introductory phase, a simplified emissions report, which is based on the already available data of the energy tax declarations, is to be submitted by the end of June.

The emissions report must be based on a previously approved monitoring plan. Every modification to the monitoring plan needs to be addressed to the competent authority by the end of each calendar year. During the introductory phase, a simplified registration and emissions reporting regulation applies. In this phase, no monitoring plan must be submitted.

VERIFICATION: The emissions report must be accompanied by a verification report by an independent verifier. During the introductory phase, emission reports must not been accompanied by a verification report by an independent verifier

ENFORCEMENT
During the fixed-price phase, entities must pay an increased certificate price for each tCO_2e for which no allowance has been surrendered, set at two times the fixed price, in addition to a financial penalty.

After the fixed-price phase, entities pay an increased certificate price of EUR 125/tCO_2e (USD 135.16).

For other instances of non-compliance, e.g., misreporting, or late reporting, entities can be fined.

MARKET REGULATION

MARKET DESIGN
The NEHG 2022 does not contain details on the concrete design of the primary market for the market phase. These provisions are expected after the evaluation of the ETS at the end of 2024.

MARKET STABILITY PROVISIONS
PRICE STABILITY MECHANISM: Introduced as an accompanying measure for the introduction and transition phases of the ETS. If the average energy price increases by more than 12.5% within one year, the allowance price increase for the next year decreases by 50% compared to the initially planned increase. Likewise, if the average energy price decreases by more than 12.5%, the allowance price will also increase by 50% in the following year.

Triggers: Due to high energy prices in 2022, the price stability mechanism applied for 2023. The price of an allowance was therefore EUR 32.50 in 2023 (USD 35.14). In 2023, the changes in energy prices did not trigger the price stability mechanism. Thus, allowance prices returned to their foreseen path (EUR 45, USD 48.66 in 2024).

OTHER INFORMATION

INSTITUTIONS INVOLVED

Austrian Federal Ministry for Finance (BMF): Responsible for establishing the regulatory framework of the ETS.

Office for National Emissions Allowance Trading at the Austria Customs Office: Implementing authority, e.g., responsible for receiving emissions reports.

EVALUATION/ETS REVIEW

A first evaluation of the national ETS is expected by mid-December 2024. Article 19 of the NEHG 2022 foresees an evaluation process that covers the specification of the market phase in line with Austria's climate targets, as well as an evaluation of the maintenance of exemptions for certain sectors. The evaluation also considers the transition to the second EU ETS covering the buildings and road transport sectors.

REGULATORY FRAMEWORK

→ National Emissions Trading Act 2022 - NEHG 2022

→ Eco-social tax reform 2022

EUROPEAN UNION

EUROPEAN UNION EMISSIONS TRADING SYSTEM

- **The oldest ETS in force and the largest, in terms of trading volume and value**
- **Reformed in 2023 to align with the EU's 2030 emissions reduction target and the European Green Deal objectives**
- **Linked with the Swiss ETS since 2020**

ETS DESCRIPTION

Operational since 2005, the European Union Emissions Trading System (EU ETS) is the oldest cap-and-trade system in force. It is a cornerstone instrument of the EU's policy framework to combat climate change under the "European Green Deal" and reduce GHG emissions cost-effectively. Until 2023, the system covered emissions from over 10,000 installations and airlines operating in the EU. Collectively, they represent around 38% of the EU's total emissions. From 2024, emissions from large ships are included in the EU ETS.

The EU ETS is currently in its fourth trading phase (2021 to 2030). Every year, covered entities must surrender allowances for their emissions under the EU ETS. Auctioning is the main method of distributing allowances, with free allocation, based on benchmarks, issued to address the risk of carbon leakage.

The EU ETS was revised in 2023 in the context of the European Green Deal to align the system with the 2030 climate target of at least 55% net emissions reductions compared to 1990 levels.

YEAR IN REVIEW

In the first half of 2023, the EU adopted important reforms of the EU ETS framework as part of:

- the "Fit for 55" package, to align the system with the EU's 2030 climate target of at least 55% net emissions reductions compared to 1990 levels and the European Green Deal objectives,
- the EU's response to the energy crisis caused by Russia's invasion of Ukraine ("REPowerEU" plan).

These reforms:

- increased the ambition and expanded the scope of the EU ETS to maritime transport, and introduced a new, separate emissions trading system for buildings, road transport and additional sectors[5] (ETS 2)[6];
- strengthened the Market Stability Reserve (MSR);
- updated the EU ETS regarding aviation;
- updated the rules of the monitoring and reporting of emissions from maritime transport;
- created the Social Climate Fund to complement the new ETS 2; and
- established a Carbon Border Adjustment Mechanism to address the risk of carbon leakage from specific sectors under the EU ETS (as an alternative to free allocation).

1 Within the European Economic Area (EEA) and on routes from the EEA to Switzerland and to the UK.
2 Emissions from all large ships entering EU ports are included, regardless of the flag they fly, covering 50% of emissions from voyages starting or ending outside the EU and 100% of emissions that occur between two EU ports and when ships are in EU ports.
3 Includes revenues from Iceland, Liechtenstein, Norway, and the UK, as well as of the Innovation and Modernisation Funds funded by the EU ETS.
4 Includes revenues from Iceland, Liechtenstein, Norway, and Northern Ireland, as well as of the Innovation and Modernisation Funds funded by the EU ETS.
5 Mainly industry sectors not covered under the existing EU ETS.
6 See EU ETS 2 factsheet.

In force
Under development
Under consideration

SECTORS

POWER
INDUSTRY
AVIATION[1]
MARITIME[2]

CAP

1,386 $MtCO_2e$ (2024, electricity and heat generation, industrial manufacturing and maritime transport)
28.9 $MtCO_2e$ (2024, aviation)

GREENHOUSE GASES

CO_2, HFCs, N_2O, PFCs, SF_6

ALLOCATION

Auctioning
Free Allocation: Benchmarking

AVERAGE 2023 PRICES

Average auction price: EUR 83.24 (USD 90.00)
Average secondary market price: EUR 83.47 (USD 90.25)

TOTAL REVENUE

EUR 184 billion[3] (USD 206 billion) since 2013
EUR 43.6 billion[4] (USD 47.1 billion) in 2023

MEMBER STATES

All EU Member States, plus Iceland, Liechtenstein and Norway (plus power generators in Northern Ireland)

They are in force and their implementation has followed in the second half of 2023.

In May, the European Commission published the seventh communication on the MSR indicator. In addition to managing the supply of allowances to auctions, from 2023 onward the MSR cancels allowances in its holdings above a certain threshold. At the start of January 2023, 2.5 billion allowances from the MSR were cancelled.

To address the impact of the energy crisis following Russia's invasion of Ukraine, the Commission put forward targeted reforms and investments to phase out the EU's dependence on fossil fuel imports, ensure the security of the energy supply, promote energy efficiency, and accelerate the clean energy transition . The REPowerEU Regulation mobilizes the ETS Innovation Fund as one of the funding sources. At the same time, it directs 27 million unallocated allowances from the MSR, which would otherwise become cancelled, to replenish the Innovation Fund.

EMISSIONS & TARGETS OF THE EUROPEAN UNION

GHG EMISSIONS (EXCL. LULUCF), 2021

(in $MtCO_2e$, share of total in %)

Energy	2,662.7	(77%)
Industrial processes	317.9	(9%)
Agriculture	378.4	(11%)
Waste	109.3	(3%)
Total (EU-27)	**3,468.3**	
Total (including UK, Iceland, Liechtenstein, and Norway)	**3,522.1**	

Energy industries	840.4	(24%)
Manufacturing industries and construction	439.5	(13%)
Transport	782.1	(23%)
Commercial, institutional, and residential	454.6	(13%)
Other energy	139.0	(4%)

GHG REDUCTION TARGETS

By 2030: Reduce net emissions to at least 55% below 1990 GHG levels (European Climate Law)

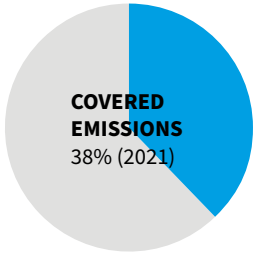
By 2050: Climate neutrality (European Climate Law)

ETS COVERAGE & PHASES

COVERED EMISSIONS

Verified ETS emissions

1,335 $MtCO_2e$ (by 2021)



PHASES

PHASE ONE: 3 years (2005-2007)
PHASE TWO: 5 years (2008-2012)
PHASE THREE: 8 years (2013-2020)
PHASE FOUR: 10 years (2021-2030)

CAP OR TOTAL EMISSIONS LIMIT

A cap limits the total emissions allowed in the system It is set to bring emissions down by 2030 by 62% compared to 2005.

PHASE ONE and PHASE TWO: The cap was calculated bottom-up, based on the aggregation of the national allocation plans of each Member State. Phase 1 started with a cap of 2,096 $MtCO_2e$ in 2005; Phase 2 started with a cap of 2,049 $MtCO_2e$ in 2008.

PHASE THREE:

Installations: A single EU-wide cap was calculated based on emissions' monitoring and set at 2,084 $MtCO_2e$ in 2013. It was reduced annually by a linear factor of 1.74% (applied to the midpoint of 2008-2012 baseline emissions). This translated into a year-on-year reduction of the cap by some 38 million allowances and resulted in a cap of 1,816 $MtCO_2e$ in 2020.

Aviation: Included in the EU ETS in 2012, with a cap calculated separately. Legally, the system covers all outgoing and incoming flights to the EEA. The 2012 cap for aviation amounted to 221 million $MtCO_2e$ (95% of 2004 to 2006 emissions). In 2013, however, the EU temporarily limited ETS obligations to flights within the EEA to support the development of a global market-based measure to reduce aviation emissions by the International Civil Aviation Organization (ICAO). The number of aviation allowances put into circulation in 2013 to 2016 was reduced to 38 million allowances annually. This 'stop-the-clock' limited scope of the EU ETS for aviation was extended until 2023.

PHASE FOUR:

From Phase 4, the linear reduction factor applies annually to the overall cap. The factor is set at 2.2% per year (of 2008 to 2012 baseline emissions) for the period 2021 to 2023, 4.3% for the period 2024 to 2027 and 4.4% from 2028. The cap is also reduced in two steps, by 90 million allowances in 2024 and 27 million allowances in 2026.

Installations: A single EU-wide cap subject annually to the linear reduction factor. Following the 2023 ETS revision, the cap in 2024 amounts to 1,386 $MtCO_2e$. From 2021, the UK is no longer part of the EU ETS except for electricity generators in Northern Ireland.

Maritime: The 2024 cap has been increased by 78.4 million allowances based on the sector's average emissions reported for 2018 and 2019.

Aviation: The aviation cap in 2024 amounts to 28.9 $MtCO_2e$.

From Phase 4, a Member State may cancel allowances from their auction share if they take additional policy measures that result in a closure of electricity generation capacity. The quantity of allowances cancelled shall not exceed the average verified emissions of the installation from five years preceding the closure.

SECTORS AND THRESHOLDS

The EU ETS scope in terms of activities and greenhouse gases is specified in Annex I and Annex II of the "ETS Directive".

PHASE ONE: Power stations and other combustion installations with >20 MW thermal rated input (except hazardous or municipal waste installations), industry (various thresholds) including oil refineries, coke ovens, and iron and steel plants, as well as production of cement, glass, lime, bricks, ceramics, pulp, paper, and cardboard.

PHASE TWO: Several countries included NOx emissions from the production of nitric acid. The EU ETS also expanded to include Iceland, Liechtenstein, and Norway.

Aviation: Emissions from international aviation were included in the EU ETS in 2012 (>10,000 tCO_2/year for commercial aviation; >1,000 tCO_2/year for non-commercial aviation since 2013). However, the EU temporarily limited the scope of the EU ETS for aviation to flights within the EEA. Exemptions for operators with low emissions were introduced.

PHASE THREE: Carbon capture and storage installations, production of petrochemicals, ammonia, nonferrous and ferrous metals, gypsum, aluminum, as well as nitric, adipic, and glyoxylic acid (various thresholds) were added to the scope.

Aviation: In 2017, the limited scope of the EU ETS for aviation was extended until 2023 to support the development of a global measure for aviation emissions under ICAO. Under the Linking Agreement between the EU and Switzerland, from 2020, the EU ETS covers emissions from outgoing flights to Switzerland.

PHASE FOUR: Amendments introduced in view of the UK's departure from the EU and in the 2023 revision of the EU ETS.

Power and industry: The scope of ETS and benchmarks used for free allocation is broadened from 2024 to remove barriers for the deployment of new technologies such as green hydrogen or hydrogen-based steel.

Aviation: Under the "Trade and Cooperation Agreement" between the EU and the UK, the EU ETS applies to emissions from flights departing from the EEA to the UK from 2021 (the UK ETS applies to flights departing to EEA airports).

Emissions from most flights to and from the EU's nine outermost regions as well as from departing flights from these regions to Switzerland and the UK are added to the scope from 2024.

Maritime: From 2024, emissions from all large ships (of 5,000 gross tonnage and above) entering EU ports are covered by the EU ETS, regardless of the flag they fly, covering:

- 50% of emissions from voyages starting or ending outside the EU;
- 100% of emissions that occur between two EU ports and when ships are in EU ports.

Initially, the scope extension to maritime transport concerns CO_2 emissions and then CH_4 and N_2O emissions from 2026.

The obligation for maritime companies to surrender allowances for their emissions is being gradually phased in.

- 2025: for 40% of emissions reported in 2024;
- 2026: for 70% of emissions reported in 2025;
- 2027 onward: for 100% of emissions reported in 2026 and later years.

To ensure environmental integrity during the phase-in, Member States will cancel the number of allowances equivalent to the difference between the surrendered allowances and the verified emissions in 2024 and in 2025.

POINT OF REGULATION

Point source

TYPE OF ENTITIES

Installations (energy and industry); companies (aviation and maritime transport)

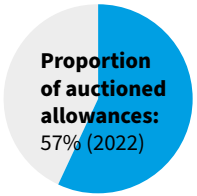
NUMBER OF ENTITIES

2022: 8,640 installations, 390 aircraft operators

The number of regulated shipping companies will become known throughout 2024.

ALLOWANCE ALLOCATION & REVENUE

ALLOWANCE ALLOCATION



PHASE ONE: Allocation was based on Member States' national allocation plans. Allowances were allocated through grandparenting. Some Member States used auctioning and some used benchmark-based allocation.

PHASE TWO:
Auctioning: Eight Member States (Germany, United Kingdom, the Netherlands, Austria, Ireland, Hungary, Czechia, and Lithuania) held auctions corresponding to ~3% of the total allowance allocation.

Free allocation: ~90% of allowances were allocated for free.

PHASE THREE:
Auctioning: The main method of distributing allowances, accounting for up to 57% of the cap. Of the share of allowances to be auctioned, 88% were distributed to Member States based on verified 2005 or average 2005 to 2007 emissions; 10% were allocated between 16 lower-income Member States under the solidarity provision; and the remaining 2% were allocated between the Member States that had reduced their emissions by at least 20% compared to the applicable base year under the Kyoto Protocol.

Free allocation: A significant volume of allowances was allocated for free to address the risk of carbon leakage, based on sectors-specific performance benchmarks. As the demand for free allowances exceeded the volume of allowances available, the free allocation of each installation was subject to a uniform cross-sectoral correction factor — which was revised in 2017.

Power: Auctioning, with an optional transitional free allocation for the modernisation and diversification of electricity generation in ten lower-income Member States. At the end of Phase 3, eligible Member States could decide to continue using this option in Phase 4 (2021 to 2030), monetize remaining allowances, or transfer them to the Modernisation Fund, created under the EU ETS in 2018.

Industry: Free allocation based on sector-specific performance benchmarks, which reflect an average emissions intensity per unit of product of the most efficient 10% of installations in each sector. The European Commission established 54 benchmarks in 2011, using 2007 and 2008 activity data and literature sources (when data was missing). Sectors deemed at risk of carbon leakage received free allocation at 100% of the relevant benchmark. Sub-sectors deemed not at risk of carbon leakage had free allocation reduced gradually from 80% of the respective benchmark in 2013 to 30% by 2020.

The carbon leakage risk was assessed against emissions intensity and trade exposure:
- direct and indirect cost increase >30%; or
- non-EU trade intensity >30%; or
- direct and indirect cost increase >5% and trade intensity >10%.

Cost intensity was determined by the formula:
[Carbon price × (direct emissions × auctioning factor + electricity consumption × electricity emission factor)]/ gross value added

Trade intensity was determined by the formula:
(imports + exports)/(imports + production)

New Entrants' Reserve (NER): 5% of the cap for Phase 3 was set aside to assist new installations or to cover installations whose capacity significantly increased since their free allocation had been determined. 300 million allowances from the reserve were allocated to the NER300, a large-scale funding program for innovative low-carbon energy demonstration projects.

Aviation: 15% of allowances were auctioned and 82% were allocated to aircraft operators for free. The remaining 3% constituted a special reserve for new entrants and fast-growing airlines. The number of allowances put into circulation for the aviation sectors was reduced to reflect the temporary limitation of the scope of the EU ETS to flights within the EEA.

PHASE FOUR:
Auctioning: the main method of distributing allowances, accounting for up to 57% of the cap. Of the share of allowances to be auctioned, 90% are distributed to Member States based on their share of verified emissions, with 10% distributed among the lower-income Member States under the solidarity provision.

Free allocation: A significant volume of allowances is allocated for free to address the risk of carbon leakage, based on sectors-specific performance benchmarks. Benchmark values are updated twice in Phase 4 to reflect technological progress in different sectors. In 2021, the European Commission updated benchmark values for the first time . They apply in 2021 to 2025. The values are adjusted for technological progress on a yearly basis. An annual reduction rate is determined for each benchmark. For the steel sector, which faces high abatement costs and leakage risks, a fixed reduction rate applies.

The uniform cross-sectoral correction factor for the adjustment of free allocation is 1 for 2021 to 2025.

The Phase 4 cap includes a buffer of more than 450 million allowances, initially earmarked for auctioning, which can be made available if the initial free allocation volume is fully absorbed (thereby avoiding the need to apply the cross-sectoral correction factor).

Free allocation for 2026 to 2030 will become conditional on the implementation of energy efficiency measures (based on audits or energy management systems) and of carbon neutrality plans for the worst performing installations, in order to incentivize decarbonization.

Free allocation to specific sectors will be gradually phased out from 2026 to 2034, in parallel to the phase-in of EU Carbon Border Adjustment Mechanism (CBAM) for third-country imports. Those sectors are - iron and steel, cement, aluminum, fertilizers and hydrogen. The CBAM will also apply to electricity imports. The transitional, data collection phase of CBAM started on 1 October 2023, with only reporting but no charges due.

Power Sector: Auctioning, with an optional transitional free allocation for the modernization and diversification of electricity generation in ten lower-income Member States. Three of the eligible Member States decided to continue using this option in Phase 4. It can be used until the end of 2024. After this time, any leftover allowances will be either added to a Member State's share of allowances to be auctioned or its share of the Modernisation Fund.

Industry: Updated benchmark values that apply for 2021 to 2025 were calculated based on activity data for installations over 2016 to 2017, supplied by Member States.

The updated values were compared to the original benchmarks to determine the reductions to be applied over the 15-year period between 2007/08 and 2022/23. Benchmarks could be reduced between 3% and 24% over this period. In total, 31 out of 54 benchmarks have been reduced by the maximum rate of 24%.

There are revised rules covering adjustments to free allocation when an installation makes a significant change to its production. These rules apply from Phase 4. The threshold for adjustments is a 15% increase or decrease in production. Adjustments to free allocation are issued based on yearly production data reports that operators submit to national competent authorities. Adjustments to the level of free allocation are made from the New Entrants' Reserve.

Carbon leakage rules: The third carbon leakage list, adopted in February 2019, applies for 2021 to 2030. The list includes a reduced number of sectors classified at risk of carbon leakage. Free allocation for other sectors will be discontinued by 2030 (except for district heating).

Carbon leakage is assessed against a composite indicator of trade intensity and emissions intensity, according to the following criteria:

Trade intensity x emissions intensity > 0.2

Trade intensity x emissions intensity > 0.15 but < 0.2; qualitative assessment will follow based on abatement potential, market characteristics, and profit margins.

Emissions intensity is determined by:
[direct emissions + (electricity consumption x electricity emission factor)]/ gross value added

Trade exposure is determined by:
(imports + exports)/(imports + production)

New Entrants' Reserve (NER): The initial volume of the NER at the start of Phase 4 amounted to 331.3 million allowances. This included unallocated allowances from Phase 3 and 200 million allowances from the MSR.

Aviation: Phase 3 breakdown applied until 2023. Free allocation to aviation will be phased out gradually – reduced to 75% in 2024, 50% in 2025 and eventually to 0% from 2026 onward.

USE OF REVENUES


General budget, including debt reduction


Climate mitigation


Low-carbon innovation


Assistance for individuals, households, and businesses

Revenue from the auctioning of allowances under the EU ETS accrues primarily to Member States' budgets. Of the revenues generated until mid-2023, Member States were instructed to use at least 50% for climate- and energy-related purposes. Member States are required to use all revenues generated from that point onward to support climate and energy objectives.

Member States can use their EU ETS revenues to finance State aid to certain electricity-intensive industries to compensate for the additional electricity costs they face as a result of the EU ETS. They do so under State aid schemes that are approved by the European Commission. Every year, they must publish the total compensation amounts paid out, including a breakdown per recipient sector and subsector. The overall spending under a scheme should not exceed 25% of a Member State's ETS revenue.

Member States report annually to the European Commission on how they spent their auction revenues. To date, Member States have reported having spent ~76% of EU ETS revenues on climate- and energy-related purposes, both domestic and international.

A share of EU ETS allowances is auctioned to supply the Innovation and Modernisation Funds – two funds established for Phase 4 to support decarbonization in the covered sectors.

Innovation Fund: Supports the commercial demonstration of innovative low-carbon technologies and industrial solutions to decarbonize Europe's energy-intensive industries, as well as the development of renewable energy, energy storage and carbon capture use and storage.

Modernisation Fund: Supports investments in lower-income Member States aimed at modernizing energy systems, improving energy efficiency, and supporting a socially just transition to climate neutrality. It is one of the solidarity mechanisms of the EU ETS, which addresses Member States' different starting points in the decarbonization challenge.

FLEXIBILITY & LINKING

BANKING AND BORROWING

Banking is allowed (since 2008).

Borrowing is not allowed.

OFFSET CREDITS

PHASE ONE: The use of the Clean Development Mechanism (CDM) and Joint Implementation (JI) credits was allowed without limitation. In practice, no offset credits were used in Phase 1.

PHASE TWO:

The use of offset credits was allowed. 1,058 $MtCO_2e$ of international credits were used.

Qualitative limits: Most categories of CDM/JI credits were allowed, except for LULUCF and nuclear power. Strict requirements applied for large hydro projects exceeding 20 MW.

Quantitative limits: In Phase 2, operators were allowed to use JI and CDM credits up to a certain percentage limit determined in the respective country's National Allocation Plan. Unused entitlements were transferred to Phase 3.

PHASE THREE:

The use of offset credits was allowed with strict limitations.

Qualitative limits: Newly generated international credits (post-2012) had to originate from projects in least developed countries. Credits from CDM and JI projects from other countries were eligible only if registered and implemented before the end of 2012. Projects from industrial gas credits (projects involving the destruction of HFC-23 and N_2O) were excluded regardless of the host country. Credits issued for emission reductions that occurred in the first commitment period of the Kyoto Protocol were no longer accepted after March 2015.

Quantitative limits: The total use of credits for Phase 2 and Phase 3 was capped at 50% of the overall reduction under the EU ETS in that period (~1.6 Gt CO_2e).

PHASE FOUR:

The use of offset credits is not allowed.

LINKS WITH OTHER SYSTEMS

The EU ETS and the Swiss ETS have been linked since 2020. This means that allowances issued in one system can be surrendered for emissions generated in either of the two systems. The "Linking Agreement" between the EU and Switzerland sets out the conditions and requirements under which the two systems are linked. A direct link was created between the registries of both systems. It allows regulated entities to transfer allowances from an account in one system to an account in the other system.

COMPLIANCE

COMPLIANCE MECHANISM

Covered entities must surrender one allowance per tCO_2e emitted for their covered emissions.

COMPLIANCE PERIOD

One calendar year.

MRV

A harmonized framework of monitoring, reporting, verification and accreditation requirements underpins the EU ETS functioning. Every year, Member States report on implementation of this framework:

- "Monitoring and Reporting Regulation (2018/2066)"
- "Accreditation and Verification Regulation (2018/2067)"
- "Monitoring and Reporting Regulation for maritime transport (2015/757)"

MONITORING: Each installation, aircraft operator and maritime transport operator is required to have an emission monitoring plan, approved by a national competent authority. The deadline for submitting an emissions report is the end of March (for the preceding calendar year).

REPORTING: Emission reports submitted annually using templates.

VERIFICATION: Emission reports are verified by independent accredited verifiers before the end of March of the following year. Once verified, operators must surrender the equivalent number of allowances by the end of September.

In addition to the detail set out here, a dedicated monitoring, reporting and verification framework for non-CO_2 aviation effects is due to start from January 2025.

ENFORCEMENT

Regulated entities must pay an excess emissions penalty of EUR 100 (USD 108.13), adjusted for inflation, for each tCO_2 emitted for which no allowance has been surrendered, in addition to buying and surrendering the equivalent number of allowances. The name of the non-compliant operator is also made public. Member States may enforce different penalties for other forms of non-compliance.

MARKET REGULATION

MARKET DESIGN

MARKET PARTICIPATION: Compliance entities and non-compliance entities.

MARKET TYPES:

Primary: Uniform price auctions with single rounds and sealed bids, conducted daily by EEX. Germany has opted out of the common auctioning platform, instead running national auctions through the EEX. Poland has also opted out but continues to participate on the common auction platform at the EEX until further notice.

Secondary: Spot, futures, options, and forward contracts are traded on the secondary markets, both on exchange and over the counter. Besides the EEX, futures are traded on ICE, ENDEX and Nasdaq.

LEGAL STATUS OF ALLOWANCES:

Classified as financial instruments. The associated derivatives can hence be traded on secondary markets.

MARKET STABILITY PROVISIONS

BACKLOADING: As a short-term measure implemented in Phase 3 to address a growing surplus of allowances in the EU ETS. Auctioning of 900 million allowances was postponed from the period spanning 2014 to 2016 until 2019 and 2020. The allowances were eventually placed in the Market Stability Reserve.

MARKET STABILITY RESERVE (MSR): The MSR was created in 2015 as a long-term measure to address a growing surplus of allowances in the EU ETS. It adjusts auction volumes according to pre-defined thresholds of the total number of allowances in circulation (TNAC), fostering balance in the EU carbon market and resilience to demand shocks. The MSR started operating in 2019.

Triggers: The Commission publishes the TNAC communication every year.

- If the TNAC is above 1,096 million, 24% of its volume is withdrawn from future auctions and placed into the MSR over a period of 12 months.
- If the TNAC is between 833 and 1,096 million, to mitigate threshold effects a smaller share of allowances is deducted from auction volumes and placed in the MSR.
- If the TNAC is less than 400 million allowances, 100 million allowances are released from the MSR and auctioned.

CANCELLATIONS: From 2023, allowances in the MSR above a certain threshold are cancelled annually. In 2023, the applicable threshold was the 2022 auction volume. From 2024, the applicable threshold is fixed at 400 million.

At the end of December 2022, the MSR contained over 3 billion allowances. The 2022 auction volume amounted to 486 million allowances. This led to a cancellation of 2,515 million allowances in January 2023.

Swiss ETS allowance supply is not considered in the TNAC, and Swiss auction quotas are not affected by the MSR.

OTHER INFORMATION

INSTITUTIONS INVOLVED

European Commission: Responsible for establishing the regulatory framework of the EU ETS and centralized administration of the system, e.g., the EU registry.

Competent authorities of all EU Member States as well as Iceland, Liechtenstein, and Norway: implementation, e.g., verifying compliance with MRV and surrender obligations.

EVALUATION/ETS REVIEW

The European Commission publishes annual reports on the functioning of the European carbon market (2023 report on the EU ETS functioning in 2022).

The ETS Directive stipulates that the system is kept under review in light of the implementation of the Paris Agreement and the development of carbon markets in other major economies. Three major EU ETS reviews — before Phase 3, before Phase 4, and in the context of increasing the EU 2030 climate target — have been conducted to date.

By the end July 2026, the European Commission will assess:

- how negative emissions could be accounted for and covered under the EU ETS,
- the feasibility of lowering the 20 MW total rated thermal input thresholds for the activities under the EU ETS,
- effective accounting and avoidance of double counting of CCU products under the EU ETS,
- the feasibility of including municipal waste incineration under the EU ETS,
- the functioning of the EU ETS for aviation, including the functioning of CORSIA.

By the end of December 2027, the Commission will assess the possibility of the scope of the EU ETS to include non-CO_2 aviation emissions.

REGULATORY FRAMEWORK

→ **Directive 2003/87/EC** of the European Parliament and of the Council establishing a scheme for GHG emission allowance trading within the Community and amending Council Directive 96/61/EC.

→ **Decision concerning the establishment and operation of a market stability reserve** for the Union GHG emission trading scheme and amending Directive 2003/87/EC (6 October 2015).

→ **Consolidated Auctioning Regulation:** Commission Delegated Regulation 2023/2830 supplementing Directive 2003/87/EC

→ All other legislation and documentation can be found **here**.

EUROPEAN UNION

EMISSIONS TRADING SYSTEM 2

- New emissions trading system due to start in 2027, with monitoring and reporting of emissions to start in 2025
- Will cover emissions from combustion fuels used in the buildings, road transport and additional sectors (mainly small industry not covered by the existing EU ETS)
- Part of the revenues to be directed to the newly created Social Climate Fund

DESCRIPTION

In July 2021, the European Commission proposed the "Fit for 55" package of reforms to align EU climate and energy policy with the objectives of the "European Green Deal", most importantly the ambitious 2030 climate target of reducing net emissions to at least 55% below the 1990 level. The package included important amendments to the EU ETS framework, including a proposal to extend emissions trading to new sectors. These amendments were adopted in the first half of 2023 and are now in force.

A new, separate emissions trading system (ETS 2) will be established for emissions from fuels used for combustion in buildings, road transport and additional sectors (mainly small industry not covered by the existing EU ETS). The ETS 2 will complement other policies of the European Green Deal in the covered sectors, helping Member States achieve their emission reduction targets under the "Effort Sharing Regulation" (Regulation (EU) 2018/842).

The ETS 2 is based on the 'cap-and-trade' principle. It will cover emissions upstream, meaning the obligation to surrender allowances will fall on the fuel suppliers rather than end-consumers. The ETS 2 cap will be set to bring emissions down by 42% by 2030 compared to 2005 level.

The ETS 2 is due to become fully operational in 2027. As a first step, the monitoring and reporting of emissions from the covered sectors will already start in 2025. To necessary rules were adopted in October 2023.

Allowances in the ETS 2 will be distributed exclusively via auctioning. In 2027, an additional auction volume will be front-loaded to ensure a smooth start of the system. The ETS 2 will also operate with a dedicated, rule-based market stability reserve to mitigate insufficient or excessive supply of allowances to the market.

A share of revenues from the ETS 2 will be used to support vulnerable households and micro-enterprises through a dedicated Social Climate Fund, created as part of the "Fit for 55" package. Member States will be required to use the remaining ETS 2 revenues for climate action and social measures.

YEAR IN REVIEW

The revision of the ETS Directive in the context of the European Green Deal and the "Fit for 55" was adopted in May 2023 and is now in force. It has introduced ETS 2 for emissions from fuel combustion in buildings, road transport and additional sectors (mainly small industry not covered by the EU ETS). A separate regulation which was also adopted in May 2023 created the Social Climate Fund, which will pool a share of revenues from the auctioning of allowances in the ETS 2 to finance decarbonisation measures and investments in the covered sectors.

In October 2023, rules for the monitoring and reporting of emissions in the ETS 2 were approved.

In force

Under development

Under consideration

SECTORS

BUILDINGS

TRANSPORT

ADDITIONAL SECTORS (MAINLY SMALL INDUSTRY)[1]

GREENHOUSE GASES

CO_2

MEMBER STATES

All EU Member States, plus Iceland, Liechtenstein and Norway

EMISSIONS & TARGETS OF THE EUROPEAN UNION

GHG EMISSIONS (EXCL. LULUCF), 2021

(in $MtCO_2e$, share of total in %)

Energy	2,662.7	(77%)
Industrial processes	317.9	(9%)
Agriculture	378.4	(11%)
Waste	109.3	(3%)
Total (EU-27)	**3,468.3**	
Total (including Iceland, Liechtenstein, and Norway)	**3,522.1**	

Energy industries	840.4	(24%)
Manufacturing industries and construction	439.5	(13%)
Transport	782.1	(23%)
Commercial, institutional, and residential	454.6	(13%)
Other energy	139.0	(4%)

GHG REDUCTION TARGETS

By 2030: Reduce net emissions to at least 55% below 1990 levels (European Climate Law)
By 2050: Climate neutrality (European Climate Law)

ETS COVERAGE & PHASES

SECTORS AND THRESHOLDS

Fuel combustion in road transport, heating and cooling in buildings and additional sectors (mainly small industry)

POINT OF REGULATION

Upstream

TYPE OF ENTITIES

Entities releasing fuels for consumption (e.g., fuel distributors)

ALLOWANCE ALLOCATION & REVENUE

ALLOWANCE ALLOCATION

Allowances in the ETS 2 will only be auctioned. A share of ETS 2 allowances will be allocated to and auctioned for the Social Climate Fund. All remaining ETS 2 allowances will be distributed among Member States to be auctioned, based on the average distribution of emissions in the covered sectors over 2016 to 2018.

USE OF REVENUES

- Climate mitigation
- Pursuit of other development objectives, such as education and health
- Assistance for individuals, households, and businesses

The Social Climate Fund is created alongside the ETS 2 to help EU Member States in financing structural measures and investments in energy efficiency and renovation of buildings, clean heating and cooling and integration of renewable energy, as well as in zero- and low-emission mobility solutions. Member States will also have the option of spending part of the resources on temporary direct income support.

All measures and investments will be compiled in national Social Climate Plans. The Fund will pool resources from the auctioning of allowances in the ETS 2 as well as of 50 million allowances from the EU ETS. Together with a mandatory 25% contribution of the Member States to their Social Climate Plans, the Fund should mobilise at least EUR 86.7 billion (USD 94.2 billion) between 2026 and 2032.

Member States will be required to use their remaining ETS 2 revenues for climate action and social measures.

COMPLIANCE

COMPLIANCE MECHANISM

Covered entities must surrender one allowance per tonne of CO_2 emitted for all their verified emissions in a compliance period.

COMPLIANCE PERIOD

One year. Deadline for surrendering allowances: end of May every year from 2028.

MRV

MONITORING: Starts in 2025. The monitoring approach is to use scope factors to distinguish final consumption sectors and emission factors for fuel types.

REPORTING: Starts in 2025. By the end of April 2025, covered entities must submit their first emission reports for the historical emissions in 2024. From 2026, covered entities will report verified emissions based on the monitoring.

VERIFICATION: Verification of emission reports by an independent accredited verifier is required from 2026.

MARKET REGULATION

MARKET STABILITY PROVISIONS

The ETS 2 has been designed to start smoothly and efficiently. Over the course of 2027, a 30% higher volume of allowances will be auctioned to provide market liquidity. The ETS 2 will also operate with a dedicated, rule-based market stability reserve to mitigate insufficient or excessive supply of allowances to the market, and with measures in the event of an excessive price increase.

ETS 2 MARKET STABILITY RESERVE (MSR): The reserve will be initially endowed with 600 million allowances.

TRIGGERS: During the first three years the ETS 2 is operational, if the price of allowances exceeds EUR 45 (USD 49) (in 2020 prices, i.e. adjusted for inflation), additional allowances may be released from the ETS 2 market stability reserve to address excessive price increases. Allowances may also be released from this reserve if the price of allowances increases too rapidly, according to specific rules and conditions.

OTHER INFORMATION

INSTITUTIONS INVOLVED

European Commission: responsible for establishment of the ETS 2 legal framework.
Competent authorities of all EU Member States: responsible for implementation of ETS 2.

REGULATORY FRAMEWORK

- → Directive (EU) 2023/959 of the European Parliament and of the Council amending Directive 2003/87/EC establishing a system for GHG emissions allowance trading and Decision (EU) 2015/1814 on MSR for the GHG emission trading system
- → Regulation (EU) 2023/955 of the European Parliament and of the Council establishing a Social Climate Fund and amending Regulation (EU) 2021/1060
- → Commission Implementing Regulation (EU) 2023/2122 updating the monitoring and reporting of greenhouse gas emissions pursuant to Directive 2003/87/EC

GERMANY

GERMAN NATIONAL EMISSIONS TRADING SYSTEM

- **German ETS introduced in 2021 covering upstream heating and transport fuels**
- **Fixed price per tonne CO_2 from 2021 to 2025, auctioning starting in 2026 with a price corridor**

ETS DESCRIPTION

Germany launched its national ETS (Nationales Emissionshandelssystem) for heating and transport fuels in 2021. With the introduction of the ETS, a wide range of sectors in Germany are now subject to a carbon price.

The national ETS complements the EU ETS by covering all fuel emissions not covered by the bloc's system. It is being phased in gradually, with an increasing fixed price per tCO_2 from 2021 to 2025. In 2026, auctions with minimum and maximum prices will be introduced. All main fuel types (gasoline, diesel, heating oil, natural and liquid gases) have been covered from the outset, while other fuels such as coal and the incineration of waste will gradually be phased in by the end of 2024. During the fixed price and price corridor phases, the cap is flexible. Covered entities must surrender allowances for all their covered emissions, and allocation is based on auctions or free allocation.

The national ETS was established through the 2019 "Fuel Emissions Trading Act" 2019, which was amended in 2020, 2022 and again in 2023. It forms part of the "Climate Action Program 2030", a package of measures adopted by the German Federal Cabinet to reach Germany's 2030 climate targets and aim for climate neutrality by 2045.

YEAR IN REVIEW

In 2023, the German government successfully concluded all legislative adjustments to the German national ETS.

In November, a EUR 60 billion (USD 64.9 billion) budgetary shortfall emerged due to a significant ruling by Germany's Constitutional Court, resulting in a EUR 17 billion (USD 18.4 billion) financial gap for the year 2024. Subsequently, in December, the German parliament approved a departure from the initially proposed EUR 5 (USD 5.41) increase for 2024, endorsing a EUR 15 (USD 16.21) hike in carbon prices (from EUR 30 (USD 32.44) in 2023 to EUR 45 (USD 48.66) in 2024) set to take effect in January 2024.

Additionally, the inclusion of GHG emissions from the combustion of coal began as planned from January 2023. The inclusion of fuels used in waste incinerators in the ETS began in January 2024.

In force
Under development
Under consideration

SECTORS

- INDUSTRY
- BUILDINGS
- TRANSPORT
- WASTE

CAP

280.1 $MtCO_2$ (2023)

GREENHOUSE GASES

CO_2

ALLOCATION

Fixed price until 2025, auctioning thereafter
Price corridor foreseen for 2026

AVERAGE 2023 PRICES

Fixed price: EUR 30 (USD 32.44)

TOTAL REVENUE

EUR 24.3 billion (USD 26.3 billion) since the beginning of the program
EUR 10.7 billion (USD 11.6 billion) in 2023

EMISSIONS & TARGETS OF GERMANY

GHG EMISSIONS (EXCL. LULUCF), 2021: 750 $MtCO_2e$

(in $MtCO_2e$, share of total in %)

Energy	642.3	(84%)
Industrial processes	57.1	(8%)
Agriculture	56.3	(7%)
Waste	4.4	(1%)
Total	**760.3**	

Energy industries	240.4	(32%)
Manufacturing industries and construction	126.0	(17%)
Transport	147.6	(19%)
Commercial, institutional, and residential	117.0	(16%)
Other energy	11.1	(1%)

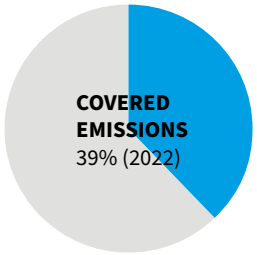
GHG REDUCTION TARGETS

By 2030: 65% below 1990 GHG levels (Climate Change Act)
By 2045: Climate neutrality (Climate Change Act)

ETS COVERAGE & PHASES

COVERED EMISSIONS

Verified ETS emissions
291.1 $MtCO_2$ (2022)



PHASES

PHASE ONE: Ten years (2021 to 2030)

CAP OR TOTAL EMISSIONS LIMIT

A cap limits the total emissions allowed in the system.

PHASE ONE: The cap is set in line with Germany's reduction targets for the non-EU ETS sectors as defined by the "European Effort Sharing Regulation" (ESR). Given the revision of the ESR as part of the "Fit for 55" package, the German government has set a revised cap for the national ETS that decreases yearly in accordance with reduction targets.

During the fixed-price period from 2021 to 2025, and as long as a price corridor is deemed necessary, the cap is flexible. If emissions (and therefore the demand for allowances) within the German ETS exceed the cap, additional allowances will be available for covered entities.

These flexibility provisions will become void as soon as price determination is left solely to the market. The cap will also be binding at this point.

SECTORS AND THRESHOLDS

The German ETS covers all fuel distributors and suppliers. It applies to all fuels used in the transport sector and for the production of heat, e.g., fuel oil, LPG, natural gas, coal, gasoline, and diesel.

Biomass used as fuel in the transport sector and for heating purposes generally also falls under the scope of the system. However, emissions from biogenic fuels that meet the sustainability criteria as set out in national regulations transposing the "European Renewable Energy Directives 2029/28/EC" and "2018/2001" do not face compliance obligations.

The system started with a limited scope in 2021 and 2022, including fuel oil, LPG, natural gas, gasoline, and diesel. Coal was added in 2023. Fuels used in waste incineration are covered from 2024 onwards.

Provisions have been put in place to avoid double compliance burdens for installations covered by the EU ETS. Emissions that arise from a fuel delivered to and used in an EU ETS installation must be reported by the EU ETS installation in all cases. These emissions may then be deducted from the reported emissions of the fuel distributor under the German ETS if:

A) evidence can be provided that the emissions have been reported by the receiving EU ETS installation; and
B) no carbon price has been passed through.

If such evidence cannot be provided or if carbon costs were passed through from the supplier under the system to the EU ETS installation, the supplier is obligated to report and surrender allowances to cover the emissions. In such a case, the EU ETS installation upon application receives full compensation for the price that has been passed through.

POINT OF REGULATION

Upstream

NUMBER OF ENTITIES

2,000 (2023)

ALLOWANCE ALLOCATION & REVENUE

ALLOWANCE ALLOCATION

PHASE ONE

Fixed price phase (2021-2025): Allowances are sold for a fixed price. The price increase for 2023 was suspended and further increases have been postponed by one year as a response to the energy crisis. The new price schedule is as follows:

- **2021:** EUR 25 (USD 27.03)
- **2022:** EUR 30 (USD 32.44)
- **2023:** EUR 30 (USD 32.44)
- **2024:** EUR 45 (USD 48.66)
- **2025:** EUR 55 (USD 59.47)

Generally, the yearly fixed price only applies to allowances acquired in the respective calendar year. However, up to 10% of allowances needed for compliance obligations for year X can be acquired until the end of September of year X+1 at the fixed price of year X.

Auctioning phase (from 2026): Will commence as planned in 2026. A price corridor with a minimum price of EUR 55 (USD 59.78) and a maximum price of EUR 65 (USD 70.65) per tCO_2 will apply in 2026.

CARBON LEAKAGE RULES: The German ETS is accompanied by a compensation mechanism to avoid carbon leakage for emissions-intensive trade-exposed sectors. Regulations were released in July 2021 and will have retroactive effect. The carbon leakage rules apply to companies from emission-intensive sectors that face international competition. Industries eligible for compensation are those on the carbon leakage list of the EU ETS Phase 4. Therefore, firms from the same industrial sector regulated under the German ETS and EU ETS should be treated equally.

Additional sectors/sub-sectors may qualify upon request if they meet thresholds for emissions and trade intensity. In contrast to the EU ETS, the German ETS does not use free allocation, but compensation based on sectoral fuel benchmarks and fixed compensation levels.

USE OF REVENUES

Climate mitigation

Pursuit of other development objectives, such as education and health

Assistance for individuals, households, and businesses

All revenues from the national ETS go into the Government's "Climate and Transformation Fund" (*Klima- und Transformationsfond* – KTF). This fund is used to support measures under the climate protection program. These include GHG reduction programs – e.g., incentivizing climate-friendly transport and energy-efficient buildings – and direct assistance to industry or households.

FLEXIBILITY & LINKING

BANKING AND BORROWING

Banking is not allowed during the fixed price phase. However, up to 10% of allowances of year x can be acquired at the price of year x until September of year x+1. Banking will be allowed in the auctioning phase.

Borrowing is not allowed.

OFFSETS AND CREDITS

The use of offset credits is not allowed.

LINKS WITH OTHER SYSTEMS

The German national ETS is not linked with any other system.

COMPLIANCE

COMPLIANCE MECHANISM

Covered entities must surrender one allowance per tCO_2e emitted for all their covered emissions.

COMPLIANCE PERIOD

One calendar year. Entities have until the end of September to surrender allowances to cover the reported emissions of the previous year.

MRV

REPORTING FREQUENCY: Annual self-reporting in the form of an emissions report based on electronic templates to be submitted by the end of July.

From 2023 onwards, the emissions report must be based on a previously approved monitoring plan. Due to a high level of standardization of the permitted reporting methods during the first two years, the monitoring plan requirement was waived for 2021 and 2022.

Emissions data are recorded in a national registry and are publicly available.

VERIFICATION: Verification of the annual emissions by accredited independent third-party verifiers has been mandatory from 2023 onwards. As with the monitoring plan requirement, the verification requirement was waived for the years 2021 and 2022.

ENFORCEMENT

During the fixed-price phase, entities must pay an excess emissions penalty for each tCO_2 emitted for which no allowance has been surrendered, set at two times the fixed price. Payment of the penalty does not release the entity from the obligation to surrender allowances to cover the emissions; entities remain obliged to purchase and surrender the outstanding allowances.

After the fixed-price phase, entities must pay an excess emissions penalty of EUR 100/tCO_2 (USD 108.13) for each tCO_2 emitted for which no allowance is surrendered. This amount will increase annually in line with the European consumer price index.

For other instances of non-compliance, e.g., misreporting, or late reporting, entities can be fined.

MARKET REGULATION

MARKET DESIGN

MARKET PARTICIPATION: Trading accounts can be held by any domestic or international natural or legal person. Compliance entities can buy allowances directly from the trading platform or via financial intermediaries.

MARKET TYPES:

Primary: EEX is the German ETS's auction platform. During the fixed-price phase, allowances are issued at the predetermined price. Auctioning will only start in 2026.

Secondary: Allowances can be purchased on the secondary market throughout the year.

LEGAL STATUS OF ALLOWANCES: Allowances do not have the status of financial instruments or derivates according to the "German Banking Act" or the "Securities Trading Act".

MARKET STABILITY PROVISIONS

Additional allowances exceeding the cap can be acquired by entities in the fixed-price phase.
In 2026, auctions of allowances will contain a price corridor of a minimum price per tCO_2 of EUR 55 (USD 59.78) and a maximum price of EUR 65 (USD 70.65).

OTHER INFORMATION

INSTITUTIONS INVOLVED

German Federal Ministry for Economic Affairs and Climate Action (BMWK): Authority responsible for establishing the regulatory framework of the national ETS.
German Emissions Trading Authority (DEHSt) at the German Environment Agency (UBA): Implementing authority, e.g., responsible for the registry and receiving emission reports.

EVALUATION/ETS REVIEW

The German government published its first **evaluation report** in December 2022. It analyzes the program implementation, impacts, and assesses the inclusion of waste from 2024.

The next evaluation report will be published in 2024. From 2024 onwards, the German ETS will be evaluated every four years.

REGULATORY FRAMEWORK

- → **Fuel Emissions Trading Act**
- → **Emissions Reporting Regulation 2022**
- → **Fuel Emissions Trading Regulation**
- → **Carbon Leakage Regulation**

KAZAKHSTAN

KAZAKHSTAN EMISSIONS TRADING SYSTEM

- Currently in Phase 5
- Full transition to benchmarking in 2021
- Plans to introduce auctioning

ETS DESCRIPTION

Kazakhstan launched its ETS (KAZ ETS) in January 2013. It covered around half of Kazakhstan's CO_2 emissions in 2022, stemming from 201 installations in the power, centralized heating, extracting industries, and manufacturing sectors.

The KAZ ETS cap is formed bottom up based on installations' expected production output and a benchmark. A reserve of allowances, on top of the cap, is further available to covered entities in case they exceed their planned output. In 2022, a total of 8.7 $MtCO_2$ allowances from the reserve were issued to 57 regulated installations.

Since 2021, all allowances have been allocated through benchmarking. There is no quantitative limit to the offset credits that covered entities can use for compliance. Domestic offset projects in all economic sectors, other than at installations covered by the ETS, can generate credits. In 2023, a domestic offsetting standard, the Qazaq Green Certificate Program, was developed. It is yet to be decided if the credits certified under this standard will be eligible under KZ ETS.

Previously, groundwork for the development of the ETS was laid out in 2011 through amendments to Kazakhstan's existing environmental legislation. The system was briefly suspended in 2016 and 2017 to tackle operational issues and reform allocation rules, although MRV obligations still applied.

YEAR IN REVIEW

The introduction of auctioning is currently under preparation.

In force

Under development

Under consideration

SECTORS

POWER, OIL & GAS

INDUSTRY

CAP

161.2 $MtCO_2$ (2024)

GREENHOUSE GASES

CO_2

OFFSET CREDITS

Domestic

ALLOCATION

Free Allocation: Benchmarking

AVERAGE 2023 PRICES

Average secondary market price: KZT 473 (USD 1.04)

EMISSIONS & TARGETS OF KAZAKHSTAN

GHG EMISSIONS (EXCL. LULUCF), 2021

(in $MtCO_2e$, share of total in %)

Energy	261.5	(77%)
Industrial processes	27.1	(8%)
Agriculture	42.8	13%
Waste	6.2	(2%)
Total	**338.1**	

Energy industries	126.6	(37%)
Manufacturing industries and construction	24.3	(7%)
Transport	25.1	(7%)
Commercial, institutional, and residential	40.3	(12%)
Other energy	45.5	(13%)

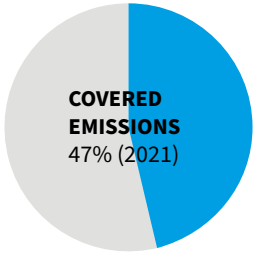
GHG REDUCTION TARGETS

By 2030: 15% (unconditional) to 25% (conditional) reduction from 1990 GHG levels (NDC)
By 2050: 40% CO_2 emission reduction in power sector from 2012 levels (Concept of Transition to Green Economy, 2013)
By 2060: Carbon neutrality (pledge during United Nations Climate Ambitions Summit in 2020)

ETS COVERAGE & PHASES

COVERED EMISSIONS

Verified ETS emissions
159.9 $MtCO_2$ (2021)



PHASES

PHASE ONE: One year (2013)
PHASE TWO: Two years (2014-2015)
(2016-2017: System suspended)
PHASE THREE: Three years (2018-2020)
PHASE FOUR: One year (2021)
PHASE FIVE: Four years (2022-2025)

CAP OR TOTAL EMISSIONS LIMIT

A cap limits the total emissions allowed in the system.

PHASE ONE: 147 $MtCO_2$ (plus new entrants' reserve of 20.6 $MtCO_2$). This equaled a stabilization of the capped entities' emissions at 2010 levels.

PHASE TWO:
2014: 154.9 $MtCO_2$ (plus a reserve of 18 $MtCO_2$)
2015: 152.8 $MtCO_2$ (plus a reserve of 20.5 $MtCO_2$)

This represented reduction targets of 0% and 1.5% respectively, compared to the average CO_2 emissions of capped entities in 2011 to 2012.

PHASE THREE: 485.9 $MtCO_2$ (plus a reserve of 35.3 $MtCO_2$). The cap was set at a 5% reduction by 2020 from 1990 levels. The cap was allocated for the overall compliance period of 2018-2020; there was no yearly cap.

PHASE FOUR: 159.9 $MtCO_2$ (plus a reserve of 11.5 $MtCO_2$).

PHASE FIVE: 649.8 $MtCO_2$ for the overall period, with declining annual caps.
2022: 166.2 $MtCO_2$ (plus a reserve of 11.8 $MtCO_2$)
2023: 163.7 $MtCO_2$ (plus a reserve of 11.6 $MtCO_2$)
2024: 161.2 $MtCO_2$ (plus a reserve of 11.5 $MtCO_2$)
2025: 158.8 $MtCO_2$ (plus a reserve of 11.3 $MtCO_2$)

SECTORS AND THRESHOLDS

PHASE ONE: Power sector and centralized heating; extractive industries and manufacturing: oil and gas mining, metallurgy, chemical industry.
PHASE TWO: Same as Phase 1.
PHASE THREE: Same as Phase 1 plus processing industry (production of building materials: cement, lime, gypsum, and brick).
PHASE FOUR: Same as Phase 3.
PHASE FIVE: Same as Phase 3.

INCLUSION THRESHOLDS: Facilities emitting more than 20,000 tCO_2/year.

POINT OF REGULATION

Point source

TYPE OF ENTITIES

Installations

NUMBER OF ENTITIES

128 companies (201 installations)

ALLOWANCE ALLOCATION & REVENUE

ALLOWANCE ALLOCATION

PHASE ONE: Free allocation (grandparenting). Based on emissions data from 2010.

PHASE TWO: Grandparenting (0% and 1.5% below 2011-2012 average emissions), with a reserve of 18 $MtCO_2$ in 2014 and 20.5 $MtCO_2$ in 2015.

PHASE THREE: Grandparenting or product-based benchmarking, chosen by each company (149 installations chose benchmarking and 76 chose grandparenting). Additionally, there was a reserve of 35.3 million allowances for new entrants, new stationary emission sources, and changes in output in case of the choice of benchmarking.

PHASE FOUR: Benchmarking. A reserve contained 11.5 million allowances for the same purposes as in Phase 3.

PHASE FIVE: Benchmarking. A reserve contains 46.3 million allowances for new entrants, new stationary emission sources, changes in output and for (planned) auctioning.

FLEXIBILITY & LINKING

BANKING AND BORROWING

Banking is allowed within each phase, but not between phases.

Borrowing is not allowed.

OFFSET CREDITS

The use of offset credits is allowed.

QUALITATIVE LIMITS: Domestic offsets credits in all economic sectors (GHG reduction or absorption activities) outside the scope of the ETS are allowed. Project applicants can submit their projects for consideration to the Ministry of Ecology and Natural Resources for approval and issuance of offset credits. These are carried out in accordance with IPCC methodologies and rules developed by the ministry.

QUANTITATIVE LIMITS: None.
No offset credits were surrendered for compliance in 2022.

LINKS WITH OTHER SYSTEMS

The Kazakhstan ETS is not linked with any other system.

COMPLIANCE

COMPLIANCE MECHANISM

Covered entities must surrender one allowance per tCO_2e emitted for all their covered emissions.

COMPLIANCE PERIOD

One year, due by the start of April of the year following the reporting period.

MRV

REPORTING FREQUENCY: Reporting is required annually for installations above the 20,000 tCO_2/year threshold.

Annual reporting is also required for operators of installations with emissions between 10,000 tCO_2/year and 19,999 tCO_2/year ("subjects to administration"). However, these operators are not required to participate in the ETS or to verify their annual emission reports. Reporting is required for CO_2, CH_4, N_2O, and PFC emissions.

VERIFICATION: Emissions data reports and their underlying data require third-party verification by an accredited auditor.

FRAMEWORK: Environmental Code of the Republic of Kazakhstan 2021.

ENFORCEMENT

The non-compliance penalty equals five monthly standard units for each tCO_2. This was KZT 18,460 (USD 40.47) in 2024.

MARKET REGULATION

MARKET DESIGN

MARKET PARTICIPATION: Compliance entities; individuals, and legal entities involved in the implementation of offset projects. Brokers, banks or other financial institutions are not allowed to trade.

MARKET TYPES:

Primary: While domestic legislation allows for the establishment of a primary market through auctioning, to date allowances have been distributed for free through grandparenting or benchmarking.

Secondary: Pure spot market, no forward contracts or other derivatives. In the beginning of the system, trades had to be executed via the Caspy Commodity Exchange JSC, which remains the main trading platform. From Phase 3 onwards, several additional exchange platforms that signed an agreement with the operator of the state registry – JSC "Zhasyl Damu" – were made available for trading. Over-the-counter trading has been allowed since Phase 3.

LEGAL STATUS OF ALLOWANCES: In accordance with the Environmental Code, a carbon unit (emissions allowance or offset credit) is a commodity permitted for transfer among the subjects of the carbon market in the Republic of Kazakhstan.

OTHER INFORMATION

INSTITUTIONS INVOLVED

Ministry of Ecology and Natural Resources: Responsible for establishing the ETS regulatory framework.
JSC Zhasyl Damu: Implementing authority, responsible for the registry and reserve management.
Caspy Commodity Exchange JSC: Operates secondary market auctions.

REGULATORY FRAMEWORK

→ Environmental Code of the Republic of Kazakhstan (2021)
→ Rules of State Regulation of Emissions and Absorption of GHGs (2022)
→ Rules for GHG Emissions Trading (2021)

MONTENEGRO

MONTENEGRO EMISSIONS TRADING SYSTEM

- Implementing an ETS as part of the EU accession process
- ETS in force since February 2020
- Climate Law currently under revision, ETS Decree due to be renewed in late 2024

ETS DESCRIPTION

In December 2019, the "Law on Protection from the Negative Impacts of Climate Change" (Climate Law) entered into force in Montenegro. The law mandates the development of a comprehensive set of climate policies including a GHG inventory, a low-carbon development strategy, and a national MRV system. It further provides the legal basis for a national ETS covering emissions from the industrial and power sectors.

A bylaw specific to the ETS, the "Decree on Activities for which a GHG Permit is Issued" (ETS Decree), was adopted in February 2020. This regulation determines sectoral coverage and inclusion thresholds, rules governing trading of allowances, allocation rules, and a market stabilization reserve. It further includes provisions for banking allowances, a minimum reserve price of EUR 24 (USD 26.08), and a linear reduction factor for the emissions cap of 1.5% annually in the period from 2020 to 2030.

Montenegro has been an EU candidate country since 2010. It is required to bring its environmental and climate policy in line with the EU as part of accession talks that began in late 2018. Establishing a national ETS is a requirement to ensure that Montenegro has the climate policy framework in place to take part in the EU ETS should it join the EU.

The ETS formally began operations in February 2020 and applies to three installations: the Pljevlja coal plant, the KAP aluminium plant, and the Tosčelik steel mill. Covered entities must surrender allowances for all their covered emissions, and allocation is based on auctions or free allocation. They received 100% of their allowances for free in 2020 and 2021. For 2022, 64% of all allowances were auctioned.

YEAR IN REVIEW

The operation of the Montenegro ETS was negatively affected by several changes of government in the past two years, which caused major delays in the adoption of the yearly allocation plan. In addition, two of the three covered installations shut down their operations in 2022 in response to rapidly rising energy prices. This is still the case as of January 2024, leaving the Pljevlja coal plant as the only operational covered entity.

The Montenegro government set up a working group in mid-2022 to review the country's climate legislation, including the ETS. This work was still ongoing as of January 2024, with the adoption of the revised Climate Law expected by mid-2024. Following this first step, the ETS Decree is due to be renewed. This will likely involve a revision of the ETS cap as well as the introduction of auctioning for 100% of allowances.

In force
Under development
Under consideration

SECTORS

POWER

INDUSTRY

CAP

3.15 $MtCO_2e$ (2023)

GREENHOUSE GASES

CO_2

OFFSET CREDITS

No offsets allowed

ALLOCATION

Free Allocation: Grandparenting
Free Allocation: Benchmarking (for new installations)
Auctioning

AVERAGE 2023 PRICES

Average auction price: EUR 24 (USD 26.08)

TOTAL REVENUE

EUR 9.26 million (USD 10.06 million) since the beginning of the program
EUR 9.26 million (USD 10.06 million) in 2023

EMISSIONS & TARGETS OF MONTENEGRO

GHG EMISSIONS (EXCL. LULUCF), 2021

(in $MtCO_2e$, share of total in %)

Energy	2.7	(79%)
Industrial processes	0.2	(6%)
Agriculture	0.2	(6%)
Waste	0.3	(6%)
Total	**3.4**	

Energy industries	1.3	(38%)
Manufacturing industries and construction	0.2	(6%)
Transport	0.9	(26%)
Commercial, Institutional, and Residential	0.1	(3%)
Other energy	0.1	(3%)

GHG REDUCTION TARGETS

By 2030: 55% below 1990 levels excl. LULUCF (NDC)

By 2050: Climate neutrality (aspirational, Sofia Declaration)

ETS COVERAGE & PHASES

COVERED EMISSIONS

Verified ETS emissions

1.46 $MtCO_2e$ (2022)

CAP OR TOTAL EMISSIONS LIMIT

A cap limits the total emissions allowed in the system.

2020: 3.3 $MtCO_2e$

2021: 3.3 $MtCO_2e$

2022: 3.2 $MtCO_2e$

2023: 3.1 $MtCO_2e$

Annual reduction factor: 1.5%

SECTORS AND THRESHOLDS

SECTORS: Industries listed under Appendix 1 of the ETS Decree must participate in the system. These include power plants, oil refineries, coke production, the production or processing of iron and steel, non-ferrous metals, cement clinker, glass, ceramic products, and paper (pulp).

INCLUSION THRESHOLDS:

- Power plants with a capacity in excess of 20 MW
- Installations for the production of pig iron or steel (primary or secondary fusion) including continuous casting, with a capacity exceeding 2.5 tonnes per hour
- Installations for the production of cement clinker in rotary kilns with a production capacity exceeding 500 tonnes per day or lime in rotary kilns with a production capacity exceeding 50 tonnes per day or in other furnaces with a production capacity exceeding 50 tonnes per day
- Installations for the manufacture of glass including glass fibre with a melting capacity exceeding 20 tonnes per day
- Installations for the manufacture of ceramic products by firing, in particular roofing tiles, bricks, refractory bricks, tiles, stoneware or porcelain, with a production capacity exceeding 75 tonnes per day, and/or with a kiln capacity exceeding 4 m^3 and with a setting density per kiln exceeding 300 kg/m^3

POINT OF REGULATION

Point source (power, industry)

TYPE OF ENTITIES

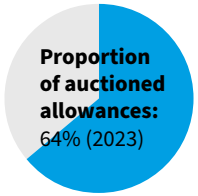
Installations

NUMBER OF ENTITIES

3, out of which only 1 is currently operational (2023)

ALLOWANCE ALLOCATION & REVENUE

ALLOWANCE ALLOCATION



2020-2022: Free allocation of allowances

2023: The government appointed the auctioning committee in December 2022 and auctioning took place in early 2023.

- Auction share: 64% (385,657 allowances)
- Free allocation share: 36% (222,515 allowances)
- Auction volume: 608,000 allowances

USE OF REVENUES


Climate mitigation


Pursuit of other development objectives, such as education and health


Low-carbon innovation

Auction revenues go to Montenegro's Environmental Protection Fund ("Eko Fond") to finance low-carbon innovation, renewable energy, and environmental protection.

FLEXIBILITY & LINKING

BANKING AND BORROWING

Banking is allowed.

Borrowing is not allowed.

OFFSET CREDITS

The use of offset credits is not allowed.

LINKS WITH OTHER SYSTEMS

The Montenegro ETS is not linked to any other system.

COMPLIANCE

COMPLIANCE MECHANISM

Covered entities must surrender one allowance per tCO_2e emitted for all their covered emissions, and allocation is based on auctions or free allocation.

COMPLIANCE PERIOD

One year.

MRV

MONITORING: Covered entities must submit, together with the allowance application, a plan for monitoring GHG emissions from the installation. The content of the Monitoring Plan, the procedures, processes and the methodology for monitoring GHG emissions are laid down by the bylaws. The entity is also obliged to improve the methodology for monitoring GHG emissions and amend the Monitoring Plan on the request of the administration authority, the Environmental Protection Agency (EPA).

REPORTING: Participants are obliged to submit a verified report on GHG emissions to the EPA by the end of March for the previous year.

If the covered entity fails to submit the verified report, the EPA makes a conservative estimate of the level of GHG emissions. The costs of making the estimate are to be paid by the entity.

The form and content of the report, procedures and the method of making a conservative estimate are prescribed by the bylaws.

VERIFICATION: Verification of the GHG reports may be performed only by an accredited legal entity that fulfils the requirements regarding personnel and equipment for report verification.

ENFORCEMENT

Penalties as stipulated by the Climate Law range from EUR 2,000 (USD 2,173) to EUR 40,000 (USD 43,478) and can be imposed against legal entities and responsible natural persons in the legal entity.

MARKET REGULATION

MARKET DESIGN

MARKET PARTICIPATION: Due to the very small size of the Montenegro ETS, participation of non-compliance entities (intermediaries) is not possible.

MARKET TYPES:

Primary: Allowance auctions are organized by the government.

Secondary: There is no established secondary market. However, the covered entities can trade allowances among themselves.

MARKET STABILITY PROVISIONS

INSTRUMENT NAME: Price floor

TRIGGERS: There is a (permanent) minimum price of EUR 24 (USD 26.08)/tCO_2 for auctions.

OTHER INFORMATION

INSTITUTIONS INVOLVED

Ministry of Ecology, Spatial Planning, Urbanism and State Property: Responsible for environmental and climate policy, including the national ETS.
Environmental Protection Agency (EPA): Responsible for allowance issuance and monitoring of verification reports.

EVALUATION/ETS REVIEW

The Climate Law and ETS Decree are currently under revision. A new Climate Law is expected to be adopted by mid-2024 and the ETS Decree is due to be renewed in late 2024.

REGULATORY FRAMEWORK

→ Decree on Activities for which a GHG Permit is Issued (2020)
→ Law on Protection from the Negative Impacts of Climate Change (2019)

SAKHALIN

- **Mandate and regulatory framework elements for pilot carbon trading system in place**
- **Individual caps set for 35 regulated entities**
- **First compliance period to start in 2024**

ETS DESCRIPTION

Sakhalin is regarded as a testing ground for identifying GHG regulation measures that can be extended to other Russian regions. In January 2021, the Russian Ministry of Economic Development, in cooperation with the regional government, approved the "Roadmap for the Implementation of an Experiment to Establish Special Regulation of GHG in the Sakhalin Region". The overall aim of the roadmap is to ensure that Sakhalin achieves carbon neutrality by 2025, and includes plans for a pilot carbon trading system.

In 2022, the State Duma approved a "Federal Law on Conducting an Experiment to Limit GHG Emissions in Selected Federal States of the Russian Federation", introducing mandatory emissions reporting and verification requirements for regulated entities and obliging them to comply with the allocated emissions allowances. The law also sets a legal basis for allowance circulation between entities. The Sakhalin Pilot ETS was mandated to launch in September, but the start has been delayed pending cap-setting and allowance allocation processes.

The Sakhalin government approved a list of 50 regulated entities, emitting at least 20,000 tCO_2 per year, in 2022, and a carbon registry started operating in test mode in September that year. The first compliance period is set to start in 2024. Covered entities will have to surrender allowances for all their covered emissions, and allocation is expected to be based on free allocation.

In 2023, regulated entities submitted their first verified emissions reports for 2022, which became the basis for setting individual caps for 35 entities in September 2023.

EMISSIONS & TARGETS OF SAKHALIN

GHG EMISSIONS (INCLUDING INDIRECT CO_2, EXCLUDING LULUCF)**, 2019**
(in $MtCO_2e$, share of total in %)

Energy	11.7	(95%)
Industrial processes	0.1	(1%)
Agriculture	0.2	(2%)
Waste	0.3	(2%)
Total	**12.3**	

Energy industries	3.5	(29%)
Transport	3.5	(29%)
Other energy	4.6	(37%)

GHG REDUCTION TARGETS

By 2025: Carbon neutrality (Roadmap for the implementation of an experiment to establish special regulation of GHG emissions in the Sakhalin Region)

ETS COVERAGE & PHASES

SECTORS AND THRESHOLDS

Power, oil, gas and coal mining, heavy industry, transport (including aviation and maritime)

INCLUSION THRESHOLDS: Facilities emitting more than 20,000 tCO_2 per year.

NUMBER OF ENTITIES

Individual caps are set for 35 entities.

FLEXIBILITY & LINKING

OFFSET CREDITS

The use of domestic offset credits will be allowed. No further details on their use are publicly available.

COMPLIANCE

MRV

REPORTING: Reporting is required annually for installations above the 20,000 tCO_2/year threshold. Annual emission reports must be submitted by July 1st of the following year.

VERIFICATION: Emissions data reports and their underlying data require third-party verification by an accredited auditor.

ENFORCEMENT

The penalty for not complying with the individual allocated caps is set at RUB 1000 per tonne of tCO_2e (USD 11.74).

OTHER INFORMATION

INSTITUTIONS INVOLVED

Russian Ministry of Economic Development: Coordinator of the Sakhalin pilot.
Government of Sakhalin Region: Implements Sakhalin pilot, in close coordination with Ministry of Economic Development.
JSC Kontur: An operator of Russian national carbon registry.

REGULATORY FRAMEWORK

- → Federal Law on Limiting Greenhouse Gas Emissions
- → Federal Law on Conducting an Experiment on Limiting Greenhouse Gas Emissions in Selected Federal States of the Russian Federation
- → Order of the Ministry of Economic Development on approval of the methodology for determining projected GHG emissions caps within the experiment on limiting of GHG emissions in regions of the Russian Federation

SWITZERLAND

SWITZERLAND EMISSIONS TRADING SYSTEM

- **Entered a new ten-year trading phase in 2021**
- **Linked with the EU ETS since January 2020**
- **Daily allowance transfers between Switzerland and the EU**

ETS DESCRIPTION

The Switzerland (Swiss) ETS started in 2008 with a five-year voluntary phase. Thereafter, participation was mandatory for large, energy-intensive entities and voluntary for medium-sized entities. The Swiss ETS covered about 12% of the country's total GHG emissions in 2021 (incl. aviation). Participants in the ETS are exempt from the national CO_2 levy.

The Swiss ETS covers electricity generation, industrial entities (largely comprising companies from the cement, chemicals, pharmaceuticals, paper, refining, and steel sectors), domestic aviation, and flights to the European Economic Area and the United Kingdom. Allowances are allocated through benchmarking and auctioning. Free allocation for aviation is being phased-out by 2026. Auctioning volumes may be reduced if the total number of allowances in circulation exceeds a certain threshold.

The Swiss ETS has been linked with the EU ETS since January 2020. The same benchmarks as in the EU ETS apply to entities covered by the Swiss ETS.

The system is mandated by the Federal Act on the Reduction of CO_2 Emissions ("CO_2 Act") and regulated through an implementing regulation ("CO_2 Ordinance").

YEAR IN REVIEW

After a revision of the CO_2 Act failed to pass a referendum in June 2021, the Swiss Parliament extended the current CO_2 Act to 2024. This included the target to reduce emissions by 1.5% per year compared to 1990 levels. In November 2022, the Swiss Federal Council published a new proposal for a revision of the CO_2 Act that covers the period from 2025 to 2030, including Switzerland's 50% emission reduction target for 2030. The proposal includes provisions to align the Swiss ETS with the revised EU ETS. The law has been debated through its first reading in the Swiss parliament.

In November 2023, the EU and Switzerland concluded the 2024 emission allowance transfer arrangements between their systems. From January 2024, daily transfers, with exceptions for specific dates, replaced the previous twice-weekly schedule. Details on the 2025 arrangements are anticipated by the end of 2024.

In force
Under development
Under consideration

SECTORS

POWER

INDUSTRY

AVIATION

CAP

4.4 $MtCO_2e$ (2024, power and industry)
1.1 $MtCO_2e$ (2024, aviation)

GREENHOUSE GASES

CO_2, N_2O, CH_4, HFCs, NF_3, SF_6, PFCs[1]

ALLOCATION

Free Allocation: Benchmarking
Auctioning

AVERAGE 2023 PRICES

Average auction price: EUR 81.08 (USD 87.67)

TOTAL REVENUE

EUR 135.2 million (USD 146.2 million)
since the beginning of the program
EUR 35.9 million (USD 38.8 million) in 2023

1 In principle, all these gases are covered in accordance with the CO_2 Ordinance. In practice, only CO_2, N_2O, and PFCs require monitoring, as the share of the other gases is negligible.

EMISSIONS & TARGETS OF SWITZERLAND

GHG EMISSIONS (INCL. INDIRECT CO_2, EXCL. LULUCF AND AVIATION), 2021

(in $MtCO_2e$, share of total in %)

Energy	34.2	(75%)
Industrial processes	4.0	(9%)
Agriculture	5.9	(13%)
Waste	1.1	(3%)
Total	**45.2**	

Energy industries	3.2	(7%)
Manufacturing industries and construction	4.6	(10%)
Transport	13.8	(30%)
Commercial, institutional, and residential	11.6	(26%)
Other energy	1.0	(2%)

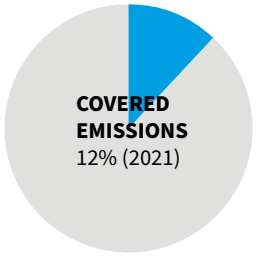
GHG REDUCTION TARGETS

From 2021 to 2030: On average at least 35% reduction from 1990 GHG levels (NDC and draft CO_2 Act)
By 2025: Anticipated 35% reduction from 1990 GHG levels (NDC)
By 2030: At least 50% reduction from 1990 GHG levels (NDC and draft CO_2 Act)
By 2050: Net-zero GHG emissions (NDC and Climate and Innovation Act)

ETS COVERAGE & PHASES

COVERED EMISSIONS

Verified ETS emissions
5.5 $MtCO_2e$ (2021)



PHASES

VOLUNTARY PHASE: Five years (2008 to 2012)
SECOND TRADING PERIOD: Eight years (2013 to 2020)
THIRD TRADING PERIOD: Ten years (2021 to 2030)

CAP OR TOTAL EMISSIONS LIMIT

A cap limits the total emissions allowed in the system.

VOLUNTARY PHASE (2008-2012): Each participant received its own entity-specific reduction target.

SECOND TRADING PERIOD (2013-2020):
Stationary installations: Overall top-down cap of 5.6 $MtCO_2e$ (2013) that was reduced annually by a constant linear reduction factor of 1.74% (of baseline emissions set by entities' historical data of the years 2008-2012) to 4.9 $MtCO_2e$ in 2020.

Aviation: 1.3 $MtCO_2$ (2020)

THIRD TRADING PERIOD (2021-2030): An annual linear reduction factor of 2.2% (2010 base year) applies to the cap for stationary installations and to the aviation cap. The caps for stationary installations and aviation amounted to 4.5 and 1.2 $MtCO_2$, respectively, in 2023.

SECTORS AND THRESHOLDS

MANDATORY PARTICIPATION: Industries listed under Annex 6 of the CO_2 Ordinance must participate in the Swiss ETS. These include 25 categories, such as cement, chemicals and pharmaceuticals, refineries, paper, district heating, steel, and other sectors. Since 2020, the ETS has covered emissions from aviation (domestic and outbound flights to the EEA) and fossil-thermal power plants.

INCLUSION THRESHOLDS: Facilities in the sectors included in Annex 6 of the CO_2 Ordinance that have a total rated thermal input of >20 MW.

POSSIBLE VOLUNTARY OPT-IN: Industries – listed under Annex 7 of the CO_2 Ordinance (21 activities) – with a total rated thermal input of ≥10 MW. A company that fulfils the participation conditions must submit the application within the following six months.

POSSIBLE OPT-OUT: Industries with a total rated thermal input greater than 20 MW but emissions below 25,000 tCO_2e in each of the past three years. If an entity's future emissions rise above the threshold in a given year, it must participate in the ETS starting from the following year and cannot opt out for the remainder of the compliance period. New entrants can apply for an opt-out with immediate effect if they can credibly report their emissions to be below 25,000 tCO_2e/year.

AVIATION: Commercial aircraft operators emitting more than 10,000 tCO_2/year or operating more than 243 flights in a four-month period in the preceding year. Non-commercial operators are included when emitting more than 1,000 tCO_2/year. The thresholds do not apply if the operator has obligations under the EU ETS.

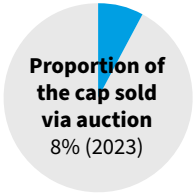
POINT OF REGULATION
Point source

TYPE OF ENTITIES
Installations (power and industry) and companies (aviation)

NUMBER OF ENTITIES
Stationary installations: 97 (2023)
Aircraft operators: 173 (2022)

ALLOWANCE ALLOCATION & REVENUE

ALLOWANCE ALLOCATION



VOLUNTARY PHASE (2008 to 2012): Participants received free allowances covering emissions up to their entity-specific emissions target.

SECOND TRADING PERIOD (2013 to 2020):
Free allocation: Free allocation was based on industry benchmarks using a similar methodology to the EU ETS. Free allocations for sectors not exposed to the risk of carbon leakage were phased out gradually. In 2013, these entities received 80% of their allowances for free, which was reduced to 30% by 2020.

A correction factor was implemented to reduce the allocated emissions allowances, determined by industry benchmarks and ensuring they aligned with the specified overall emissions cap.

Free allocation for aircraft operators was based on tonne-kilometer data for 2018 reported by individual aircraft operators, multiplied by the benchmark of 0.642 emissions allowances per 1,000 tonne-kilometers (same benchmark as in the EU ETS).

Auctioning: Allowances that were not allocated for free were auctioned. Auctions took place two or three times a year, depending on available auction volumes. From January 2020, auctions are open to entities covered by the Swiss ETS and the EU ETS, as well as to non-compliance entities allowed to place bids in the EU ETS. In line with EU ETS legislation, the Federal Office of the Environment (FOEN) has the authority to cancel the auction if the clearing price is significantly below the prevailing secondary market price of the EU ETS. In such a situation, allowances are transferred to subsequent auctions.

5% of the allowances are set aside in a reserve for new entrants and fast-growing operators.

Aviation: In line with EU ETS regulations, starting in 2020, 15% of aviation sector allowances are auctioned. 3% were placed in the reserve dedicated to new and fast-growing operators. The remaining 82% was allocated according to sector-specific benchmarks

THIRD TRADING PERIOD (2021 to2030):
Free allocation: As of 2022, the Swiss ETS applies the same allocation benchmarks as the EU ETS. Free allocation levels may be updated annually if production levels deviate at least 15 percentage points from the 2014-2018 base years.

Auctioning: Since 2022, auction volumes have been subject to a market stability mechanism (see ‘Market Stability Provisions’ section).

USE OF REVENUES

General budget, including debt reduction

FLEXIBILITY & LINKING

BANKING AND BORROWING
Banking within and across phases is allowed without limits. Banked allowances from Phase 3 of the EU ETS can be used for compliance in the 2021 to 2030 trading phase.

Valid certificates from the UNFCCC flexible mechanisms (Certified Emission Reductions and Emission Reduction Units) from the 2008 to 2012 phase could be banked into the second trading period and surrendered until April 2015.

Borrowing is not allowed, although allocated allowances from the current trading year may be used for surrender obligations of the prior year.

OFFSET CREDITS
The use of offset credits is not allowed.

QUALITATIVE LIMITS: Since 2021, offset credits cannot be used to meet compliance obligations. International offset credits were allowed up to 2020, subject to certain criteria. Most categories of credits from CDM projects in least-developed countries were allowed. Credits from CDM and Joint Implementation projects from other countries were eligible only if registered and implemented before the end of 2012.

QUANTITATIVE LIMITS: During 2013 to 2020, the maximum amount of offset credits allowed into the system was set at 11% of average emissions allowances allocated in the voluntary phase (2008 to 2012), minus offset credits used in that same time period, multiplied by five.

Industries that entered the Swiss ETS in the second trading period (2013 to 2020) could surrender offsets to cover up to 4.5% of their emissions. For aircraft operators, the quantitative limit was set at 1.5%.

LINKS WITH OTHER SYSTEMS

Switzerland concluded negotiations with the EU on linking their respective systems in 2015 and signed the agreement in 2017. Following legislative approval and ratification in 2019, the link entered into force in January 2020. Prior to that, revisions were made to align with the EU ETS legislative framework.

Covered entities in the Swiss ETS can use allowances from the EU ETS for compliance, and vice versa. The two systems run separate auctions. Market participants from the EEA need an account in the Swiss Emissions Trading Registry in order to participate. In 2024, allowance transfers between the EU and Swiss registries will be executed on a daily basis, with specific exceptions for certain dates. This arrangement follows an agreement reached in November 2023 by the Joint Committee overseeing the EU and Swiss linking agreement. The 2024 arrangements cover a 12-month period, with information on 2025 arrangements expected before the end of 2024.

COMPLIANCE

COMPLIANCE MECHANISM

Covered entities must surrender one allowance per tCO_2e emitted for all their covered emissions.

COMPLIANCE PERIOD

One calendar year. Covered entities have until the end of September of the following year to surrender allowances.

MRV

MONITORING: Monitoring plans are required for every installation and for every aircraft operator (no later than three months after the registration deadline). Monitoring plans must be approved by a competent authority. Emissions according to the Swiss CO_2 Ordinance (mainly CO_2 and N_2O) are subject to monitoring.

REPORTING: Annual monitoring report, based on self-reported information (by the end of March).

VERIFICATION: FOEN may order third-party verification of the monitoring reports from installations and can take random samples to ensure consistency. Aircraft operators must have their monitoring reports verified by an accredited third-party verifier.

ENFORCEMENT

The penalty for failing to surrender sufficient allowances is set at CHF 125/tCO_2 (USD 139/tCO_2). In addition to the fine, entities must surrender the missing allowances in the following year.

MARKET REGULATION

MARKET DESIGN

MARKET PARTICIPATION: Compliance entities, non-compliance entities (domestic and international) and individuals. Traders are subject to a holding limit of one million Swiss/EU allowances.

MARKET TYPES:

Primary: Single round sealed-bid uniform price auction, organized by the Swiss Emissions Trading Registry several times per year.

Secondary: Swiss allowances are not traded on regulated trading platforms but may be traded over the counter. EU ETS allowances, which can be used for compliance in the Swiss ETS, are traded on multiple exchanges, including ICE Futures and EEX.

LEGAL STATUS OF ALLOWANCES:

Allowances do not qualify as financial instruments under Swiss financial market regulations. Emissions allowances may form the underlying asset of derivative contracts which are covered by the “Financial Market Infrastructure Act”.

MARKET STABILITY PROVISIONS

The authorities introduced a market stability mechanism in 2022 that reduces auction volumes if the quantity of emissions allowances in circulation exceed a certain threshold.

If the number of allowances in circulation exceeds 50% of the cap of the previous year, the market stability mechanism reduces the auction volume of the current year by 50%. In 2022, the market stability mechanism reduced the auction volume from 460,000 to 230,000 and in 2023 from 580,000 to 290,000 allowances.

The unauctioned allowances lose their validity after the end of the compliance period. The mechanism is regularly reviewed against market dynamics and developments in the EU. The Swiss ETS is not subject to the EU ETS Market Stability Reserve.

OTHER INFORMATION

INSTITUTIONS INVOLVED

Federal Office for the Environment (FOEN): Implementing authority, e.g., responsible for the registry, for auctioning allowances, and receiving emission reports.

EVALUATION/ETS REVIEW

Transitional revisions to the CO_2 Act (main ETS legislation) and CO_2 Ordinance (implementing regulation) came into effect at the start of January 2021 in order to ensure continuity on Swiss climate policy and extend the lifetime of the ETS (for an unlimited period). Latest revisions came into effect in January 2024.

The full revision of the CO_2 Act was rejected in a popular vote in June 2021. A transitional extension of the Act for 2022-2024 was adopted in December 2021. A new proposal for a revision of the Act that covers the period from 2025 to 2030 was published by the Federal Council in November 2022 and is currently being debated in Parliament. The proposal provides for a linking-compatible revision of the ETS.

REGULATORY FRAMEWORK

→ **Federal Act on the Reduction of CO_2 Emissions** (CO_2 Act)
→ **Draft for a CO_2 Act** revision
→ **Ordinance on the Reduction of CO_2 Emissions** (CO_2 Ordinance)

TÜRKİYE

- **Submitted Updated First NDC in April 2023**
- **Announced launch of pilot ETS during COP28**
- **First activities under Partnership for Market Implementation (PMI) in 2024**

DESCRIPTION

Türkiye has been preparing for the use of carbon pricing instruments to help achieve its mitigation targets with efforts gathering pace in 2023. These include the submission of an Updated First NDC, which has explicit references to the Turkish Emission Trading System (TR ETS), and an announcement from the Directorate of Climate Change (DoCC) during COP28 that a pilot ETS is planned to launch in October 2024 with the publication of the National Allocation Plan. Moreover, following its publication in the Official Gazette in December, the Grant Agreement with the World Bank PMI program supporting the implementation of the pilot ETS came into force. The program will assist Türkiye in assessing various design options through modelling studies and provide support during the pilot as well as the first implementation phases of the new system.

These developments follow the advisory decisions of the Climate Council (a multi-stakeholder consultation event with broad participation) in 2022, which included the launch of the pilot ETS in 2024 aligned with the country's 2053 Net-Zero Target. The intention to develop an ETS has also been reflected in Türkiye's annual Medium-Term Programs (MTPs) since 2022.[1] Moreover, the high-level planning outlined in the 12th Turkish Development Plan (2024 to 2028) takes the year 2053 as a long-term reference in the country's green and digital transformation agenda and considers the TR ETS as an instrument of this transformation.

In preparation for the launch of the pilot ETS, Türkiye is finalizing a draft Climate Law creating the legal basis for the main features of TR ETS. The draft law is expected to be submitted to Parliament in 2024. Although the precise details are not final yet, the announcement by the DoCC during COP28 envisions the determination of the cap and allocation approach in late 2024 with the publication of the National Allocation Plan which will ensure transparency and predictability during implementation. Thereafter, market operations will commence early in 2025.

The pilot ETS will leverage data collected under Türkiye's comprehensive mandatory Monitoring, Reporting and Verification (MRV) System which has been in place since 2015. It is expected to cover around 130 installations in energy and industry sectors with emissions greater than 500,000 tCO_2e per year. The pilot phase is expected to run for two years initially.

Türkiye is a candidate for EU accession and as a part of this process, the country is planning to commence an Instrument for Pre-Accession Assistance (IPA III) project in 2024 for the transposition of the EU ETS legislation into secondary legislation which will define national ETS' technical features following the pilot phase.

1 The most recent MTP covering 2024-2026 was approved by the President and published in the Official Gazette in September.

EMISSIONS & TARGETS OF TÜRKİYE

GHG EMISSIONS (EXCL. LULUCF)**, 2020**

(in $MtCO_2e$, share of total in %)

Energy	402.5	(71%)
Industrial processes	75.1	(13%)
Agriculture	72.1	(13%)
Waste	14.7	(3%)
Total	**564.4**	

Energy industries	159.5	(28%)
Manufacturing industries and construction	66.2	(12%)
Transport	91.2	(16%)
Commercial, institutional, and residential	64.2	(11%)
Other energy	21.4	(4%)

GHG REDUCTION TARGETS

By 2030: Up to 41% reduction from the BAU scenario (Updated First NDC)

By 2053: Net-zero GHG emissions

COMPLIANCE

MRV

REPORTING FREQUENCY: Annual

VERIFICATION: Annual emission data reports (prepared according to the monitoring plans confirmed by DoCC) and their underlying data require independent third-party verification annually for all entities. The Turkish Accreditation Agency is the institution that accredits the verifiers.

FRAMEWORK: The Turkish MRV legislation (mainly based on the EU system) establishes an installation-level system for CO_2 emissions for approximately 740 entities. Sector coverage includes the energy sector (total rated thermal input >20 MW) and industry sectors (coke production, metals, cement, glass, ceramic products, insulation materials, pulp and paper, and chemicals over specified threshold sizes/production levels).

Entities had until October 2014 to submit their first monitoring plans. Since then, they have also submitted subsequent monitoring plans and verified annual emissions reports from 2015 to 2023 to DoCC. Entities must submit their verified annual emission reports before the end of April each year.

ENFORCEMENT

Entities that fail to comply with the Turkish MRV regulation are subject to sanctions under Turkish Environmental Law No. 2872.

OTHER INFORMATION

INSTITUTIONS INVOLVED

Ministry of Environment, Urbanization and Climate Change (MoEUCC): Responsible for climate change policies as established and mandated by Presidential Decree in 2021.

Directorate of Climate Change (DoCC): Under the MoEUCC; responsible for determining policies, strategies and actions (including those related to carbon pricing and ETS) at national and international levels within the scope of Türkiye's efforts to combat and adapt to climate change, conducting negotiation processes, and ensuring coordination with relevant institutions and organizations.

REGULATORY FRAMEWORK

- → **Grant Agreement** with the World Bank PMI
- → **Presidential Decree establishing MoEUCC**
- → **2024-2026 Medium Term Plan** (2023)
- → **2024-2028 12th Development Plan** (2023)
- → **DoCC website** for other legislation and documents

UNITED KINGDOM

UK EMISSIONS TRADING SCHEME

- **Began in 2021 following UK's departure from the EU ETS**
- **Review concluded to align the ETS with the UK's net-zero target**
- **Number of allowances to be reduced annually and scope to be expanded from 2026**

ETS DESCRIPTION

The UK Emissions Trading Scheme (UK ETS) began operating in January 2021, following the departure of the UK (excluding power operators located in Northern Ireland) from the EU ETS. Verified emissions from stationary UK ETS operators currently cover around a quarter of the UK's territorial GHG emissions. The first phase of the UK ETS runs until 2030.

The UK ETS covers around 1,000 installations in the power and industrial sectors, as well as around 400 aircraft operators. Aviation activity covered includes flights within the UK as well as flights departing the UK to the European Economic Area (EEA) and Switzerland. Covered installations and aircraft operators must surrender allowances for all their covered emissions. Allowances are allocated primarily through auctioning, with a portion freely allocated to mitigate the risk of carbon leakage. The system has both a cost containment mechanism (CCM) and auction reserve price, to support market stability.

The UK government remains open to the possibility of linking the UK ETS to other systems, if such a link would be advantageous for both systems.

YEAR IN REVIEW

In July, the UK ETS Authority announced a package of reforms aimed at aligning the scheme with each of the government's climate targets, such as the 2050 net-zero target. The announcement marked the conclusion of the previous year's public consultation on developing the scheme, which ran between March and June 2022.

Among the changes was a 30% reduction in the total number of allowances available over the period 2021 to 2030, to bring the cap trajectory in line with the country's net-zero strategy. The cap was rebased in 2024, with 53.5 million previously unallocated allowances auctioned between 2024 and 2027 to smooth the transition. In total (including redistributed allowances) auction volumes will be cut by around 45% by 2027.

The UK ETS Authority has also announced its intention to cover emissions from domestic maritime activities from 2026, and from waste incineration and waste from energy from 2028 (preceded by a two-year MRV-only period from 2026 to 2028). The UK ETS Authority has confirmed that engineered greenhouse gas removals (GGR) are also expected to be included. The UK ETS Authority has also decided to phase-out free allocation to aviation by 2026.

Decisions are anticipated on measures to support the effective functioning of the market and free allocation for stationary sectors, following the launch of a public consultation on these matters at the end of 2023.

1 Average auction clearing price over the year by averaging the clearing price over the number of auctions.
2 This was calculated from the end-year futures published settlement price used in legislation for average prices.

In force
Under development
Under consideration

SECTORS

POWER
INDUSTRY
AVIATION

CAP

92.1 $MtCO_2e$ (2024)

GREENHOUSE GASES

CO_2, N_2O, PFCs

ALLOCATION

Free Allocation: Benchmarking
Auctioning

AVERAGE 2023 PRICES

Average auction price: GBP 53.36 (USD 66.70)[1]
Average secondary market price: GBP 55.54 (USD 69.42)[2]

TOTAL REVENUE

GBP 14.6 billion (USD 18.7 billion) since beginning of the program in 2021
GBP 4.2 billion (USD 5.2 billion) in 2023

Further consultation on bringing additional sectors into the UK ETS and incorporation of GGRs is also anticipated.

The UK ETS authority also published a suite of documents aimed at supporting the transparent, efficient and effective operation of the scheme. These include a review, an evaluation of the scheme, and a long-term pathway out to 2050.

The UK government also announced it will introduce a Carbon Border Adjustment Mechanism by 2027. The mechanism will initially apply to imports of emissions intensive industrial goods, including aluminium, cement, ceramics, fertiliser, glass, hydrogen, iron and steel. It is intended to mitigate carbon leakage risks, by ensuring that imports of products that face a cost of carbon under the UK ETS pay an equivalent charge at the border.

EMISSIONS & TARGETS OF THE UK

OVERALL GHG EMISSIONS (INCL. INDIRECT CO_2, EXCLUDING LULUCF), 2021

(in $MtCO_2e$, share of total in %)

Energy	335.0	(78%)
Industrial processes	32.3	(8%)
Agriculture	43.1	(10%)
Waste	19.1	(4%)
Total	**429.5**[3]	

Energy industries	80.1	(19%)
Manufacturing industries and construction	43.6	(10%)
Transport	108.1	(25%)
Commercial, institutional, and residential	87.7	(20%)
Other energy	15.5	(4%)

GHG REDUCTION TARGETS

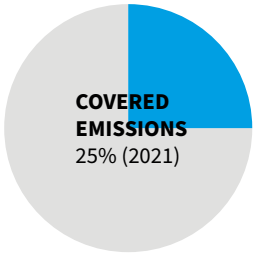
By 2030: At least a 68% reduction in UK net GHG emissions from 1990 levels, including emissions from LULUCF (NDC)

By 2035: Limit UK net GHG emissions to 965 $MtCO_2e$ over 2033 to 2037, representing ~77% reduction from 1990 levels, including emissions from LULUCF and international aviation and shipping (Carbon Budget Order 2021)

By 2050: Net-zero UK GHG emissions, including emissions from LULUCF and international aviation and shipping (Climate Change Act 2008 [2050 Target Amendment] Order 2019)

ETS COVERAGE & PHASES

Verified ETS emissions
107.8 $MtCO_2e$ (2021)



PHASES

PHASE ONE: Ten years (2021 to 2030)

CAP OR TOTAL EMISSIONS LIMIT

A cap limits the total emissions allowed in the system.

FIRST ALLOCATION PERIOD (2021 to 2025): 633 $MtCO_2e$, to be adjusted to reflect the hospital and small emitter opt-outs.

SECOND ALLOCATION PERIOD (2026 to 2030): 303 $MtCO_2e$, to be adjusted to reflect the hospital and small emitter opt-outs.

The cap was initially set at 5% below the UK's notional share of the EU ETS cap for its fourth phase. The cumulative caps for the first and second allocation periods were originally 736 $MtCO_2e$ and 630 $MtCO_2e$, respectively. However, they were reduced to the above following the conclusion of the 2022 consultation on reforming the UK ETS, which included aligning the cap trajectory with the UK's net-zero emissions target. The cap for 2024 is 92.1 $MtCO_2e$. Allowances for the New Entrants' Reserve (NER) are part of the overall cap.

SECTORS AND THRESHOLDS

POWER SECTOR AND INDUSTRY: The UK ETS applies to a specified list of activities of installations in the power and industrial sectors. This includes activities involving the combustion of fuels in installations with a total rated thermal input exceeding 20 MW, as well as activities in refining, heavy industry, and manufacturing. Power generators in Northern Ireland still fall under the EU ETS, as they are part of the integrated Single Electricity Market with the Republic of Ireland.

In addition to the power sector's participation in the UK ETS, the UK's Carbon Price Support (CPS) policy imposes an additional carbon tax of GBP 18 per tCO_2 (USD 22.50) for power generators in Great Britian (excluding Northern Ireland) using fossil fuels.

Hospitals and Small Emitter (HSE) Scheme: Hospitals and small emitters with emissions below 25,000 tCO_2e per year and a net-rated thermal input lower than 35 MW can opt out of the ETS and instead monitor and report their emissions and meet annual emission reduction targets. This approach is similar to the UK's opt-out scheme in Phase 3 of the EU ETS.

3 Includes Northern Ireland and UK overseas territories and crown dependencies.

Ultra-Small Emitter Exemption: For stationary installations emitting less than 2,500 tCO_2e per year, an ultra-small emitter exemption is in place. These installations are required to monitor emissions and notify the regulator if emissions exceed the threshold.

AVIATION: Emissions are included from flights within the UK and flights from the UK and from Gibraltar to a country within the EEA and to Switzerland.[4] Exemptions are made for commercial aircraft operators with fewer than 243 full scope flights per calendar year for three consecutive four-month periods or total full scope annual emissions of less than 10,000 tCO_2. Non-commercial aircraft operators are exempt if their annual full scope emissions fall below 1,000 tCO_2. 'Full scope' refers to all an aircraft operator's aviation activity, whether or not it is covered by the UK ETS.[5]

ADDITIONAL SECTORS: In 2023, the UK ETS Authority announced its intention to expand the scheme to cover emissions from domestic maritime from 2026, and emissions from waste incineration and waste from energy from 2028.

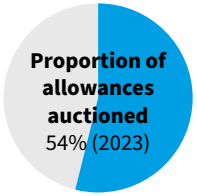
POINT OF REGULATION
Point source

TYPE OF ENTITIES
Installations, aircraft operators

NUMBER OF ENTITIES
A total of 1,429 entities in 2022, made up of 1,051 installations and 378 aircraft operators

ALLOWANCE ALLOCATION & REVENUE

ALLOWANCE ALLOCATION



AUCTIONING: Auctioning is the primary means of allowance allocation in the UK ETS. Auctions have a GBP 22 (USD 27.50) Auction Reserve Price (ARP), below which allowances will not be sold. In December 2023, the UK ETS Authority launched a consultation on the level and design of the current ARP. Auctions clear even when not all allowances are sold. Unsold allowances are carried over to the next four auctions, up to a limit of 125% of allowances originally intended for sale at those auctions. If all four subsequent auctions reach the 125% limit, the remaining unsold allowances are transferred into the Market Stability Mechanism Account.

In 2023, ~79 million allowances were allocated through auctioning, raising GBP 4.2 billion (USD 5.2 billion). As set out in the auction calendar, ~69 million UK Allowances (UKAs) will be sold in 2024.

FREE ALLOCATION: A number of UKAs are allocated for free to industrial participants at risk of carbon leakage. The number of free allowances that an installation is entitled to is determined using the historical activity level, an industry benchmark, and a carbon leakage exposure factor (CLEF). The benchmarks and CLEFs that have been used initially are those used in Phase 4 of the EU ETS. Historical activity levels are based on data collected under the EU ETS.

There is a maximum number of allowances allocated for free (the "industry cap"). Originally, an absolute value for the industry cap was established for each year of the first phase. This approach was changed following the 2022 consultation on reforming the UK ETS. From 2024, the industry cap is now set at 40% of the total cap and reduces annually in line with the cap trajectory. If the total amount of free allocation exceeds the industry cap for a particular year, unallocated UKAs from the industry cap from the previous year, as well as allowances from a flexible reserve, can be used. As a last resort, a cross-sectoral correction factor would be applied to ensure a uniform reduction across eligible participants.

An initial allocation table, which lists the volume of free allowances for each installation for the first allocation period, was published in May 2021. Eligible installations must submit a verified Activity Level Report (see 'Compliance' section). If the data in the Activity Level Report shows an increase or decrease in activity of 15% or more from historical activity levels (calculated based on the previous two years' activity levels), their free allocation will be recalculated.

The first phase of a review of free allocation started with a call for evidence in spring 2021 and continued in 2022 as part of the consultation on developing the UK ETS. The second phase of the review is focused on the free allocation methodology and better targeting support for those sectors most at risk of carbon leakage. Changes will be implemented from 2026.

In 2023, the UK ETS Authority announced that free allocation for aviation operators would be phased out from 2026.

NER: A reserve of free allowances is set aside for installations that become eligible for participation within Phase 1 and for covered installations that significantly increase their activity level. The number of free allowances for new entrants is determined based on their activity in the first year of operation, the industry benchmark, and CLEF.

4 Flights departing Northen Ireland and arriving in Switzerland will be included in the UK ETS once the Northern Ireland Assembly is able to progress legislation; see https://www.gov.uk/government/publications/coverage-of-aviation-in-the-uk-and-swiss-emissions-trading-schemes-memorandum-of-understanding
5 The full scope of aviation activities included in the UK ETS is outlined in the Greenhouse Gas Emissions Trading Scheme Order 2020.

USE OF REVENUES

General budget, including debt reduction

Revenues from UK ETS auctions accrue to the general budget and are not earmarked.

FLEXIBILITY & LINKING

BANKING AND BORROWING

Banking is allowed, and allowances remain valid in future years of the scheme.

Limited and implicit borrowing is allowed, i.e., the use of UKAs allocated for free in the current year for compliance in the previous year.

OFFSET CREDITS

The use of offset credits is not allowed. The UK is considering introducing GGRs to be used for compliance within the scheme.

The UK is also considering how the UK ETS should interact with the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA).

LINKS WITH OTHER SYSTEMS

The UK ETS is not linked with any other system.
The UK government has indicated it is open to the possibility of internationally linking the scheme in the future but has not made any decision on preferred linking partners. The post-Brexit Trade and Cooperation Agreement between the EU and UK stipulates that the jurisdictions "shall give serious consideration to linking their respective carbon pricing systems in a way that preserves the integrity of these systems and provides for the possibility to increase their effectiveness".

COMPLIANCE

COMPLIANCE MECHANISM

Covered entities must surrender one allowance per tCO_2e emitted for all their covered emissions, and allocation is based on auctions or free allocation.

COMPLIANCE PERIOD

One year. Covered entities have until the end of April of the following year to surrender allowances. These provisions are the same as under the EU ETS.

MRV

REPORTING FREQUENCY: Annual self-reporting.

VERIFICATION: Verification by independent accredited verifiers is required before the end of March each year.

FRAMEWORK: The UK ETS has adopted the MRV framework of Phase 4 of the EU ETS, including discretionary changes regarding reduced frequency of improvement reporting and the simplification of monitoring plans.

ENFORCEMENT

Regulated entities must pay an excess emissions penalty for each tCO_2e emitted without surrendering an allowance. This penalty is equal to GBP 100 per tCO_2e (USD 125) initially but is adjusted for inflation over time. The names of non-compliant operators are published.

MARKET REGULATION

MARKET DESIGN

MARKET PARTICIPATION: Compliance entities, non-compliance entities (domestic and international), and individuals.

MARKET TYPES:

Primary: The majority of allowances are allocated through auctioning. Auctions are held every two weeks, with dates and allowance amounts set out in the auction calendar. Compliance entities, financial institutions, and business groupings and public bodies acting on behalf of compliance entities can participate. Auctions are managed by ICE Futures Europe.

Secondary: UKAs are traded on the ICE Futures Europe exchange. Contracts for daily futures, futures, and options on futures contracts are available. Participants may also trade allowances over the counter. Participants in the secondary market must have an account in the UK Registry. Participants trading on the exchange must meet the requirements of the ICE Futures Exchange.

LEGAL STATUS OF ALLOWANCES: The "Recognised Auction Platforms (Amendment and Miscellaneous Provisions Regulations 2021) Affirmative Statutory Instrument" establishes UKAs as financial instruments.

MARKET STABILITY PROVISIONS

SUPPLY ADJUSTMENT MECHANISM (SAM): The UK ETS Authority launched a consultation in December 2023 on the potential introduction and design of a SAM.

COST CONTAINMENT MECHANISM (CCM): The UK ETS has a CCM to avoid price spikes by auctioning additional allowances. If the CCM is triggered, regulators can decide on whether and how to intervene. The intervention can include: redistributing allowances between the current year's auctions; bringing forward UKA supply from future years; drawing from the Market Stability Mechanism Account; auctioning up to 25% of remaining allowances in the NER; or auctioning allowances left unallocated from the industry cap in a given year. The UK ETS Authority has publicly consulted on the current design of the CCM.

Triggers: The CCM is triggered if, for six consecutive months, the allowance price is three times the average allowance price in effect in the UK in the two preceding years.

AUCTION RESERVE PRICE (ARP): To ensure a minimum level of ambition in the transition from the EU ETS to the UK ETS, an ARP of GBP 22 (USD27.50) is in place. The UK ETS Authority has publicly consulted on maintaining the ARP and sought views on the level and design of the ARP.

OTHER INFORMATION

INSTITUTIONS INVOLVED

UK ETS Authority: Overall responsibility for designing and implementing the UK ETS. It is composed of the representatives of the UK Government, Scottish Government, Welsh Government, and the Department of Agriculture, Environment and Rural Affairs of Northern Ireland.

Regulators (Environment Agency; Scottish Environment Protection Agency; Natural Resources Wales; Northern Ireland Environment Agency; Offshore Petroleum Regulator for Environment and Decommissioning): Responsible for enforcing compliance with the UK ETS Regulations. The Environment Agency serves as the registry administrator and is responsible for the management of accounts in the UK Emissions Trading Registry.

EVALUATION/ETS REVIEW

Phase 1 includes two mandatory whole-system reviews. The first review was published at the end of 2023, and the second must be published by the end of 2028.

In addition to the whole-system reviews, the government is in the process of reviewing free allocation for stationary installations and aviation and changes required to align with CORSIA.

REGULATORY FRAMEWORK

→ The Greenhouse Gas Emissions Trading Scheme Order 2020
→ The Greenhouse Gas Emissions Trading Scheme Auctioning Regulations 2021

UKRAINE

- **First monitoring reports submitted in 2022, following MRV law introduced in 2021**
- **Data from operation of the MRV system provides the basis for an ETS**
- **Roadmap for an ETS currently under development**

ETS DESCRIPTION

Ukraine plans to establish a national ETS in line with its obligations under the "Ukraine-EU Association Agreement", which entered into force in September 2017. Issues related to climate change are addressed in Article 365 (c) Title V and in an annex to the agreement, which outlines steps for the implementation of a national ETS, including:

- adopting national legislation and designating a competent authority(-ies);
- establishing a system for identifying relevant installations and GHGs;
- developing a national allocation plan to distribute allowances;
- establishing a system to issue allowances to be traded domestically among installations in Ukraine; and
- establishing MRV and enforcement systems, as well as public consultations procedures.

The country has since established a national MRV system, by its scope partially covering activities similar to EU ETS activities, to provide a solid basis for the upcoming ETS. Since 2021, the MRV procedures as adopted in the framework law on MRV have been applied by regulated installations. To establish its ETS, Ukraine plans to develop separate legislation based on at least three years of data from the MRV system. According to a statement made by the Minister of Environmental Protection and Natural Resources in October 2023, the ETS may be launched in a pilot mode in 2025.

In 2022, covered installations were supposed to submit first monitoring reports for 2021. However, from 2022, due to the Russian war of aggression against the country, the MRV system is implemented on a voluntary basis. Draft instruments for cap-setting and allowance allocation were developed, and a stakeholder engagement process was also carried out in 2022 to early 2023.

In October 2023, the Minister of Environmental Protection and Nature Resources announced that an ETS law should be drafted in 2024. Work on the Roadmap on the Introduction of a GHG ETS started in autumn 2023, aimed at delivering an action plan for ETS implementation in early 2024. The document should also undergo a stakeholder consultation process in 2024.

EMISSIONS & TARGETS OF UKRAINE

GHG EMISSIONS (EXCL. LULUCF), **2021**

(in $MtCO_2e$, share of total in %)

Energy	209.7	(64%)
Industrial processes	58.4	(18%)
Agriculture	47.0	(14%)
Waste	12.1	(4%)
Total	**327.3**	

Energy industries	85.2	(26%)
Manufacturing industries and construction	21.0	(6%)
Transport	33.7	(10%)
Commercial, institutional, and residential	19.7	(6%)
Other energy	50.1	(15%)

GHG REDUCTION TARGETS

By 2030: Economy-wide net domestic reduction of 65% in GHG emissions compared to 1990 (updated NDC)

By 2050: GHG emissions from energy and industrial processes will not exceed 31-34% of 1990 GHG levels (Low Emission Development Strategy 2050)

By 2060: Climate neutrality (National Economic Strategy until 2030)

COMPLIANCE

MRV

MONITORING: Monitoring is required annually for CO_2 emissions from the following activities:

- fuel combustion in installations over 20 MW;
- oil refining;
- the production of coke, metal ores, pig iron, steel, ferrous alloys including ferroalloys (if the total nominal thermal capacity of combustion units exceeds 20 MW), cement clinker, lime or the calcination of dolomite or magnesite (with a production capacity exceeding 50 tonnes per day), nitric acid, and ammonia, glass production (with a production capacity exceeding 20 tonnes per day);
- N_2O emissions from the production of nitric acid.

Monitoring takes place according to Monitoring Plans, approved by the Ministry of Environmental Protection and Natural Resources (MEPNR).

REPORTING: Covered entities are obliged to submit a verified annual report on GHG emissions to the MEPNR by the end of March of the following year.

VERIFICATION: Emissions data reports and their underlying data require third-party verification by an accredited auditor.

FRAMEWORK: Law on the principles of monitoring, reporting, and verification of GHG emissions. Order of the Cabinet of Ministers on approval of the procedure for monitoring and reporting on GHG emissions. Order of the Cabinet of Ministers on verification of operators reports.

OTHER INFORMATION

INSTITUTIONS INVOLVED

Ministry of Environmental Protection and Natural Resources of Ukraine: Competent authority for implementing the MRV law and the upcoming ETS.

National Accreditation Agency of Ukraine: Accredits third-party verifiers.

State Ecological Inspection of Ukraine: Controlling compliance with MRV requirements.

REGULATORY FRAMEWORK

- → **Law on the principles of monitoring, reporting and verification of greenhouse gas emissions** (MRV law)
- → **Order of the Cabinet of Ministers on approval of the procedure for monitoring and reporting on GHG emissions**
- → **Association Agreement between the European Union and its Member States, of the one part, and Ukraine, of the other part**

ALBERTA

TECHNOLOGY INNOVATION AND EMISSIONS REDUCTION REGULATION

- Intensity-based approach
- TIER Regulation amendments in 2023
- The province has had a carbon price since 2007

ETS DESCRIPTION

The Alberta Technology Innovation and Emissions Reduction (TIER) Regulation is the province's industrial carbon pricing and emissions trading system. The Technology Innovation and Emissions Reduction Implementation Act paved the way for the system, which was implemented in January 2020, replacing former regulations for carbon pricing that had been in place since 2007.

The TIER Regulation applies to: (1) large emitters defined as those that have emitted equal or more than 100,000 tCO_2e in 2016, or any subsequent year, or have imported more than 10,000 tonnes of hydrogen in 2023 or any subsequent year; (2) opted-in facilities with emissions under 100,000 tCO_2e/year but more than 2,000 tCO_2e/year; and (3) opted-in aggregated facilities that include two or more small conventional oil and gas facilities.

Covered entities must reduce their emissions intensity (emissions per unit of production) by a set percentage each year. The reduction requirement is based on a facility's average emissions intensity over a three-year historic period or compared to a sector-specific benchmark. Covered entities that outperform their targets generate emissions performance credits (EPCs), which can be sold or used in future compliance years. Those that exceed their limits are required to provide compensation by either (1) purchasing EPCs from other covered facilities, (2) paying into the TIER fund to purchase a fund credit for each tonne of excess emissions produced at the prescribed TIER Fund Price (CAD 65 [USD 48.15] per tonne in 2023, rising by CAD 15 [USD 11.11] each year until it reaches CAD 170 [USD 125.93] per tonne in 2030), or (3) purchasing emission offset credits generated within Alberta under an approved offset protocol or sequestration credits.

The TIER Regulation meets the Canadian government's stringency requirements for carbon pollution pricing systems and is similar to the federal OBPS.

YEAR IN REVIEW

The latest review of the TIER Regulation was completed in December 2022. Based on this review, Alberta implemented significant amendments which came into effect in January 2023. Amendments primarily focus on modernizing the TIER system, and enhancing the province's approach to reducing emissions from large industrial emitters.

Amendments included, but are not limited to:

- The stringency of facility-specific benchmarks and sector-specific high-performance benchmarks tighten by 2% annually. For oil sands mining, in situ and upgrading, the annual tightening rate is 4% in 2029 and 2030.
- The price to obtain a TIER fund credit will increase annually by CAD 15 (USD 11.11) from CAD 65 (USD 48.15) per credit starting in 2023 to CAD 170 (USD 125.93) per credit in 2030.
- The credit usage limit for the compliance obligation will increase by 10% each year, from 60% in 2023 to 90% in 2026.
- The credit expiry timeline for EPCs has been reduced to five years and for emissions offset credits to six years.

In force
Under development
Under consideration

SECTORS

POWER

INDUSTRY

GREENHOUSE GASES

CO_2, CH_4, N_2O, SF_6, HFCs, PFCs, other

OFFSET CREDITS

Domestic

ALLOCATION

Free Allocation

AVERAGE 2023 PRICES

Set price: CAD 65 (USD 48.15)

TOTAL REVENUE

CAD 3.97 billion (USD 2.94 billion) since the beginning of the program
CAD 0.86 billion (USD 0.64 billion) in 2023

- Sequestration credits and capture recognition tonnes are established as new instruments. Sequestration credits enable recognition for projects under the federal Clean Fuel Regulations. Capture recognition tonnes also enable large emitters and opt-in facilities to reduce sequestered emissions from total regulated emissions at carbon capture sites.
- Flaring emissions are now included in opted-in aggregated facilities for oil and gas facilities.
- Opt-in threshold for emissions-intensive and trade-exposed facilities is 2,000 tCO_2e/year.

The TIER Regulation is in effect through 2030, and a review must be completed by the end of 2026

EMISSIONS & TARGETS OF ALBERTA

OVERALL GHG EMISSIONS (EXCL. LULUCF), 2021

(in $MtCO_2e$, share of total in %)

Energy	223.0	(87%)
Industrial processes	12.5	(5%)
Agriculture, forestry and other land use[4]	17.0	(7%)
Waste	4.2	(2%)
Total	**256.0**	

Energy industries	124.9	(49%)
Manufacturing industries and construction	9.1	(4%)
Transport	36.8	(14%)
Commercial, institutional, and residential	16.0	(6%)
Other energy	36.0	(14%)

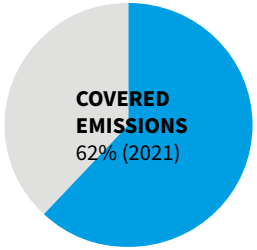
GHG REDUCTION TARGETS

By 2050: Carbon neutrality (Alberta Emissions Reduction and Energy Development Plan)

ETS COVERAGE & PHASES

COVERED EMISSIONS

Verified ETS emissions 159 $MtCO_2e$ (2021)



CAP OR TOTAL EMISSIONS LIMIT

The total emissions limit under the TIER Regulation is the sum of the annual emissions limits based on emissions intensity benchmarks for all covered entities. The limit is therefore not set ex-ante and is only known after the compliance period ends.

In the 2022 calendar year, TIER covered 160 $MtCO_2e$ of emissions.

SECTORS AND THRESHOLDS

INCLUSION THRESHOLDS: Coverage is mandatory for facilities with emissions equal or exceeding 100,000 tCO_2e GHGs in 2016, or any subsequent year, or facilities that import more than 10,000 tonnes of hydrogen in 2023 or any subsequent year.

Facilities with fewer than 100,000 tCO_2e GHGs may opt-in to the TIER system if they compete against a facility regulated under TIER, or have more than 2,000 tonnes of annual emissions and are in an emissions-intensive, trade-exposed (EITE) sector.

The owner or operator of multiple small conventional oil and gas facilities can also opt-in to the TIER system by applying to be regulated as an aggregate facility.

POINT OF REGULATION

Point source (industry, power)

TYPE OF ENTITIES

Facilities (stationary fuel combustion, industrial processes, venting, flaring, fugitive/other, on-site transportation, waste and wastewater, formation CO_2)

NUMBER OF ENTITIES

In the 2022 calendar year, TIER regulated 455 facilities. The number of sites is orders of magnitude higher as the opted-in conventional oil and gas facilities aggregate numerous small operations.

ALLOWANCE ALLOCATION & REVENUE

ALLOWANCE ALLOCATION

Allocation is determined in relation to annual emissions limits based on emissions intensity benchmarks. Entities that emit less than their emissions limit receive EPCs (compliance units) for free from the Government of Alberta, corresponding to the number of tCO_2e below the limit. This is similar to free allocation based on benchmarks. These compliance units can be banked or sold to entities that emit more than their emissions limits.

Facilities with emissions above their limit must provide compensation by a prescribed deadline for each tCO_2e above the limit.

Emissions reduction requirements under the TIER Regulation are set using two benchmarking approaches:

1. High-performance benchmarks (HPBs) that recognize and reward the most efficient facilities in an industry, or
2. Facility-specific product benchmarks (FSBs) which set a reduction target relative to a facility's historic performance.

The reduction target is being tightened at a rate of 2% per year for FSBs and HPBs, including heat, hydrogen, and electricity, since 2023. For oil sands mining, in situ and upgrading, the annual tightening rate is 4% in 2029 and 2030.

Facilities comply with the least stringent of these approaches.

High-performance benchmark approach: Benchmarks are set based on the average emissions-intensity of the most emissions-efficient facilities producing each benchmarked product over reference years. If fewer than ten facilities are producing a product, the benchmark is set based on the emissions intensity of the best-performing facility. Where a facility produces a product that has not received a high-performance benchmark, the facility-specific benchmark applies.

Facility-specific benchmark approach: Facilities are required to reduce emissions intensity relative to the facility's historical production-weighted average emissions intensity. Facility-specific benchmarks are not applicable for industrial heat or hydrogen or to facilities in the electricity sector.

USE OF REVENUES

Climate mitigation & adaption

Low-carbon innovation

General budget, including debt reduction

Revenues (i.e., compensation payments of covered facilities that exceed their set emissions limit) are designated to the TIER Fund, which funds a variety of GHG reduction programs and low-carbon innovation projects and climate resilience (e.g., investment in carbon capture, utilization and storage).

FLEXIBILITY & LINKING

BANKING AND BORROWING

EPCs can be banked, transferred, or retired by facilities subject to the TIER Regulation to meet their reduction requirements. The expiry length for EPCs is set at five years after the reduction year.

OFFSET CREDITS

The use of Alberta-based emissions offset credits is allowed as compliance instruments under the TIER Regulation. The eligibility criteria for these credits are set in the TIER Regulation, the Standard for GHG Emission Offset Project Developers, and the Carbon Offset Emission Factors Handbook. The government approves eligible project types through the development of methodologies (quantification protocols) for the generation of Alberta emission offset credits. A quantification protocol outlines the eligible activity or activities and provides monitoring, measuring and quantification procedures for the emission or net sequestration reductions resulting from the implementation of an eligible activity.

QUALITATIVE LIMIT: High-level criteria for emissions offset projects include, but are not limited to, that the emission reduction or net sequestration activity:

- must occur in Alberta,
- must meet additionality requirements (including legal additionality),
- must result from an action taken that is not required by law,
- must result from action taken and occuring after January 1, 2002,
- must be real and demonstrable,
- must be quantifiable and measurable using replicable techniques, and
- must not have had reduced the total regulated emissions of a TIER facility.

QUANTITATIVE LIMIT: The use of emission offset credits and EPCs to meet a facility's total compliance obligation is limited to 60% in 2023 and will increase by 10% annually until it reaches 90% in 2026. The expiry length for offsets is set at six years including the reduction year.

Transactions between buyer and seller are managed outside the Alberta Emissions Offset Registry; the registry is a tracking and listing service.

LINKS WITH OTHER SYSTEMS

The TIER system is not directly linked with any other system.
A subset of TIER offset types are recognized as compliance units under the Canadian (federal) output-based pricing system.
Some sequestration credits generated in the TIER system allow projects to also be recognized under the Canadian (federal) Clean Fuel Regulations.
Covered facilities can become eligible for certain exemptions from the Canada federal fuel charge.

COMPLIANCE

COMPLIANCE MECHANISM

Covered entities must surrender one compliance unit per tCO_2e that exceeds the facility's annual emissions limit, which is either based on the high-performance benchmark approach or a facility-specific benchmark.

These are the compliance options under the TIER system:

- On-site emission reductions;
- Use of EPCs (produced and traded by facilities that exceed their emission reduction obligations);
- Use of Alberta-based emissions offset credits and sequestration credits;
- Purchase fund credits by paying into the TIER fund at the prescribed price, which is equivalent to the Canadian federal minimum carbon price of CAD 65 (USD 48.15) per tCO_2e for the 2023 compliance year and rising annually by CAD 15 (USD 11.11) to reach CAD 170 (USD 125.93) per tCO_2e in 2030.

Maximum proportion of compliance that can be met with credits: 60% of a facility's total compliance obligation in 2023, increasing by 10% per year until it reaches 90% in 2026.

COMPLIANCE PERIOD

One year.

MRV

REPORTING: All facilities are required to submit verified annual compliance reports yearly by the end of June of the following year. Facilities with more than 1 million tCO_2e per year are also obliged to submit an annual compliance forecasting report.

VERIFICATION: Reports must be verified by a qualified third-party assurance provider.

FRAMEWORK: The rules for reporting GHG emissions are outlined in the "Technology Innovation and emissions Reduction Regulation" and Alberta Greenhouse Gas Quantification Methodologies.

ENFORCEMENT

If a covered entity does not meet its compliance obligation, the maximum amount of the penalty can be up to CAD 400 (USD 296.27) for every tCO_2e by which it exceeds the allowable emissions for the entity.

MARKET REGULATION

MARKET DESIGN

MARKET PARTICIPATION: Compliance entities including mandatorily and voluntarily covered entities (for inclusion thresholds see 'Sectors and Thresholds' section.)

MARKET TYPES:

Primary: Compliance units are currently not auctioned.

Secondary: Covered entities may purchase EPCs from other regulated entities that have outperformed their compliance obligation. Transactions are conducted via the Alberta Emission Performance Credit Registry (EPCR), which handles the allocation, transfer or retirement of EPCs.

MARKET STABILITY PROVISIONS

INSTRUMENT NAME: TIER Fund (price ceiling)

Triggers: To compensate for emissions exceeding the facility's annual emissions limit, covered entities can purchase and surrender fund credits by paying into the TIER Fund at the prescribed TIER Fund price. The TIER Fund price, which functions as a price ceiling is CAD 65 (USD 48.15) per tCO_2e for the 2023 compliance year; it will increase by CAD 15 (USD 11.11) per year, reaching CAD 170 (USD 125.93) per tCO_2e in 2030.

OTHER INFORMATION

INSTITUTIONS INVOLVED

Government of Alberta, Alberta Environment and Protected Areas: Responsible for establishing the regulatory framework of the TIER system, enforcement of the regulation, and allocation of EPCs.

Alberta Carbon Registries: Comprises the Alberta Emission Performance Credit Registry, which handles the allocation, transfer or retirement of EPCs, and the Alberta Emissions Offset Registry, which handles the registration and transactions of emission offset credits.

Both registries are operated by CSA Group in coordination with the Government of Alberta. The CSA Group provides the infrastructure and public transparency for both registries.

EVALUATION/ETS REVIEW

The Government of Alberta completed its latest review of the TIER Regulation in December 2022. The TIER Amendment Regulation came into force at the beginning of 2023 and will stay in place until 2030. An interim review of the TIER regulation must be completed by the end of 2026.

REGULATORY FRAMEWORK

- → Emissions Management and Climate Resilience Act (EMCRA)
- → Technology Innovation and Emissions Reduction Regulation (TIER Regulation)
- → Order in Council 403/2022 – TIER Regulation Amendments
- → Alberta Emissions Developing Benchmarks and Energy Development Plan
- → Standard for developing benchmarks: Technology Innovation and Emissions Reduction Regulation

BRITISH COLUMBIA

B.C. OUTPUT-BASED PRICING SYSTEM

- **System replaces the previous carbon pricing mechanism for industry**
- **B.C. OBPS aligned with the Canada federal benchmark criteria**

ETS DESCRIPTION

Starting in April 2024, the B.C. Output-Based Pricing System (B.C. OBPS) replaces the province's carbon pricing mechanism for industrial operators, which had included the provincial carbon tax and a baseline-and-credit system under the CleanBC Program for Industry. The CleanBC Program for Industry had been in place since April 2019 and included the CleanBC Industrial Incentive Program (CIIP) and the CleanBC Industry Fund (CIF); the CIIP will be discontinued, and the CIF is under review and will continue under the new mechanism.

The CIIP encouraged industrial facilities to reduce their emissions by directing a portion of B.C.'s carbon tax paid by industry into incentives for cleaner industrial operations. These incentive payments were based on the performance of each industrial operation in relation to world-leading low-carbon emissions benchmarks.

In 2023, British Columbia announced the transition to an OBPS for large industrial emitters with its official implementation starting in April 2024. The B.C. OBPS follows the federal carbon price path and ensures a price incentive for industrial emitters to reduce GHG emissions through a performance-based system. Facilities that emit under their annual emission limit will earn credits. For facilities that emit over their emission limit, the B.C. OBPS provides flexible compliance options to meet compliance obligations. Flexible payment options include using earned credits, B.C. offsets, or making a direct payment.

YEAR IN REVIEW

As part of "Budget 2023", British Columbia announced the increase of B.C.'s carbon price to CAD 65 (USD 48.15) per tCO_2e for 2023, increasing by CAD 15 (USD 11.11) each year until it reaches CAD 170 (USD 125.93) in 2030; with this increase the province's carbon price would now meet the Government of Canada's carbon price path. The budget also included the announcement to transition from the CIIP to the B.C. OBPS, starting in April 2024.

In force

Under development

Under consideration

SECTORS

INDUSTRY

GREENHOUSE GASES

CO_2, CH_4, N_2O, SF_6, HFCs, PFCs

OFFSET CREDITS

Domestic

ALLOCATION

Free Allocation

AVERAGE 2023 PRICES

CAD 65 (USD 48.15)

EMISSIONS & TARGETS OF BRITISH COLUMBIA

OVERALL GHG EMISSIONS (EXCL. LULUCF), **2021**

(in $MtCO_2e$, share of total in %)

Energy	51.8	(87%)
Industrial processes	3.5	(6%)
Agriculture, forestry and other land use[4]	2.1	(4%)
Waste	2.0	(3%)
Total	**59.4**	

Energy industries	9.3	(15%)
Manufacturing industries and construction	4.1	(7%)
Transport	26.5	(45%)
Commercial, institutional, and residential	7.5	(13%)
Other energy	4.5	(8%)

GHG REDUCTION TARGETS

By 2030: 40% below 2007 levels
By 2040: 60% below 2007 levels
By 2050: 80% below 2007 levels

ETS COVERAGE & PHASES

COVERED EMISSIONS

The OBPS is scheduled to begin operating in April 2024, so no data yet available.

CAP OR TOTAL EMISSIONS LIMIT

The total emission limit under the B.C. OBPS is the sum of the annual emissions limits based on emissions intensity benchmarks for all individual covered entities. The limit is therefore not set ex-ante and is only known after the compliance period ends.

SECTORS AND THRESHOLDS

INCLUSION THRESHOLDS: Participation is mandatory for producers of certain regulated industrial products under the "Greenhouse Gas Industrial Reporting and Control Act" (GGIRCA) emitting ≥10,000 tCO_2e/year. Industrial operations within regulated sectors under this threshold with annual emissions of ≥10,000 tCO_2e/year are permitted to opt-in to the B.C. OBPS on a voluntary basis; those that do not opt-in remain subject to the B.C. Carbon Tax.

POINT OF REGULATION

Point source (industry)

TYPE OF ENTITIES

Facilities

NUMBER OF ENTITIES

n/a

ALLOWANCE ALLOCATION & REVENUE

ALLOWANCE ALLOCATION

Industrial facility's emissions are assessed against a facility-specific emission limit, which is based on a product-specific performance standard. Facilities that emit less than their emissions limit receive credits (compliance units), free of charge from the government of British Columbia, corresponding to the number of tonnes CO_2e below the limit. This is similar to free allocation based on benchmarks. These earned credits can be banked or sold to entities that emit more than their emissions limits (see below for more details). Earned credits do not have an expiry date.

The performance standards are calculated using the three-year provincial production weighted average emissions intensities for 2019-2021. Then a reduction factor, which determines the percentage of priced emissions for a specific product, is applied. The reduction factor is set at 65% for most products, 80% for copper mining, 85% for lead-zinc smelting, 90% for cement, chemical processing and lime products, 95% for aluminum smelting.

Tightening rates ensure a yearly gradual increase to the OBPS's stringency. The B.C. OBPS tightening rate is set at 1% on all emissions for all products except for industrial process emissions; the tightening rate for industrial process emissions is set at 0% for all sectors.

USE OF REVENUES

Climate mitigation & adaption

A portion of revenues paid by industry regulated by the B.C. OBPS will be directed to continuing the CIF, which supports the development, trial, and deployment of projects that reduce GHG emissions from large industrial operations. As further policy work and the design of the new model for industry emissions pricing is underway, future decisions will confirm revenues directed to this program after affordability measures are fully addressed. In the interim, the CleanBC Program for Industry will continue under its current funding model, until the OBPS is ready for

implementation. The funding available to the CIF under OBPS is anticipated to be confirmed in "Budget 2024".

FLEXIBILITY & LINKING

BANKING AND BORROWING

Banking allowed.

Borrowing is not allowed.

Under the B.C. OBPS, earned credits can be traded or transferred between facilities operating in B.C that are owned by the same operator. Earned credits can also be traded between industrial operators participating in the B.C. OBPS.

OFFSET CREDITS

QUALITATIVE LIMITS: Only offsets from projects that are approved, validated, and verified through the B.C. Carbon Registry are allowed as compliance option. Under the B.C. OBPS, offset units are limited to those generated within three years of the beginning of the compliance year.

QUANTITATIVE LIMITS: The use of offsets to meet a facility's compliance obligation is limited.

LINKS WITH OTHER SYSTEMS

The B.C. OBPS is not directly linked with any other system.

A subset of B.C. OBPS offset types are recognized as compliance units under the Canadian (federal) output-based pricing system.

COMPLIANCE

COMPLIANCE MECHANISM

Covered entities must surrender one allowance per tCO_2e that exceeds the facility's annual emissions limit.

To meet their obligations, facilities can use a combination of compliance units and direct payments (compliance charge).

Compliance units can be earned credits or offset units.

The compliance charge is equivalent to the Canadian federal minimum carbon price of CAD 80 (USD 50.26) for 2024; it will increase by CAD 15 (USD 11.11) per year, reaching CAD 170 (USD 125.93) per tCO_2e in 2030.

The use of compliance units is limited. In 2024, a maximum of 50% of the compensation can be met with compliance units (earned credits and/or offset units), reducing to 40% in 2025, and fixed at 30% from 2026 to 2030.

COMPLIANCE PERIOD

One year

MRV

REPORTING: Facilities that emit ≥10,000 tCO_2e per year – and those that have emitted more than 10,000 tCO_2e in any of the previous three years – must report their GHG emissions annually by 31 May of the year following the compliance period.

VERIFICATION: Facilities with ≥25,000 tCO_2e during either the current reporting cycle or any of the previous three reporting cycles must have their emission reports verified by an accredited third party.

FRAMEWORK: The B.C. OBPS will use the MRV framework regulated under the Greenhouse Gas Industrial Reporting and Control Act.

ENFORCEMENT

Late penalties automatically apply in cases where a facility fails to meet its compliance obligation by the deadline. Automatic late penalties increase until the compliance obligation is met. Detailed regulations are published in the **GHG Emissions Administrative Penalties and Appeals Regulation** under the GHG Industrial Reporting and Control Act.

MARKET REGULATION

MARKET DESIGN

MARKET PARTICIPATION: Compliance entities including mandatorily and voluntarily covered entities (for inclusion thresholds see 'Sectors and Thresholds' section.)

MARKET TYPES:

Primary: Compliance units are currently not auctioned.

Secondary: Earned credits can be traded or transferred between facilities operating in British Columbia that are owned by the same operator. Earned credits can also be traded between industrial operators participating in the British Columbia OBPS.

MARKET STABILITY PROVISIONS

INSTRUMENT NAME: Compliance charge (price ceiling)

TRIGGERS: To compensate for emissions exceeding the facility's annual emissions limit, a facility can use direct payments (compliance charge) to meet the facility's compliance obligations at the full carbon price for that year. This price acts as a price ceiling and is aligned with the federal benchmark carbon price (CAD 80 [USD 59.26] in 2024). The price increases by CAD 15 (USD 11.11) each year until 2030, resulting in a price of CAD 170 (USD 125.93) per tCO_2e in 2030.

OTHER INFORMATION

INSTITUTIONS INVOLVED

Ministry of Environment and Climate Change Strategy's Climate Action Secretariat (ENV): Authority responsible for establishing the regulatory framework of the British Columbia OBPS system; allocation of earned credits.

EVALUATION/ETS REVIEW

To ensure continuous improvement of the system, the British Columbia OBPS will undergo an annual review.

By 2026, the Canada federal government will undertake an interim review of the federal benchmark which includes a review of the provincial carbon pricing systems to make sure that they meet the federal benchmark criteria.

REGULATORY FRAMEWORK

- → Greenhouse Gas Industrial Reporting and Control Act (GGIRCA)
- → Greenhouse Gas Emissions Reporting Regula-tion (GGERR)
- → B.C. OBPS Technical Background and General Program Guidance for Industrial Operators
- → CleanBC Roadmap to 2030
- → B.C. Carbon Registry
- → B.C.'s Offset Protocol Policy

CALIFORNIA

CALIFORNIA CAP-AND-TRADE PROGRAM

- **Broadest carbon pricing system in the US and one of the largest carbon markets in the world**
- **Linked with Québec's system**
- **Public consultation process through 2023 to consider potential program updates**

ETS DESCRIPTION

The California Cap-and-Trade Program began operation in 2012 with the opening of its tracking system for allocation, auction distribution, and trading of compliance instruments. Compliance obligations started in January 2013. The program covers ~75% of the state's GHG emissions.

The program covers ~400 facilities and emissions from the power, industrial, transport, and buildings sectors. Covered entities must surrender allowances for all their covered emissions. Allowances are distributed via a combination of auction, free allocation, and free allocation with consignment. The proceeds from auctioning are reinvested in projects that reduce emissions, strengthening the economy, public health, and the environment, especially in disadvantaged communities.

The California Cap-and-Trade Program is implemented under the authority of the California Air Resources Board (CARB). California has been part of the Western Climate Initiative (WCI) since 2007 and formally linked its program with Québec's in January 2014.

YEAR IN REVIEW

In December 2022, the Board of CARB approved the "2022 Scoping Plan for Achieving Carbon Neutrality". The plan lays out a path of carbon neutrality that includes a 48% reduction of emissions below 1990 levels in 2030, which exceeds California's statutory 40% reduction target. CARB announced it would evaluate all major programs, including the Cap-and-Trade Program, to assess the need to increase the stringency between now and 2030 and a Program through 2045.

A series of informal stakeholder workshops began in June to consider potential amendments to the program. CARB presented three different scenarios for revising future allowance budgets consistent with emission reductions of 40%, 48%, and 55% below 1990 levels. Among other topics considered during public workshops were updates to cost-containment mechanisms, the use of revenues from consigned allowances, and carbon leakage protection measures.

Any amendments to the Cap-and-Trade Regulation are expected to be voted on by the Board of CARB by the end of 2024, with the changes potentially implemented from 2025.

In force
Under development
Under consideration

SECTORS

POWER
INDUSTRY
BUILDINGS
TRANSPORT

CAP

280.7 $MtCO_2e$ (2024)

GREENHOUSE GASES

CO_2, CH_4, N_2O, SF_6, HFCs, PFCs, NF_3, and other fluorinated GHGs[1]

OFFSET CREDITS

Domestic[2]

ALLOCATION

Free Allocation: Benchmarking
Free Allocation with Consignment
Auctioning

AVERAGE 2023 PRICES

Average auction price: USD 32.93

TOTAL REVENUE

USD 26.97 billion since beginning of program
USD 4.72 billion in 2023[3]

1 Compliance obligations are currently only assessed on emissions of CO_2, CH_4, and N_2O
2 California's Cap-and-Trade Program allows the use of offsets issued by linked jurisdictions (i.e., Québec).
3 Does not include revenue from the auction of consigned allowances.

EMISSIONS & TARGETS OF CALIFORNIA

OVERALL GHG EMISSIONS (INCLUDING INDIRECT CO_2, EXCLUDING LULUCF), **2021**
(in $MtCO_2e$, share of total in %)

Energy	307.2	81%
Industrial processes	33.8	9%
Agriculture, forestry and other land use[4]	29.9	8%
Waste	10.4	3%
Total	**381.3**	

Energy industries	100.9	26%
Manufacturing industries and construction	12.6	3%
Transport	146.8	38%
Commercial, institutional, and residential	36.1	9%
Other energy	10.9	3%

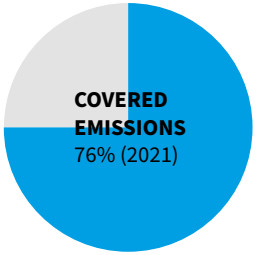
GHG REDUCTION TARGETS

By 2030: 40% reduction from 1990 GHG levels (SB 32)
By 2045: Carbon neutrality and an 85% reduction from 1990 anthropogenic GHG levels (AB 1279)

ETS COVERAGE & PHASES

COVERED EMISSIONS

Verified ETS emissions 292.2 $MtCO_2e$



COMPLIANCE PERIODS

FIRST COMPLIANCE PERIOD: Two years (2013 and 2014)
SECOND COMPLIANCE PERIOD: Three years (2015 to 2017)
THIRD COMPLIANCE PERIOD: Three years (2018 to 2020)
FOURTH COMPLIANCE PERIOD: Three years (2021 to 2023)
FIFTH COMPLIANCE PERIOD: Three years (2024 to 2026)

CAP OR TOTAL EMISSIONS LIMIT

A cap limits the total emissions allowed in the system.

FIRST COMPLIANCE PERIOD: The system started in 2013 with a cap of 162.8 $MtCO_2e$, declining to 159.7 $MtCO_2e$ in 2014, at a rate of ~2% annually.
SECOND COMPLIANCE PERIOD: With the program expanding to include fuel distribution, the cap rose to 394.5 $MtCO_2e$ in 2015. The cap decline factor averaged 3.1% per year in the second compliance period (2015 to 2017), reaching 370.4 $MtCO_2e$.

THIRD COMPLIANCE PERIOD: The cap in the third compliance period started at 358.3 $MtCO_2e$ and declined at an average annual rate of 3.3% to 334.2 $MtCO_2e$ in 2020.

FOURTH COMPLIANCE PERIOD AND BEYOND: During the 2021 to 2030 period, the cap declines by about 13.4 $MtCO_2e$ each year, averaging ~4% per year, to reach 200.5 $MtCO_2e$ in 2030.
The "Cap-and-Trade Regulation" sets a formula for declining caps after 2030 through 2050.

SECTORS AND THRESHOLDS

FIRST COMPLIANCE PERIOD: Covered sectors included those that have one or more of the following processes or operations: large industrial facilities (including cement, glass, hydrogen, iron and steel, lead, lime manufacturing, nitric acid, petroleum and natural gas systems, petroleum refining, and pulp and paper manufacturing, including cogeneration facilities co-owned/operated at any of these facilities); electricity generation; electricity imports; other stationary combustion; and CO_2 suppliers.

SECOND COMPLIANCE PERIOD AND BEYOND: In addition to the sectors listed above, suppliers of natural gas, suppliers of reformulated blendstock for oxygenate blending (i.e., gasoline blendstock) and distillate fuel oil (i.e., diesel fuel), suppliers of liquefied petroleum gas in California, and suppliers of liquefied natural gas are covered by the program.

INCLUSION THRESHOLDS: Facilities emitting ≥25,000 tCO_2e per year. All electricity imported from specified sources connected to a specific generator with emissions >25,000 tCO_2e per year is covered. Emissions associated with imported electricity from unspecified sources have a zero threshold, and all imported electricity emissions are covered using a default emissions factor.

OPT-IN COVERED ENTITIES: A facility in one of the covered sectors that emits <25,000 tCO_2e annually can voluntarily participate in the Program. Opt-in entities are subject to all registration, reporting, verification, compliance obligations, and enforcement applicable to covered entities.

POINT OF REGULATION

Upstream (buildings and transport); point source (industry, in-state power generation); imported electricity at the point of first delivery onto California's electricity grid.

TYPE OF ENTITIES

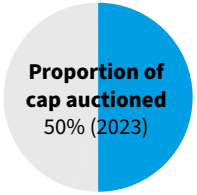
Installations, fuel distributors, electricity importers

4 Only includes categories "3A Livestock" and "3C Aggregate Sources and Non-CO_2 Emissions Sources on Land".

NUMBER OF ENTITIES
~400 facilities[5]

ALLOWANCE ALLOCATION & REVENUE

ALLOWANCE ALLOCATION



Allowances are distributed via free allocation, free allocation with consignment, and auction.

FREE ALLOCATION: Industrial facilities receive free allowances to minimize carbon leakage. For nearly all industrial facilities, the amount is determined by product-specific benchmarks, recent production volumes, a cap adjustment factor, and an assistance factor based on assessment of leakage risk.

Leakage risk is divided into "low", "medium", and "high" risk tiers based on levels of emissions intensity and trade exposure for each specific industrial sector.

FIRST COMPLIANCE PERIOD: The Cap-and-Trade Regulation as adopted in 2011 set assistance factors of 100% for the first compliance period, regardless of leakage risk.

SECOND COMPLIANCE PERIOD AND BEYOND: For facilities with medium leakage risk, the original regulation included an assistance factor decline to 75% for the second compliance period and to 50% for the third. For facilities with low leakage risk, it included an assistance factor decline to 50% for the second compliance period and to 30% for the third. However, amendments to the Cap-and-Trade Regulation made in 2013 delayed these assistance factor declines by one compliance period. Pursuant to AB 398 adopted in 2017, all assistance factors were changed to 100% through 2030, citing continued vulnerability to carbon leakage. There is no cap on the total amount of industrial allocation, but the formula for allocation includes a declining cap adjustment factor to gradually reduce allocation in line with the overall cap trajectory.

Free allocation is also provided for transition assistance to public wholesale water entities, legacy contract generators, universities, public service facilities, and, during the period 2018-2024, waste-to-energy facilities.

FREE ALLOCATION WITH CONSIGNMENT: Electrical distribution utilities and natural gas suppliers receive free allocation on behalf of their ratepayers. Natural gas and electric utilities must use the allowance value for ratepayer benefit and for GHG emissions reductions. All allowances allocated to investor-owned electric utilities and an annually increasing percentage of allowances allocated to natural gas suppliers must be consigned for sale at the state's regular quarterly auctions. Publicly owned electric utilities can choose to consign freely allocated allowances to auction or use them for their own compliance needs.

AUCTIONING:
- Auction share: ~70% of total California-issued vintage 2023 allowances made available through auction in 2023, which included allowances owned by CARB (~41%) and allowances consigned to auction by utilities (~29%).
- Auction volume: 197,368,635 (2023 vintage) 25,400,000 for advance auction (2026 vintage).

Unsold allowances in past auctions are gradually released for sale at auction after two consecutive auctions are held in which the clearing price is higher than the minimum price. However, if any of these allowances remain unsold after 24 months, they will be placed into CARB's price ceiling reserve or into the two lower reserve tiers (see 'Market Stability Provisions' section). To date, 37 million allowances originally designated for auction have been placed in reserves through these provisions.

USE OF REVENUES

- Climate mitigation
- Pursuit of other development objectives, such as education and health
- Assistance for individuals, households, and businesses
- Low-carbon innovation

REVENUE FROM AUCTION OF CALIFORNIA-OWNED ALLOWANCES: Most of California's auction revenue goes to the Greenhouse Gas Reduction Fund, of which at least 35% must benefit disadvantaged and low-income communities. The funds are then distributed as California Climate Investments, which support projects that deliver significant environmental, economic, and public health benefits across the state. As of May 2023, USD 9.8 billion (of the total USD 27.0 billion revenue raised) has been invested in 569,477 projects, with expected GHG reductions of 98 $MtCO_2e$. Over USD 7.2 billion has reached disadvantaged and low-income communities.

5 ~300 registered covered/opt-in entities. These entities represent ~400 registered emitting sources/facilities.

REVENUE FROM AUCTION OF UTILITY-OWNED ALLOWANCES: Investor-owned electric utilities and natural gas suppliers are allocated allowances, a portion of which must be consigned to auction. Auction proceeds must be used for ratepayer benefit and for GHG emissions reductions.

FLEXIBILITY & LINKING

BANKING AND BORROWING

Banking is allowed, but is subject to a holding limit on allowances to which all entities in the system are held. The holding limit is based on the year's cap and decreases annually. Entities may also be eligible for a limited exemption from the holding limit based on their emissions levels to support meeting annual compliance obligations or obligations at the end of a three-year compliance period.

Borrowing is not allowed.

OFFSET CREDITS

The use of compliance offset credits is allowed. Such credits, issued by CARB or by the authority of a linked cap-and-trade system, are compliance instruments under the California Cap-and-Trade Program.

QUALITATIVE LIMIT: Currently, offset credits originating from projects carried out according to one of six compliance offset protocols are accepted as compliance instruments:

- US. forest projects;
- Urban forest projects;
- Livestock projects (methane management);
- Ozone-depleting substances projects;
- Mine methane capture projects; and
- Rice cultivation projects.

Compliance offset credits issued by jurisdictions linked with California (i.e., Québec) are eligible to be used to satisfy a California entity's compliance obligation, subject to the quantitative limits described below.

To ensure environmental integrity, California's compliance offset program has incorporated the principle of buyer liability. The state may invalidate an offset credit that is later determined not to have met the requirements of its compliance offset protocol due to double counting, over-issuance, or regulatory non-conformance. The entity that surrendered the offset credit for compliance must then substitute a valid compliance instrument for the invalidated offset credit.

QUANTITATIVE LIMIT: For 2013 to 2020 emissions, entities could meet up to 8% of their obligations using offset credits. For emissions after 2020, entities are subject to lower limits on the use of offset credits established by AB 398. The share of offsets that can be used to fulfil the compliance obligation is 4% per year for 2021 to 2025 emissions, and 6% for 2026 to 2030 emissions.

In addition to setting new quantitative limits on the use of offset credits, AB 398 set new limits on the types of offset credits that can be used to fulfil compliance obligations. Starting with compliance obligations for 2021 emissions, no more than 50% of any entity's offset usage limit can come from offset projects that do not provide direct environmental benefits to the state (DEBS).

Projects located within California are automatically considered to provide DEBS. Offset projects implemented outside of California may still result in DEBS, based on scientific evidence and project data provided. For example, a forest project outside California has been determined to provide benefits within California by improving the quality of water flowing through the state. Recent regulatory amendments specify the criteria used to determine DEBS.

LINKS WITH OTHER SYSTEMS

California's program linked with Québec's in January 2014. The two expanded their joint market by linking with Ontario in January 2018 until the termination of Ontario's system in mid-2018.

COMPLIANCE

COMPLIANCE MECHANISM

Each covered entity must surrender one compliance instrument for each tCO_2e of its covered emissions.

COMPLIANCE PERIOD

Except for the year following the last year of a compliance period, compliance instruments equal to 30% of the previous year's verified emissions must be surrendered annually, by the start of November. Compliance instruments equal to all remaining emissions must be surrendered by the start of November of the year following the last year of a compliance period.

MRV

REPORTING FREQUENCY: Annually

VERIFICATION: Emissions data reports and their underlying data require annual verification by an independent third-party for all entities covered by the Program.

FRAMEWORK: Reporting is required for most emitters at or above 10,000 tCO_2e per year. They must implement internal audits, quality assurance, and control systems for the reporting program and the reported data.

ENFORCEMENT

A covered entity that fails to surrender sufficient compliance instruments to cover its verified GHG emissions on either an annual surrender deadline or a compliance period surrender deadline is automatically assessed an untimely surrender obligation. It is required to surrender the missing compliance instruments as well as three additional compliance instruments for each compliance instrument it failed to surrender.

Failure to meet this untimely surrender obligation would subject the entity to substantial financial penalties for its noncompliance, pursuant to "California Health and Safety Code Section 38580".

Separate and substantial penalties apply to mis-reporting or non-reporting under the "Regulation for the Mandatory Reporting of Greenhouse Gas Emissions".

MARKET REGULATION

MARKET DESIGN

MARKET PARTICIPATION: Covered entities, opt-in covered entities, and voluntarily associated entities can participate in the program. Voluntarily associated entities are approved individuals or entities that intend to:

- purchase, hold, sell, or retire compliance instruments but are not covered under the program;
- operate a compliance offset project registered with CARB; or
- provide clearing services and derivative clearing services as qualified entities.

Voluntarily associated entities must be in the United States and have an approved account in the system registry, the Compliance Instrument Tracking System Service (CITSS). Additional eligibility criteria apply, including for individual market participants.

MARKET TYPES:

Primary: Allowances are made available through sealed-bid auctions. State-owned and consigned allowances are offered through quarterly allowance auctions organized jointly with Québec. Auctions are administered by WCI, Inc.

Secondary: Allowances, offset credits, and financial derivatives are traded in the secondary market on the Intercontinental Exchange (ICE), CME group, and Nodal Exchange platforms. Any company qualified to access these platforms can trade directly or through a future commission merchant. Companies can also trade directly over the counter but must have a CITSS account to take delivery of compliance instruments.

LEGAL STATUS OF ALLOWANCES: Allowances are defined as limited tradable authorizations to emit up to one tCO_2e. According to the "California Code of Regulations", an allowance does not constitute property or bestow property rights and cannot limit the authority of the regulator to terminate or limit such authorization to emit.

MARKET STABILITY PROVISIONS

AUCTION RESERVE PRICE: USD 24.04 per allowance in 2024. The auction reserve price increases annually by 5% plus inflation, as measured by the Consumer Price Index.

RESERVE: Some allowances from each annual cap are placed in an Allowance Price Containment Reserve (APCR). Prior to amendments mandated by AB 398, these allowances were spread across three reserve tiers in an earlier APCR. Pursuant to AB 398, from 2021 onward, these allowances have been placed into two price tiers and a price ceiling.

Specifically, AB 398 directed where allowances from the earlier APCR would be distributed. Two-thirds of those allowances were spread evenly across the two APCR price tiers. The remaining one-third (which had previously been spread evenly across the original three price tiers), plus unsold allowances that had been transferred into the APCR (about 37 million to date), have been placed into the price ceiling. In addition, the Cap-and-Trade Regulation also set aside portions of annual 2021-2030 allowance caps for the two APCR price tiers.

Although no reserve sale has been held to date, CARB will offer one if auction settlement prices from the preceding quarter are greater than or equal to 60% of the lowest APCR price tier. CARB also always offers the third quarter APCR sale before the November compliance obligation deadline.

At the price ceiling, a covered entity can purchase allowances (or, if no allowances remain, "price ceiling units") up to the amount of its current unfulfilled emissions obligation. The revenues from the sale of price ceiling units will be used to purchase real, permanent, quantifiable, verifiable, enforceable, and additional emissions reductions on at least a tonne for tonne basis. Sales at the price ceiling will only be conducted if no allowances remain at the two lower APCR tiers and a covered entity has demonstrated that it does not have sufficient compliance instruments in its accounts for that year's compliance event.

In 2024, the two APCR tiers and the price ceiling are set at USD 56.20, USD 72.21, and USD 88.20, respectively. Tier prices and the price ceiling increase by 5% plus inflation (as measured by the Consumer Price Index).

OTHER INFORMATION

INSTITUTIONS INVOLVED

California Air Resources Board: Responsible for the design and implementation of the Cap-and-Trade Program.

Western Climate Initiative, Inc.: Non-profit organization that provides cost-effective administrative and technical solutions for supporting the coordinated development and implementation of participating jurisdictions' GHG emissions trading programs, such as administering auctions and maintaining the system registry (CITSS).

EVALUATION/ETS REVIEW

Pursuant to requirements in existing legislation (AB 32, AB 197, and AB 398), CARB must update the "California Climate Change Scoping Plan" at least every five years and must provide annual reports to various committees of the Legislature and the Board. The Scoping Plan provides updates on progress toward climate targets and lays out strategies to achieve them, including the role and level of effort accorded to different programs in the state's portfolio approach to climate mitigation. The latest update to the Scoping Plan was adopted in December 2022.

REGULATORY FRAMEWORK

→ **Global Warming Solutions Act of 2006 (AB 32)**
→ **AB 398**
→ **2018 amendments to the 2021-2030 period**
→ Current regulation can be found on the **CARB website**

CANADA

FEDERAL OUTPUT-BASED PRICING SYSTEM

- **Backstop system established under the Greenhouse Gas Pollution Pricing Act**
- **In place since 2019, to ensure price incentive for industries to reduce GHG emissions**
- **Canada's GHG Offset Credit System launched in June 2022**
- **OBPS standards tightened in 2023**

ETS DESCRIPTION

Since 2019, carbon pricing has been in place across all Canadian provinces and territories. Based on the "Pan-Canadian Approach to Pricing Carbon Pollution" adopted in 2016, Canadian jurisdictions have the flexibility to design and implement their own pricing system tailored to local needs, provided it meets minimum national stringency criteria (known as the "federal benchmark"). To meet the federal benchmark, provinces, and territories may design several types of carbon pricing systems, including:

- an explicit price-based system:
  → a carbon levy on fossil fuels; or
  → a combination ("hybrid") of a carbon levy on fossil fuels and an intensity-based emissions trading system (ETS) for industrial emitters.
- a cap-and-trade system.

In accordance with the 2021 update of the Pan-Canadian Approach to Pricing Carbon Pollution, the minimum national carbon price was set at CAD 65 (USD 48.15) in 2023, increasing by CAD 15 (USD 11.11) each year to reach CAD 170 (USD 125.93) in 2030.

A **federal carbon pollution pricing "backstop" system** applies in jurisdictions that request it or that do not implement systems that meet the federal benchmark.

Based on the "Greenhouse Gas Pollution Pricing Act" (GGPPA), adopted in 2018, the federal backstop system has been in place since 2019, and comprises two parts:

1. A regulatory charge on fossil fuels, such as gasoline and natural gas, known as the **fuel charge**. Generally, the fuel charge applies early in the supply chain and is payable by a registered producer or distributor. The fuel charge started at CAD 20 (USD 14.81) per tCO_2e in 2019 and increased annually by CAD 10 (USD 7.40), until it reached CAD 50 (USD 37.03) per tCO_2e in 2022. The updated fuel charge started at CAD 65 (USD 48.15) from April 2023, and increases by CAD 15 (USD 11.11) each year until it reaches CAD 170 (USD 125.93) in 2030.
2. A performance-based system for industries, known as the **federal Output-Based Pricing System (OBPS)**.

The federal OBPS is designed to maintain the carbon price signal for industrial emitters to reduce their GHG emissions while mitigating the risk of carbon leakage and competitiveness impacts. It applies to facilities in the emissions-intensive and trade-exposed (EITE) industrial and electricity sectors that emit equal to or more than 50,000 tCO_2e. Smaller facilities with annual emissions equal to or more than 10,000 tCO_2e from sectors at risk of carbon leakage and adverse competitiveness impacts can apply to participate voluntarily.

The OBPS sets a performance (output-based) standard (i.e., GHG emissions per unit of output) based on the national production-weighted average emissions intensity for a given activity in covered sectors. Facilities calculate a limit based on their level of production and the appropriate standard(s) and are required to provide compensation for emissions that exceed this limit. Those performing

In force
Under development
Under consideration

SECTORS

POWER

INDUSTRY

GREENHOUSE GASES

CO_2, CH_4, N_2O, SF_6, HFCs, PFCs

OFFSET CREDITS

Domestic

ALLOCATION

Free Allocation

AVERAGE 2023 PRICES

Set price: CAD 65 (USD 48.15)

TOTAL REVENUE

CAD 400 million (USD 296.30 million) for compliance years 2019 and 2020
CAD 236 million (USD 174.81 million) in 2020

better than the standard are issued surplus credits (compliance units) that they can sell or save to use later. Facilities can comply by: (1) remitting surplus credits purchased from other facilities or retained from previous periods; (2) paying the carbon price; or (3) remitting eligible offset credits.

YEAR IN REVIEW

All Canadian provinces and territories had until September 2022 to either request the federal carbon pollution pricing system or propose their own plan for a carbon pricing system for 2023 to 2030 that meets the updated benchmark criteria. Systems that have been approved by the federal government remain in place until at least the end of 2026 for OBPS; the same applies for jurisdictions where the federal backstop is in place. As of the beginning of 2024, the federal OBPS applies in Manitoba, Nunavut, Prince Edward Island, and Yukon.

The federal government amended its federal "backstop" OBPS in November 2023 to increase the stringency of the output-based standards used to determine facilities' emissions limits. The rates are now set to decline at a fixed tightening rate with no end date: 2% annual tightening rate for most industrial facilities' output-based standards and 1% for high-risk EITE facilities. Twelve new output-based standards for industrial activities have also been added to the regulations.

By 2026, the federal government will review all provincial carbon pricing programs to ensure that they still meet the federal benchmark requirements for 2027 to 2030. An interim review of the federal benchmark will also be undertaken by 2026.

EMISSIONS & TARGETS OF CANADA

OVERALL GHG EMISSIONS (EXCL. LULUCF), 2021

(in $MtCO_2e$, share of total in %)

Energy	543.0	(81%)
Industrial processes	51.9	(7%)
Agriculture	54.0	(8%)
Waste	21.1	(3%)
Total	**670.0**	

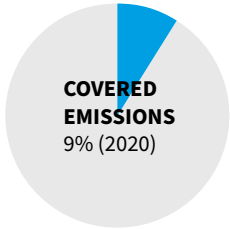
Energy industries	177.0	(26%)
Manufacturing industries and construction	66.1	(10%)
Transport	149.0	(22%)
Commercial, institutional, and residential	55.5	(8%)
Other energy	95.4	(14%)

GHG REDUCTION TARGETS

By 2030: 40-45% below 2005 levels (NDC)

By 2050: Climate neutrality (Canadian Net-Zero Emissions Accountability Act)

ETS COVERAGE & PHASES



COVERED EMISSIONS

Verified ETS emissions 56.50 $MtCO_2e$ (2020)

CAP OR TOTAL EMISSIONS LIMIT

No explicit emissions cap.

SECTORS AND THRESHOLDS

INCLUSION THRESHOLDS: Coverage is mandatory for facilities in the EITE industrial and electricity sectors that emit equal to or more than 50,000 tCO_2e per year. Smaller facilities with annual emissions equal to or more than 10,000 tCO_2e from sectors at risk of carbon leakage and adverse competitiveness impacts can opt in to participate voluntarily.

POINT OF REGULATION

Point source (industry, power)

TYPE OF ENTITIES

Facilities

NUMBER OF ENTITIES

In 2023, 37 facilities were covered under the federal OBPS (14 mandatory and 23 voluntary facilities).

ALLOWANCE ALLOCATION & REVENUE

ALLOWANCE ALLOCATION

Allocation is determined in relation to annual emissions limits based on emissions intensity benchmarks (standards) called output-based standards. These benchmarks are primarily set using the production-weighted average emissions intensity of all facilities making similar products across Canada.

Each covered facility then calculates an annual emissions limit based on its level of production and the relevant output-based standards.

Facilities that emit less than their emissions limit receive surplus credits (compliance units) for free, corresponding to the number of tCO_2e below the limit. This is similar to free allocation based on benchmarks. These surplus credits can be banked or sold to entities that emit more than their emissions limits (see below for more details).

USE OF REVENUES


Pursuit of other development objectives, such as education and health


Assistance for individuals, households, and businesses


Low-carbon innovation


General budget, including debt reduction

For provinces that voluntarily opt for the federal system, all proceeds from the federal OBPS are returned directly to the jurisdiction of origin for use according to their needs.
In other provinces where the federal system applies, proceeds from the OBPS in these jurisdictions are returned to the provinces or territories through the OBPS Proceeds Fund to support low-carbon technology deployment.

FLEXIBILITY & LINKING

BANKING AND BORROWING

Surplus credits may not be surrendered for compliance if they were issued more than five years before being surrendered.

Borrowing is not included.

OFFSET CREDITS

The use of offset credits is allowed.

QUALITATIVE LIMITS: Two types of offset credits can be used for compliance under the OBPS: recognized units, and federal GHG offset credits. Both types of credits must have been issued for projects taking place in Canada that began in 2017 or later.

Recognized units are offset credits issued by a province or territory under a recognized offset program and offset protocol and meet the requirements under section 78 of the OBPS including: have been issued for projects located in Canada and that began in 2017 or later; be valid (not having being suspended, invalidated or revoked); have been issued for an offset project that is registered in a recognized provincial offset program under a recognized offset protocol that appear on the List of Recognized Offset Programs and Protocols for the Federal OBPS; have been verified; be eligible for use as a method of compensation or compliance with respect to a pricing mechanism for GHG emissions in the province in which it was issued; and be designated for use exclusively as a compliance unit to be surrendered under the federal OBPS.

Federal GHG offset credits are issued under Canada's GHG offset credit system and federal offset protocols are applicable in all provinces and territories in Canada, except for jurisdictions where the same project activity is covered by an active protocol in a provincial or territorial offset program. As of 2023, there are two protocols under the federal GHG offset credit system: landfill methane recovery and destruction, and reduction of GHG emissions from refrigeration systems. To be eligible for use under the OBPS, both types of credits must have been issued for reductions or removals that took place at most eight years before being surrendered or before the deadline for surrendering.

QUANTITATIVE LIMITS: Since 2022, at least 25% of the compliance obligation must be met in the form of excess emissions charge payment.
In the 2019 and 2020 compliance periods, no recognized units or federal GHG offset credits were remitted for compliance

LINKS WITH OTHER SYSTEMS

The Canada federal OBPS currently has a one-way linkage via recognized units with Alberta and British Columbia's offset system.

COMPLIANCE

COMPLIANCE MECHANISM

An entity can meet its compliance obligations by either making an excess emissions charge payment at the federally established carbon price or purchasing and remitting surplus credits (compliance units) from other covered facilities or use federal offset credits or recognized units (eligible offset credits from recognized provincial programs and protocols – see 'Offset Credits').

From 2022, at least 25% of the compensation must be provided in the form of excess emissions charge payment.

For compliance provided by the regular-rate compensation deadline, the compensation required per tCO_2e of excess emissions is one compliance unit or payment of the excess emissions charge. If provided after the regular-rate compliance deadline, four compliance units or payment at four times the applicable excess emissions charge are required per tCO_2e of excess emissions.

COMPLIANCE PERIOD

One year. The regular-rate compensation deadline is 15 December of each calendar year after the emissions have happened. The increased-rate compensation deadline is 15 February of the year following the regular-rate compensation deadline.

MRV

MONITORING: Covered entities must monitor their emissions, production levels, and captured and stored emissions on an annual basis. For covered entities, monitoring of production has to happen with respect to each of the regulated industrial activities. Electricity generators must monitor their emissions and electricity production for each unit and in aggregate.

REPORTING: 1 June of the calendar year following the end of the compliance period for which the annual report is prepared, along with a verification report. Reports must also include the GHG emissions limit applicable to the covered entity for the compliance period, and the difference (if any) between the emissions limit and the actual emissions.

VERIFICATION: Reports must be verified by accredited third parties.

FRAMEWORK: The information to be included in an annual report is set out in the OBPS Regulations. Starting with 2024, the "Quantification Methods for the Output-Based Pricing System Regulations" specifies the methods to quantify GHGs, the ratio of heat and the quantity of electricity generated.

ENFORCEMENT

If a facility fails to provide compensation by the 15 December of each calendar year after the emissions have happened, it must provide compensation by the increased-rate compensation deadline of 15 February of the year following the regular-rate compensation deadline. The increased-rate compensation is four times the regular rate. Failing to provide compensation by the increased-rate compensation deadline is an offence under the Act and is also a violation that can proceed under the Environmental Violations Administrative Monetary Penalties Act (EVAMPA).

MARKET REGULATION

MARKET DESIGN

MARKET PARTICIPATION: Compliance entities including mandatorily and voluntarily covered entities (for inclusion thresholds see 'Sectors and Thresholds'.)
Regulatory provisions allow for other market participants and offset proponents to open accounts in the Credit and Tracking System (CATS).

MARKET TYPES:

Primary: Surplus credits are issued by the government to facilities based on their performance compared to the applicable output-based standards. Surplus credits are not auctioned.

Secondary: Covered entities may purchase surplus credits from other covered entities that have outperformed their compliance obligation. Other market participants and offset proponents may also participate in this market. Transactions take place in CATS, where users can post messages declaring their intent to buy or sell units, as well as answer to posted messages and transfer credits.

LEGAL STATUS OF ALLOWANCES:
The legal nature of surplus credits is not specified in the Output Based Pricing System Regulations.

MARKET STABILITY PROVISIONS

The excess emissions charge compliance option acts as a price ceiling for the system (see 'Compliance Mechanism'). The excess emissions charge payment is set at CAD 80 (USD 59.26) in 2024, and will increase by CAD 15 (USD 11.11) annually until it reaches CAD 170 (USD 125.93) per tCO_2e in 2030.

OTHER INFORMATION

INSTITUTIONS INVOLVED

Environment and Climate Change Canada: Responsible for the design, coordination, implementation and monitoring of Canada's climate action plans and targets, and the implementation of the federal carbon pollution pricing backstop system; specifically, the federal carbon pricing system for industry (the OBPS), in provinces and territories where it applies.

EVALUATION/ETS REVIEW

By 2026, an interim review of the federal benchmark will take place to ensure that the existing benchmark criteria are still sufficient. The federal government will involve provinces, territories and Indigenous organizations in the review process.
2023 Progress Report on the 2030 Emissions Reduction Plan
Greenhouse Gas Pollution Pricing Act – Annual Report to Parliament for 2021
Pan-Canadian Approach to Pricing Carbon Pollution – Interim Report 2020
Greenhouse Gas Pollution Pricing Act Annual Report for 2020

REGULATORY FRAMEWORK

- Output-Based Pricing System Regulations
- Regulations Amending the OBPS Regulations, November 2023
- Pan-Canadian Framework on Clean Growth and Climate Change
- A Healthy Environment and a Healthy Economy
- Update to the Pan-Canadian Approach to Carbon Pollution Pricing 2023-2030
- Greenhouse Gas Pollution Pricing Act
- Net-Zero Emissions Accountability Act

CANADA

NATIONAL CAP-AND-TRADE SYSTEM FOR OIL AND GAS EMISSIONS

- **Proposed Regulatory Framework to cap GHG emissions from oil and gas sector**
- **Draft regulations to be released in 2024, final regulations targeted for 2025**
- **Reporting requirements from 2026, ongoing consideration of how to phase in the emissions cap from 2026 to 2030**
- **Designed to support Canada's plan to achieve net zero by 2050**

ETS DESCRIPTION

In December 2023, Canada announced the development of a federal cap-and-trade system for the oil and gas sector in order to achieve net-zero emissions by 2050, and released a Regulatory Framework to Cap Oil and Gas Sector Greenhouse Emissions. The system is aimed at reducing GHG pollution from the oil and gas sector, which is Canada's largest source of GHG emissions, and will play a critical role in meeting Canada's climate targets. The framework is based on a discussion document on options to cap and cut oil and gas sector GHG emissions, which was published by the Canadian government in July 2022 as part of the country's broader 2030 Emissions Reduction Plan.

The regulatory framework outlines key design details of the proposed approach and is currently undergoing public consultation. The government expects to publish these draft regulations of the oil and gas emissions cap in mid-2024 with final regulations planned for 2025.

The regulatory framework proposes a number of design details, including that the emissions cap for the oil and gas sector would be phased in between 2026 and 2030, and decrease over time to be consistent with Canada's 2050-emissions goal of net-zero. The framework proposes that the 2030 emissions cap would be in the range of 106 to 112 $MtCO_2e$. The government would allocate emission allowances equal to the emissions cap. The maximum level of annual emissions from the sector would be limited to a legal upper bound, which would take into account the use of flexibility provisions. This legal upper bound would include the total number of emission allowances allocated plus the maximum allowable quantity of other eligible compliance units under the cap-and-trade system, namely offset credits and contributions to a decarbonization fund. The legal upper bound would be set between 131 and 137 $MtCO_2e$ for 2030. In the framework, the 2030 emissions cap and legal upper bound are expressed as ranges, but will be set at a specific level when the cap-and-trade regulations are finalized.

The proposed key components of the emissions cap-and-trade system include:

- The cap-and-trade system would apply to liquid natural gas and upstream oil and gas facilities;
- Petroleum refining would be excluded;
- The system would cover all direct GHG emissions: CO_2, CH_4, N_2O and others;
- The system would account for transfers of thermal energy, hydrogen, CO_2, and electricity to ensure that all GHG emissions that relate to the production of oil and gas are covered;
- Compliance periods would span three years;
- Reporting, quantification, and verifications regulations would apply for covered entities;
- Free allocation would be granted at the beginning of the first compliance period based on a baseline production level and a free allocation rate for a given product or activity;
- Auctioning of allowances might be considered in later compliance periods;

- Each allowance would be equivalent to one tCO_2e;
- Trading of emissions allowances would only be allowed among covered entities;
- Banking would be allowed for up to two compliance periods (six years);
- Payments into a decarbonization fund and domestic offset credits are being considered as compliance options;
- The emissions cap would decline at a pace and scale consistent with meeting net zero by 2050;
- The regulation would be designed to complement and leverage other federal and provincial regulations.
- Cap-and-trade regulations would be subject to ongoing monitoring and regular reviews.

EMISSIONS & TARGETS OF CANADA

OVERALL GHG EMISSIONS (EXCL. LULUCF), 2021

(in $MtCO_2e$, share of total in %)

Energy	543.0	(81%)
Industrial processes	51.9	(7%)
Agriculture	54.0	(8%)
Waste	21.1	(3%)
Total	**670.0**	

Energy industries	177.0	(26%)
Manufacturing industries and construction	66.1	(10%)
Transport	149.0	(22%)
Commercial, institutional, and residential	55.5	(8%)
Other energy	95.4	(14%)

GHG REDUCTION TARGETS

By 2030: 40-45% below 2005 levels (NDC)

By 2050: Net zero (Canadian Net-Zero Emissions Accountability Act)

OTHER INFORMATION

INSTITUTIONS INVOLVED

Environment and Climate Change Canada (ECCC): Responsible for the design, coordination, implementation and monitoring of Canada's climate action plans and targets, and the implementation of the federal carbon pollution pricing backstop system; specifically, the federal carbon pricing system for industry (the OBPS), in provinces and territories where it applies; responsible for the development of the final regulations for the cap-and-trade system for oil and gas emissions.

REGULATORY FRAMEWORK

- → Regulatory Framework to Cap Oil and Gas Sector Greenhouse Gas Emissions
- → Options to Cap and Cut Oil and Gas Sector Greenhouse Gas Emissions to Achieve 2030 Goals and Net-Zero by 2050
- → Canadian Environmental Protection Act, 1999 (CEPA)
- → Greenhouse Gas Pollution Pricing Act (GGPPA)
- → 2030 Emissions Reduction Plan

COLORADO

GREENHOUSE GAS EMISSIONS AND ENERGY MANAGEMENT FOR MANUFACTURING REGULATION

- **Baseline-and-credit approach**
- **EITE (GEMM 1) facilities face compliance obligation based on emissions intensity targets**
- **GEMM 2 facilities face compliance obligation based on 2030 absolute emissions reduction targets**
- **Legislation (HB1339) being discussed which would set a cap on sector emissions and rule out the option for payment into a fund as a compliance option**

ETS DESCRIPTION

In October 2023, the Colorado Air Quality Control Commission (AQCC) adopted regulations establishing an ETS covering large in-state manufacturers, beginning with the first compliance year in 2024. The regulations are designed to support the achievement of Colorado's statutory industrial and manufacturing sector-wide as well as its economy-wide GHG emission reduction goals. The regulation prioritizes benefits to disproportionately impacted communities through reductions of locally harmful air pollutants.

The AQCC initially set reduction requirements (but not yet an ETS) for large manufacturing emitters through the Greenhouse Gas and Energy Management for Manufacturing regulation (GEMM 1) beginning in 2021, under the statutory direction of Colorado House Bill 19-1261. The GEMM 1 regulation applied to energy-intensive, trade-exposed (EITE or GEMM 1) manufacturing stationary sources that produced equal to or greater than 50,000 tCO_2e emissions annually. This threshold was lowered to 25,000 tCO_2e with the adoption of the amendment of the GEMM regulation (GEMM 2). Currently, four manufacturing stationary sources are considered GEMM 1 facilities.

The AQCC expanded the GEMM 1 rule through the adoption of GEMM 2 in October 2023. The GEMM 2 regulation currently covers 18 manufacturing facilities (emitting equal to or greater than 25,000 tCO_2e) in addition to the four facilities that fall in the EITE (GEMM 1) categorization. While GEMM 2 institutes absolute emission reduction requirements, EITE (GEMM 1) sources adhere to intensity-based emissions limitations.

Under the new GEMM 2 rule, an EITE (GEMM 1) facility's annual emissions limit for a compliance year is calculated by using the facility's previous year's production totals and emissions intensity requirement and applying a 5% mass-based emissions reduction. The annual emissions limit varies each year depending on the production level of the facility. The facility's emissions intensity requirement is reflective of best available control technology and industry standards and is updated every 5 years.

A GEMM 2 facility's GHG emissions requirement is based on the facility's historical mass-based emissions reductions between 2015 and its baseline year (either 2021 or 2022, whichever year has the higher emissions) and the facility's share of emission contributions to the GEMM 2 group's cumulative baseline. These two factors were used to determine their interim (2024 to 2029) and 2030 emissions requirements such that the group of 18 facilities collectively achieve a 20% mass-based reduction in emissions by 2030 relative to the group's aggregate emissions in 2015. Beginning in 2030, before they may access the trading system, GEMM 2 facilities must implement their portfolio of onsite, technically feasible GHG reduction measures as well as undertake additional GHG and harmful air pollutant reductions if the facility is located near a disproportionately impacted community. The Colorado Department of Public Health and Environment's Air Pollution Control Division (APCD) reviews and approves the GHG reduction plans.

In force
Under development
Under consideration

SECTORS

INDUSTRY

GREENHOUSE GASES

CO_2, CH_4, N_2O, SF_6, HFCs, PFCs, NF_3

ALLOCATION

Allocation based only on overcompliance

The GHG credit trading system will be established by the start of December 2024. EITE (GEMM 1) and GEMM 2 facilities will be able to trade GHG credits bilaterally or through bidding or offering their GHG credits in an annual auction, the first of which will take place on 30 June 2025. A technical stakeholder process is underway to develop guidance to facilitate trading between EITE (GEMM 1) and GEMM 2 facilities. This guidance sets out to ensure that trading EITE (GEMM 1) GHG credits (that are generated in relation to an intensity-based target) with GEMM 2 GHG credits (that are generated in relation to an absolute target) does not jeopardize progress toward Colorado's climate goals. The resulting trading guidance will be published by December 2024.

The AQCC also called for the APCD to propose the establishment of a state-managed fund to allocate money to finance projects to reduce GHG emissions from the sector by no later than September 2025. This fund would provide an additional compliance option for GEMM 2 facilities. The rulemaking hearing for the fund is set to be held by December 2025.

In February 2024, a House Bill (HB1339) was introduced that, if enacted, would prohibit covered emissions from increasing from January 2025, requiring sector emissions to decline so as not to exceed 97 $MtCO_2e$ between 2025 and 2030. Furthermore, if enacted, HB1339 would prohibit facilities from fulfilling their compliance obligations by paying into a fund such as that the AQCC called for the APCD to propose. It would also establish facility-specific GHG emission reduction requirements for facilities whose emissions affect a disproportionately impacted community.

EMISSIONS & TARGETS OF COLORADO

OVERALL GHG EMISSIONS (INCLUDING INDIRECT CO_2, EXCLUDING LULUCF), **2020**
(in $MtCO_2e$, share of total in %)

Energy	106.7	(83%)
Industrial processes	4.4	(3%)
Agriculture	15.4	(12%)
Waste	2.4	(2%)
Total	**128.9**	

Energy industries	55.4	(43%)
Industrial energy	13.2	(10%)
Transport	25.2	(20%)
Commercial and residential	12.9	(10%)

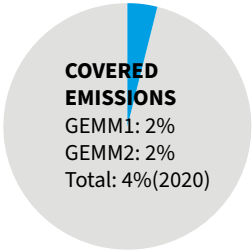
GHG REDUCTION TARGETS

By 2025: 26% reduction below 2005 levels
By 2030: 50% reduction below 2005 levels
By 2035: 65% reduction below 2005 levels
By 2040: 75% reduction below 2005 levels
By 2045: 90% reduction below 2005 levels
By 2050: Net zero
(Colorado Revised Statutes 25-7-102(2)(g)(I))

ETS COVERAGE & PHASES

COVERED EMISSIONS

Verified ETS emissions Total: 4.5 $MtCO_2e$ (2020)
GEMM1: 2.2
GEMM2: 2.4



PHASES

GEMM 1:
PHASE ONE: Five years (2025 to 2029)
PHASE TWO: Five years (2030 to 2034)
PHASE THREE: Five years (2035 to 2039)
PHASE FOUR: (2040 onwards)

GEMM 2:
PHASE ONE: Three years (2024 to 2026)
PHASE TWO: Three years (2027 to 2029)
PHASE THREE: (2030 onwards)

CAP OR TOTAL EMISSIONS LIMIT

The total emissions limit under the Colorado GEMM regulation is the sum of the facility bottom-up annual emissions limits (EITE GEMM 1) and facility emissions below 2030 reduction targets (GEMM 2) for all covered entities.

If HB1339 is enacted, sector-wide emissions will be capped at 97 $MtCO_2e$ cumulatively between 2025 and 2030.

SECTORS AND THRESHOLDS

SECTORS: GEMM 1 and GEMM 2 regulations cover high-emitting stationary sources in the industrial and manufacturing sector.

GEMM 1 FACILITY INCLUSION THRESHOLDS: 25,000 tCO_2e and EITE source classification
GEMM 2 FACILITY INCLUSION THRESHOLDS: 25,000 tCO_2e

POINT OF REGULATION
Point source (industrial and manufacturing stationary sources)

TYPE OF ENTITIES
Manufacturing stationary sources

NUMBER OF ENTITIES
GEMM 1: 4
GEMM 2: 18

ALLOWANCE ALLOCATION & REVENUE

ALLOWANCE ALLOCATION
GEMM 1 facilities are allocated GHG reduction credits annually, free of charge, based on the quantity of tCO_2e that the facility's annual direct GHG emissions are less than the facility's annual emissions limitation in the relevant year.

GEMM 2 facilities are allocated GHG reduction credits annually, free of charge, based on the quantity of tCO_2e that the facility's annual direct GHG emissions are less than the facility's 2030 GHG emissions requirement.

From the outset of the trading system, GEMM 2 facilities may generate credits through onsite carbon capture and storage projects, subject to an approved protocol. From 2031, GEMM 2 facilities will also be able to generate GHG reduction credits through offsite direct air carbon capture projects, subject to an approved protocol. Facilities that generate GHG reduction credits may use the credits toward future compliance obligations or may trade the credits to other GEMM facilities.

USE OF REVENUES
The Colorado ETS will not collect revenues or handle the exchange of funds from buyer to seller. The auction will facilitate the trade, but the financial transaction will be done directly between the facilities.

If the proposed state-managed fund is adopted by the Commission in 2025, and if HB1339 is not enacted prohibiting compliance through fund payments, GHG Reduction Fund revenues should be used to finance decarbonization projects at other industrial sites located within "Disproportionately Impacted Communities", or finance otherwise cost-prohibitive on-site reduction projects within the group of covered entities, prioritizing projects in or near disproportionately impacted communities.

FLEXIBILITY & LINKING

BANKING AND BORROWING
EITE (GEMM 1) and GEMM 2 facilities can bank GHG credits for up to three years from the date generated.

Borrowing is not allowed.

OFFSET CREDITS
The use of offsets is not allowed as a compliance option.

LINKS WITH OTHER SYSTEMS
The Colorado GEMM GHG credit trading system is not linked with any other system.

COMPLIANCE

COMPLIANCE MECHANISM
Each EITE (GEMM 1) and GEMM 2 facility must surrender one GHG credit per tCO_2e that exceeds its annual emissions limit or compliance obligation in the relevant compliance period.

COMPLIANCE PERIOD
GEMM 1: One year
GEMM 2: Two three-year compliance periods (2024 to 2026 and 2027 to 2029) with one year compliance periods from 2030 and beyond

MRV
GEMM 1:
Reporting: Beginning in 2026, EITE (GEMM 1) facilities must submit a report by May each year including data regarding the previous year's total emissions, total units of production, and emissions rate per product.

Verification: EITE (GEMM 1) facilities must have a third-party auditor conduct energy and GHG emission control audits every five years to establish and determine whether GHG best available emissions control technology (GHG BAECT) and energy best management practices (energy BMP) are being employed. The audit reports require both GHG BAECT and energy BMP analyses that identify and rank all technically feasible control technologies and strategies and energy efficiency measures.

GEMM 2:
Reporting: Beginning in 2025, GEMM 2 facilities must submit a report by the end of March each year, including data regarding the previous year's total direct emissions. GEMM 2 facilities must also

submit GHG reduction plans that identify what technically feasible portfolio of onsite measures at or below the 2030 social cost of GHGs they plan to use to meet their emission reduction requirements. Compliance reports as well as GHG reduction plan progress and compliance reports must be submitted by the end of September for each compliance period (2024 to 2026 to be submitted in 2027, 2027 to 2029 to be submitted in 2030, and annually from 2030 onward).

Verification: GHG reduction plans must undergo a technical and regulatory review by an independent third party.

FRAMEWORK: The rules for reporting GHG emissions for EITE (GEMM 1) and GEMM 2 facilities are outlined in Colorado's "Greenhouse Gas Reporting and Emission Reduction Requirements Emissions regulation".

ENFORCEMENT

GEMM 1: In the event of noncompliance, EITE (GEMM 1) facilities will need to surrender three GHG credits for every tCO_2e emitted in excess of the facility's annual emissions limit and may be subject to a civil penalty or other enforcement action.

GEMM 2: In the event of noncompliance, a GEMM 2 facility's GHG emissions reduction requirement for the relevant compliance period will be adjusted downwards by at least two times the amount that the facility exceeded its emissions reduction requirement. The resulting increased compliance obligation must be achieved within three years of the period of non-compliance. GEMM 2 facilities not in compliance for a particular year must submit a mitigation plan by the end of the following calendar year. Civil penalties and other enforcement actions may also be assessed.

MARKET REGULATION

MARKET DESIGN

MARKET PARTICIPATION: Covered entities

MARKET TYPES: A GHG credit trading system will be established by December 2024. EITE (GEMM 1) and GEMM 2 facilities may either bilaterally contract between themselves or may participate in an annual auction held in June each year starting in 2025.

Bilateral contracting: APCD will help to facilitate direct transfers of GHG credits between covered entities but will not handle the money for any transactions.

Auction: Bidders may not also be offerors for the same vintage year of credits and vice versa. APCD will administer the auction but will not handle the money for any transactions.

MARKET STABILITY PROVISIONS

INSTRUMENT NAME: Greenhouse Gas Reduction Fund (price ceiling)

TRIGGERS: The AQCC directed the APCD to propose the establishment of a state-managed fund to receive and allocate monies to finance projects to reduce GHG emissions from the industrial and manufacturing sector by no later than September 2025, and to request a hearing on this matter by no later than December 2025. If the Commission adopts such a fund, it will serve as a compliance option for any GEMM 2 facilities unable to comply by other means laid out in the rule. The compliance price would also be set at a per tCO_2e cost, which is expected to be set above any regulatory price cap for onsite reductions. However, if HB1339 is enacted, payment into the fund will be prohibited as a compliance option.

OTHER INFORMATION

INSTITUTIONS INVOLVED

Colorado State Legislature: Adopted SB19-06 and HB 21-1266 which set requirements for a GHG accounting system and trading program.
Colorado Air Quality Control Commission: Responsible for holding hearings and adopting regulations on air quality matters consistent with statutory direction.
Colorado Department of Public Health and Environment Air Pollution Control Division: Responsible for developing, administering, and enforcing the adopted AQCC regulations based on a mandate from the Colorado legislature.

EVALUATION/ETS REVIEW

The AQCC has directed the Division to evaluate the trading program and to identify any modifications that may be necessary. If any such modifications are identified by the Division, the AQCC requests that the Division bring a petition to request a rulemaking hearing to the AQCC by September 2025. In addition, the AQCC has directed the Division to report on the following credit trading system items on or before the end of December 2025:

- The status of the trading program
- The co-pollutant reductions associated with the credits generated for the trades
- Updated projections for the 2026 credit market, and likely compliance pathways for the GEMM 2 facilities

REGULATORY FRAMEWORK

- → Greenhouse Gas Emissions and Energy Management for Manufacturing Phase 1 and Phase 2 Regulation (AQCC Regulation 27)
- → Climate Action Plan to Reduce Pollution (House Bill 19-1261)
- → Greenhouse Gas Emission Reduction Measures (Senate Bill 23-016)
- → Environmental Justice Disproportionate Impacted Community (House Bill 21-1266)
- → Collect Long-term Climate Change Data (Senate Bill 19-096)
- → A Bill for an Act Concerning Measures to be Taken by the AQCC to Reduce Air Pollution in the State (House Bill 24-1339)

MARYLAND

- **Economy-wide cap-and-invest program proposed as a supportive policy in Maryland Climate Pollution Reduction Plan**
- **Would work alongside RGGI, which covers the state's power sector emissions**
- **House Bill 1272 proposes to develop the system by the end of 2024**

In December 2023, Maryland's Climate Pollution Reduction Plan was published, describing how economy-wide policies, such as a cap-and-invest program, could be necessary for Maryland to achieve its emissions reduction goals. Maryland's power sector is currently regulated by the Regional Greenhouse Gas Initiative (RGGI), but the 2023 plan includes direction for the state to consider expanding to an economy-wide cap-and-invest program. It cites potential for additional revenues to be invested in clean energy projects, consumer rebates, and other decarbonization programs. In 2024, the Maryland Department of the Environment (MDE) is exploring how this coverage of additional emission sources could work.

In June 2023, the economy-wide cap-and-invest program was proposed by MDE and the University of Maryland's Center for Global Sustainability as a supportive policy to achieve Maryland's 2031 target of a 60% reduction in GHG emissions from 2006 levels. The proposal anticipated the program achieving 4.8 $MtCO_2e$ of emissions reductions by 2031.

In February 2024, a bill was introduced to the Maryland congress that would establish the economy-wide cap-and-invest program. The bill outlines how the system should remain consistent with the recommendations of Maryland's Climate Pollution Reduction Plan and its targets. If enacted, the new legislation will take effect in July 2024 and require the system to be developed by the end of 2024 by the Department of Environment in collaboration with the Maryland Commission on Climate Change.

In force

Under development

Under consideration

EMISSIONS & TARGETS OF MARYLAND

GHG EMISSIONS (INCLUDING INDIRECT CO_2, EXCLUDING LULUCF), 2020

(in $MtCO_2e$[1], share of total in %)

Energy use	63.8	(86%)
Industrial processes	4.5	(6%)
Agriculture	1.7	(2%)
Waste	4.0	(5%)
Total	**74.0**	

Electricity	18.3	(25%)
Residential, commercial and industrial fuel use	13.5	(18%)
Transport	29.6	(40%)
Fossil fuel industry	2.4	(3%)

GHG REDUCTION TARGETS

By 2031: 60% reduction from 2006 levels (Climate Solutions Now Act)

By 2045: Net zero (Climate Solutions Now Act)

REGULATORY FRAMEWORK

- → Maryland's Climate Pollution Reduction Plan
- → Maryland's Climate Pathway
- → Climate Solutions Now Act of 2022
- → Department of the Environment – Cap-and-Invest Program – Establishment (House Bill 1272)

OTHER INFORMATION

INSTITUTIONS INVOLVED

Maryland Department of the Environment (MDE): Agency responsible for implementing policies to achieve Maryland's climate goals, including developing the cap-and-invest program in collaboration with the MCCC if HB1272 is enacted.

Maryland Commission on Climate Change (MCCC): Government body that would work in collaboration with MDE to develop the cap-and-invest program if HB1272 is enacted.

University of Maryland's Center for Global Sustainability: MDE's scientific partner in developing Maryland's Climate Pathway report.

1 Maryland is required to use 20-year global warming potential (GWP) values under its state law, but reports totals using 100-year GWP as well. Emissions shown here are based on 100-year GWP.

MASSACHUSETTS

MASSACHUSETTS LIMITS ON EMISSIONS FROM ELECTRICITY GENERATORS

- **Complements RGGI to help ensure that Massachusetts achieves its mandatory mitigation targets**
- **Four years of full compliance from all covered entities**
- **Began auctioning future year vintage allowances in 2022**

ETS DESCRIPTION

The Massachusetts Limits on Emissions from Electricity Generators (regulation "310 CMR 7.74") began operating in 2018. It covers around 8% of the state's CO_2 emissions, all from the power sector. Under this regulation, covered entities must surrender allowances for all of their covered emissions.

Since 2021, 100% of allowances have been allocated in quarterly auctions. Since 2022, future vintage allowances have also been sold in the regular auctions. The revenues raised are used to further reduce GHG emissions, as well as to fund adaptation programs and projects targeting communities adversely impacted by air pollution. A third party monitors the market to identify indications of anti-competitive behavior.

The program complements RGGI: electricity generators in the state must comply (i.e., hold and surrender allowances) with both RGGI and the Massachusetts program. The program was implemented in response to a 2016 ruling from the state's Supreme Court to ensure that Massachusetts achieves its mandatory mitigation targets.

YEAR IN REVIEW

Prices for auctioned allowances have decreased recently, with the price of a 2024 vintage allowance dropping from around USD 6 per tCO_2 in December 2022 to around USD 3/t in September 2023.

The market monitor puts the fluctuations down to changes in demand for allowances over the year in line with the compliance cycle, and a wide range of price expectations among regulated entities. The lower prices toward the end of 2023 could indicate that regulated entities needed relatively few additional allowances to meet compliance obligations for 2023, and allowances were being purchased to use for compliance in 2024, or to be traded on the secondary market.

In force
Under development
Under consideration

SECTORS

POWER

CAP

7.6 $MtCO_2$ (2024)

GREENHOUSE GASES

CO_2 only

ALLOCATION

Auctioning

AVERAGE 2023 PRICES

Weighted average auction price (vintage 2023): USD 8.77
Weighted average auction price (all vintages in 2023 auctions): USD 6.35

TOTAL REVENUE

USD 166.6 million since the beginning of the program
USD 41.4 million in 2023

EMISSIONS & TARGETS OF MASSACHUSETTS[1]

OVERALL GHG EMISSIONS (INCLUDING INDIRECT CO_2, EXCLUDING LULUCF), **2020**
(in $MtCO_2e$, share of total in %)

Energy	59.7	93%
Industrial processes	3.1	5%
Agriculture and land use	0.3	<1%
Waste	0.7	1%
Total	**63.9**	

Residential[1]	12.2	20%
Commercial[1]	7.3	12%
Industrial[1]	3.1	5%
Transport	23.5	39%
Electricity	12.8	21%
Natural Gas Systems	0.7	1%

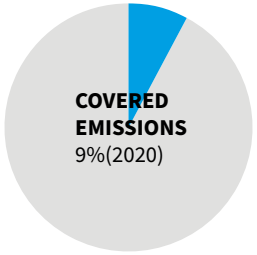
GHG REDUCTION TARGETS

By 2030: 50% GHG emissions reduction below the 1990 level (An Act Creating a Next-Generation Roadmap for Massachusetts Climate Policy)
By 2040: 75% GHG emissions reduction below the 1990 level (An Act Creating a Next-Generation Roadmap for Massachusetts Climate Policy)
By 2050: Net-zero GHG emissions. Positive emissions will be compensated with removals, and positive emissions in 2050 are not to be greater than 85% below the 1990 level. (An Act Creating a Next-Generation Roadmap for Massachusetts Climate Policy)

ETS COVERAGE & PHASES

COVERED EMISSIONS

Verified ETS emissions 5.5 $MtCO_2$ (2020)



CAP OR TOTAL EMISSIONS LIMIT

A cap limits the total emissions allowed in the system. The cap declines annually by 223,876 tCO_2 until it reaches 1.8 $MtCO_2$ by 2050.

ANNUAL CAPS:
2019: 8.7 $MtCO_2$
2020: 8.5 $MtCO_2$
2021: 8.3 $MtCO_2$
2022: 8.1 $MtCO_2$
2023: 7.8 $MtCO_2$
2024: 7.6 $MtCO_2$

SECTORS AND THRESHOLDS

Large electricity generators subject to RGGI, with an installed capacity of or greater than 25 MW.

POINT OF REGULATION

Point source (power)

TYPE OF ENTITIES

Installations (i.e. Electricity generating facilities)

NUMBER OF ENTITIES

24 (2023)

ALLOWANCE ALLOCATION & REVENUE

ALLOWANCE ALLOCATION

AUCTIONING: From 2019, allowances were partially auctioned, with 25% sold in 2019 and 50% in 2020. Full auctioning began in 2021. Currently, auctions take place on a quarterly basis. The results are included in market monitoring reports posted on the program's web page. From 2022, MassDEP offers future vintage allowances at every auction. MassDEP auctioned a total of 6,206,437 vintage 2023 allowances (783,568 in the 2022 auctions and 5,422,869 in the 2023 auctions).

1 CO_2e from fossil fuel combustion

FREE ALLOCATION: Before 2021, non-auctioned allowances were freely allocated through grandparenting based on historical (2013-2015) generation.

USE OF REVENUES

Climate mitigation

Pursuit of other development objectives, such as education and health

Auction proceeds are collected in a separate account and used for climate mitigation and for the pursuit of other objectives such as climate adaptation programs and projects targeting communities adversely impacted by air pollution

FLEXIBILITY & LINKING

BANKING AND BORROWING

Banking is allowed, but restrictions apply to ensure that emissions in a given year do not exceed the previous year's cap. To achieve this, the number of allowances auctioned is adjusted downward each year to compensate for banked allowances.

Borrowing is not allowed, but "emergency deferred compliance" is possible. This provision allows an electricity generating facility to defer, for one year, compliance for part or all of the emissions emitted during an emergency. Allowances for those emissions must be surrendered on a two-for-one basis in the following year. An emergency is defined as "a period during when the regional transmission organization has issued an alert that an abnormal condition affecting the reliability of the power system exists or is anticipated in Massachusetts".

OFFSET CREDITS

The use of offset credits is not allowed.

LINKS WITH OTHER SYSTEMS

The Massachusetts ETS is not linked with any other system.

COMPLIANCE

COMPLIANCE MECHANISM

Covered entities must surrender one allowance per tCO_2e emitted for all their covered emissions.

COMPLIANCE PERIOD

One year.

MRV

REPORTING FREQUENCY: Covered entities must report the CO_2 emissions for the previous calendar year by the start of March.

VERIFICATION: Emissions must match reports to RGGI and the US Environmental Protection Agency. Documents (i.e., emissions reports and compliance certification reports) must be certified by a designated representative identified by the facility, and MassDEP may choose to conduct audits.

ENFORCEMENT

If MassDEP finds that an entity is in violation of compliance, this will be presumed to constitute "a significant impact to public health, welfare, safety or the environment". In addition to penalties, the covered entity must submit three allowances for each metric tonne of non-compliance.

MARKET REGULATION

MARKET DESIGN

MARKET PARTICIPATION: Compliance entities only.

MARKET TYPES:

Primary: The allowance auctions use a sealed bid, uniform price auction format. No bidder can purchase more than 33% of the allowances offered for sale in any one auction. Auctions are managed by Enel X.

Secondary: Compliance entities may transfer allowances to other compliance entities at any time except during the month of March. The Massachusetts Carbon Allowance Registry is used to track the ownership of allowances. Potomac Economics monitors the conduct of market participants in the auctions and in the secondary market to identify indications of anti-competitive conduct.

LEGAL STATUS OF ALLOWANCES: Allowances constitute a "limited authorization to emit one metric ton of CO_2" to comply with the regulation. They are not property rights.

MARKET STABILITY PROVISIONS

AUCTION RESERVE PRICE: Auctions have a reserve price of USD 0.50 per allowance.

OTHER INFORMATION

INSTITUTIONS INVOLVED

Executive Office of Energy and Environmental Affairs: Cabinet-level office that oversees MassDEP.

Massachusetts Department of Environmental Protection: Regulatory agency implementing the Massachusetts Limits on Emissions from Electricity Generators (regulation "310 CMR 7.74").

Potomac Economics: Current market monitor. Monitors the conduct of market participants in the auctions and in the secondary market to identify indications of anti-competitive conduct.

Enel X: Manages the auctions.

APX: Maintains allowance tracking software platform.

EVALUATION/ETS REVIEW

The first program review was conducted in 2021, with a review planned every ten years thereafter.

REGULATORY FRAMEWORK

→ **Electricity Generator Emissions Limits** (310 CMR 7.74)

NEW BRUNSWICK

NEW BRUNSWICK OUTPUT-BASED PRICING SYSTEM

- Transitioned from federal OBPS in January 2021
- Compliance based on intensity of output of each covered entity
- Opt-in possible for smaller emitters

ETS DESCRIPTION

New Brunswick transitioned large industrial emitters from the federal output-based pricing system (OBPS) to a provincial OBPS from January 2021. It is an intensity-based ETS in which each covered entity must surrender compliance units for emissions that exceed the facility's annual emissions limit. The annual emissions limits are based on emissions intensity benchmarks, which are derived from historical emissions data. The system applies to the same sectors and gases as the federal system, and follows the same price trajectory, rising CAD 15 (USD 11.11) each year until 2030, resulting in a price of CAD 170 (USD 125.93) per tCO_2e in 2030.

YEAR IN REVIEW

In 2023, the government developed and implemented a New Brunswick OBPS Industry Fund, which returns proceeds collected from fund credit transactions to participants to support GHG emission reduction projects. All proceeds are allocated via a merit-based process.

The New Brunswick OBPS price rose to CAD 65 (USD 48.15) per tCO_2e in 2023 and increased to CAD 80 (USD 59.26) per tCO_2e in 2024, in line with the federal OBPS pricing trajectory.

In force
Under development
Under consideration

SECTORS

POWER

INDUSTRY

GREENHOUSE GASES

CO_2, CH_4, N_2O, SF_6, HFCs, PFCs

ALLOCATION

Free Allocation

AVERAGE 2023 PRICES

Set price: CAD 65 (USD 48.15)

TOTAL REVENUE

Revenue data is expected to be published in 2024.

EMISSIONS & TARGETS OF NEW BRUNSWICK

OVERALL GHG EMISSIONS (EXCLUDING LULUCF), **2021**
(in $MtCO_2e$, share of total in %)

Energy	10.6	89%
Industrial processes	0.3	3%
Agriculture	0.4	3%
Waste	0.5	4%
Total	**11.9**	

Energy industries	5.7	48%
Manufacturing industries and construction	0.6	5%
Transport	3.3	28%
Commercial, institutional, and residential	0.7	6%
Other energy	0.2	2%

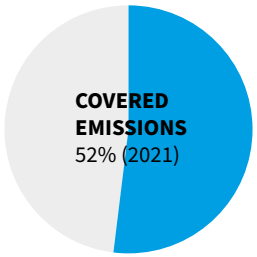
GHG REDUCTION TARGETS

By 2030: 46% reduction below 2005 levels (New Brunswick's Climate Change Action Plan)
By 2050: Net-zero emissions (New Brunswick's Climate Change Action Plan)

ETS COVERAGE & PHASES

COVERED EMISSIONS[1]

ETS emissions 6.2 $MtCO_2e$ (2021)



CAP OR TOTAL EMISSIONS LIMIT

The total emission limit under the New Brunswick OBPS is the sum of the annual emissions limits based on emissions intensity benchmarks for all individual covered entities. The limit is therefore not set ex-ante and is only known after the compliance period ends.

SECTORS AND THRESHOLDS

SECTORS: Power and industry

INCLUSION THRESHOLDS: Coverage is mandatory for facilities with emissions exceeding 50,000 tCO_2e/year. Smaller emitters (exceeding 10,000 tCO_2e/year) may also be covered by the system, on an opt-in basis.

POINT OF REGULATION

Point source (power, industry)

TYPE OF ENTITIES

Facilities

NUMBER OF ENTITIES

15 (2023), including voluntary opt-in market participants

ALLOWANCE ALLOCATION & REVENUE

ALLOWANCE ALLOCATION

Allocation is determined in relation to annual emissions limits based on emissions intensity benchmarks. Entities that emit less than their emissions limit receive compliance units, free of charge, corresponding to the number of tCO_2e below the limit. This is similar to free allocation based on benchmarks. These compliance units can be sold to entities that emit more than their emissions limits (see below for more details).

Benchmarks are calculated by applying a performance standard reduction factor to a facility-specific emissions intensity baseline. The baselines are calculated by averaging the total annual quantity of regulated emissions resulting from production during a reference period.

USE OF REVENUES

- Climate mitigation
- Low-carbon innovation

In 2023, the government developed and implemented a New Brunswick OBPS Industry Fund, as an additional stream of the New Brunswick Climate Change Fund, which returns proceeds collected from fund credit transactions to New Brunswick OBPS participants to support GHG emission reduction projects. All proceeds are allocated via a merit-based process.

1 Verified emissions data for the New Brunswick OBPS are not currently available. These data are derived from the **Federal Canadian Greenhouse Gas Reporting Program** Facility Greenhouse Gas Data for 2021, applying the corresponding emissions thresholds for the New Brunswick OBPS. They do not account for entities that may have voluntarily opted into the system.

FLEXIBILITY & LINKING

BANKING AND BORROWING
Banking is allowed for performance credits for up to seven years.

Borrowing is not allowed.

OFFSET CREDITS
The use of offset credits is not allowed as a compliance option in the initial years of the system.

LINKS WITH OTHER SYSTEMS
The New Brunswick OBPS is not linked with any other system. However, covered facilities can become eligible for certain exemptions from the Canada federal fuel charge.

COMPLIANCE

COMPLIANCE MECHANISM
Covered entities must surrender one compliance unit (optionally including Climate Change Fund Credits) per tCO_2e that exceeds the facility's annual emissions limit.

COMPLIANCE PERIOD
One year

MRV
REPORTING: GHG emissions reports must be submitted by the beginning of June of the year following the reporting period, and compliance reports are due by 15 December of the year following the compliance period.

VERIFICATION: Reports must be verified by an accredited verification team.

FRAMEWORK: The rules for reporting GHG emissions are outlined in New Brunswick's "Reduction of Greenhouse Gas Emissions Regulation" and "Reporting and Reduction of Greenhouse Gas Emissions Standard".

ENFORCEMENT
Covered entities that fail to fulfill a compliance obligation must pay the unfulfilled amount with interest at a rate set out in the New Brunswick Regulation 84-247 under the "Revenue Administration Act" (currently ~0.76% per month compounded monthly or 9.5% per year). All revenue from interest payments goes into the New Brunswick Climate Change Fund.

If a compliance credit is retired and later found to be invalid, the covered entity must fulfill the compliance obligation within 60 days of receiving notice of the invalid credit.

Administrative penalties are laid out in the Administrative Penalties Regulation Act (New Brunswick Regulation 2021-44 under the Climate Change Act). Administrative penalties are set at CAD 1,000 for first time violations, CAD 5,000 for second time violations, and CAD 10,000 for third and subsequent violations.

MARKET REGULATION

MARKET DESIGN
MARKET PARTICIPATION: Compliance entities including mandatorily and voluntarily covered entities (for inclusion thresholds see 'Sectors and Thresholds' section.)

MARKET TYPES:
Primary: Compliance units are currently not auctioned.

Secondary: Covered entities may purchase performance credits (compliance units) from other covered entities that have outperformed their compliance obligation. Transactions are conducted via a registry that is managed by the Minister of Environment and Climate Change.

MARKET STABILITY PROVISIONS
INSTRUMENT NAME: Climate Change Fund (price ceiling)

Triggers: Covered entities can purchase and surrender credits from New Brunswick's Climate Change Fund to compensate for emissions exceeding performance limits. The price ceiling is aligned with the federal minimum carbon price (CAD 65, USD 48.15, in 2023). The price ceiling increases by CAD 15 (USD 11.11) each year until 2030, resulting in a price of CAD 170 (USD 125.93) per tCO_2e in 2030. A covered entity cannot obtain more fund credits than required to fulfill its compliance obligation for a compliance period.

OTHER INFORMATION

INSTITUTIONS INVOLVED

New Brunswick Department of Environment and Local Government: Responsible for reviewing and implementing the regulatory framework in New Brunswick.

New Brunswick Minister of Finance and Treasury Board: Oversees the Climate Change Fund and potential investments of its funds.

EVALUATION/ETS REVIEW

The Minister of Environment and Climate Change will undertake the revision of New Brunswick's Climate Change Act every five years or at any shorter interval that the Minister considers appropriate.

REGULATORY FRAMEWORK

- → Climate Change Act
- → Reduction of Greenhouse Gas Emissions Regulation (Regulation 2021-43 under the Climate Change Act)
- → Administrative Penalties Regulation (Regulation 2021-44 under the Climate Change Act)
- → Reporting and Reduction of Greenhouse Gas Emissions Standard
- → Performance Credit Standard
- → New Brunswick Regulation 84-247 under the Revenue Administration Act

NEWFOUNDLAND AND LABRADOR

NEWFOUNDLAND AND LABRADOR PERFORMANCE STANDARDS SYSTEM

- **Compliance based on intensity of output**
- **Opt-in possible for smaller emitters**

ETS DESCRIPTION

Newfoundland and Labrador's Performance Standards System (PSS) came into effect in 2019. It is an intensity-based ETS for large industrial emitters, in which each covered entity must surrender compliance units for emissions that exceed each facility's annual emissions limit. Each facility's annual emissions limit is based on a combination of historical emission intensity, actual production activity data, and an annually decreasing reduction factor. Special provisions are in place for offshore petroleum facilities which must reduce emissions by an equivalent percentage in absolute terms (regardless of production). The system applies to the same sectors and GHGs as the federal system, and follows the same price trajectory, rising CAD 15 (USD 11.11) each year until 2030, resulting in a price of CAD 170 (USD 125.93) per tCO_2e in 2030.

The mandatory inclusion threshold is set lower than in the Canadian federal system, applying to facilities in covered sectors with emissions exceeding 25,000 tCO_2e/year and with a voluntary opt-in option for smaller emitters (emitting any amount greater than 15,000 tCO_2e/year).

YEAR IN REVIEW

In line with the federal OBPS pricing trajectory, the 2023 price rose to CAD 65 (USD 48.15) per tCO_2e and will increase to CAD 80 (USD 59.26) per tCO_2e in 2024.

In force

Under development

Under consideration

SECTORS

POWER

INDUSTRY

GREENHOUSE GASES

CO_2, CH_4, N_2O, SF_6, HF Cs, PFCs

ALLOCATION

Free Allocation

AVERAGE 2023 PRICES

CAD 65 (USD 48.15)

TOTAL REVENUE

CAD 407,400 (USD 301,798) since the beginning of the program

CAD 185,800 (USD 137,638) in 2023

EMISSIONS & TARGETS OF NEWFOUNDLAND AND LABRADOR

GHG EMISSIONS BY CRF CATEGORY, 2021

(in $MtCO_2e$, share of total in %)

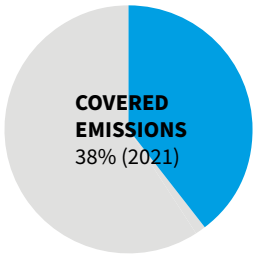
Energy	7.5	(90%)
Industrial processes	0.2	(2%)
Agriculture	0.1	(1%)
Waste	0.6	(7%)
Total	**8.3**	

Energy industries	2.5	(30%)
Manufacturing industries and construction	0.1	(1%)
Transport	4.0	(48%)
Commercial, institutional, and residential	0.6	(7%)
Other energy	0.3	(4%)

GHG REDUCTION TARGETS

By 2030: 30% below 2005 levels (Climate Change Action Plan Mid-Term Update)
By 2050: Net-zero emissions (Climate Change Action Plan Mid-Term Update)

ETS COVERAGE & PHASES



COVERED EMISSIONS

ETS emissions 3.1 $MtCO_2e$ (2021)

CAP OR TOTAL EMISSIONS LIMIT

The total emission limit under the Newfoundland and Labrador PSS is the sum of the annual emissions limits based on emissions intensity benchmarks for all individual covered entities. The limit is therefore not set ex-ante and is only known after the compliance period ends. In 2021, this limit amounted to approximately 3.1 $MtCO_2e$.

SECTORS AND THRESHOLDS

SECTORS: Power and industry

INCLUSION THRESHOLDS: Coverage is mandatory for facilities with emissions exceeding 25,000 tCO_2e/year. Smaller emitters (exceeding 15,000 tCO_2e/year) may also be covered by the system, on an opt-in basis.

POINT OF REGULATION

Point source (power, industry)

TYPE OF ENTITIES

Facilities

NUMBER OF ENTITIES

15 regulated facilities in 2022, of which 12 had a GHG reduction target

ALLOWANCE ALLOCATION & REVENUE

ALLOWANCE ALLOCATION

Allocation is determined in relation to annual emissions limits based on emissions intensity benchmarks. For onshore industrial facilities, baseline emissions intensity is determined with reference to units of output. For mobile offshore industrial facilities, baseline emissions intensity is determined with reference to hours of operation. Entities that emit less than their emissions limit receive credits, free of charge, corresponding to the number of tCO_2e below the limit. This is similar to free allocation based on benchmarks. These credits can be banked or sold to entities that emit more than their emissions limits.

USE OF REVENUES

Climate mitigation

Low-carbon innovation

Fund deposits are used to support GHG reduction projects at industrial facilities in addition to reductions mandated by the PSS. Where money deposited into the fund remains unused after five years, the advisory council makes a recommendation to the minister regarding how it can be used to achieve a verifiable reduction in GHG emissions.

FLEXIBILITY & LINKING

BANKING AND BORROWING

Banking of performance-based credits (compliance units) for future compliance periods is allowed, but compliance units purchased from the GHG Reduction Fund must be used in the period in which they are issued.

Borrowing is not allowed.

OFFSET CREDITS

The use of offset credits is not allowed as a compliance option.

LINKS WITH OTHER SYSTEMS

The Newfoundland and Labrador PSS is not linked with any other system. However, covered facilities can become eligible for certain exemptions from the Canada federal fuel charge.

COMPLIANCE

COMPLIANCE MECHANISM

Covered entities must surrender one compliance unit (optionally including Greenhouse Gas Reduction Fund Credits) per tCO_2e that exceeds the facility's annual emissions limit.

COMPLIANCE PERIOD

One year

MRV

REPORTING: GHG emissions reports must be submitted annually by June of the year following a reporting period, and compliance reports are due by November of the same year.

VERIFICATION: The owner or operator must submit a verification statement and a verification report from an accredited verification body by September of the year in which the report to be verified is required to be submitted.

FRAMEWORK: The rules for reporting GHG emissions are outlined in Newfoundland and Labrador's "Management of Greenhouse Gas Reporting Regulations" under the "Management of Greenhouse Gas Act" legislation.

ENFORCEMENT

Onshore facilities must achieve 20% of their compliance obligation through on-site GHG reductions or through submission of performance credits that they previously earned. If this portion of the compliance obligation is not filled by the deadline, the covered entity must pay into the GHG Reduction Fund any remaining obligation at a rate of four times the federal carbon price in that year. Any remaining balance of the compliance obligation may be filled by earned or purchased performance credits and by Fund credit purchases.

MARKET REGULATION

MARKET DESIGN

MARKET PARTICIPATION: Compliance entities including mandatorily and voluntarily covered entities (for inclusion thresholds see 'Sectors and Thresholds' section.)

MARKET TYPES:

Primary: Compliance units are currently not auctioned.

Secondary: Covered entities may purchase performance credits (compliance units) from other covered entities that have outperformed their compliance obligation. Transactions are conducted via a registry that is established and maintained by the minister.

LEGAL STATUS OF ALLOWANCES: Credits are referred to as intangible capital assets owned by the company. They can only be submitted for regulatory compliance or sold to another entity for its compliance obligation.

MARKET STABILITY PROVISIONS

INSTRUMENT NAME: Greenhouse Gas Reduction Fund (price ceiling)

Triggers: Covered entities can purchase and surrender credits from Newfoundland and Labrador's Greenhouse Gas Reduction Fund to compensate for emissions exceeding performance limits. These (fund) credits cannot be banked, transferred, or refunded. The price ceiling is aligned with the federal minimum carbon price (CAD 65, USD 48.15, in 2023). The price ceiling increases by CAD 15 (USD 11.11) each year until 2030, resulting in a price of CAD 170 (USD 125.93) per tCO_2e in 2030.

OTHER INFORMATION

INSTITUTIONS INVOLVED

Newfoundland and Labrador Department of Environment and Climate Change: Agency responsible for administering and enforcing the regulatory framework in Newfoundland and Labrador. The Department works with the Canada-Newfoundland and Labrador offshore Petroleum Board to apply the Act in the offshore area.

Newfoundland and Labrador Greenhouse Gas Reduction Fund Advisory Council: Group of five to seven expert members that assesses applications for payments and provides recommendations to the minister regarding payments from the fund.

EVALUATION/ETS REVIEW

The Minister (appointed under the "Executive Council Act") will conduct a review of Newfoundland and Labrador's Management of Greenhouse Gas Act and the regulations every five years and consider the areas which may be improved.

REGULATORY FRAMEWORK

- → Management of Greenhouse Gas Act
- → Management of Greenhouse Gas Regulations
- → Management of Greenhouse Gas Reporting Regulations
- → Management of Greenhouse Gas Administrative Penalty Regulations
- → Opted-in Facilities Regulations
- → Advisory Council Regulations

NOVA SCOTIA

NOVA SCOTIA OUTPUT-BASED PRICING SYSTEM FOR INDUSTRY

- OBPS began operation in 2023
- Replaced Nova Scotia's cap-and-trade program
- System meets the Canada federal benchmark criteria

ETS DESCRIPTION

The Nova Scotia Output-Based Pricing System for Industry (Nova Scotia OBPS) is part of the province's approach to reduce GHG emissions from large industrial facilities. Similar to the federal carbon pricing system in Canada, it aims to lower emissions while maintaining economic competitiveness and minimizing carbon leakage.

The Nova Scotia OBPS was approved by the Canadian federal government in November 2022 and began operating in 2023. It replaced Nova Scotia's cap-and-trade program, which had been in place since 2019 but was officially phased out after the final compliance deadline in December 2023.

The Nova Scotia OBPS is mandatory for facilities with annual emissions equal to or more than 50,000 tCO_2e. Other facilities under this threshold with annual emissions of ≥10,000 tCO_2e/year have the option to voluntarily join the system. If not, they would be subject to the Canada federal fuel charge.

The Nova Scotia OBPS sets facility-level emissions-intensity standards (performance standards) for electricity generators and large industrial emitters. Covered entities must surrender allowances (compliance units) for emissions that exceed the facility's annual emissions limit. The annual emissions limit is based on an emissions intensity benchmark. If a facility's emissions are below its limit, it earns performance credits (compliance units), which can be banked for future use or sold.

YEAR IN REVIEW

The Nova Scotia OBPS began operating in 2023, replacing Nova Scotia's cap-and-trade program which had been in place since 2019. The cap-and-trade program was phased out in 2023, officially ending after the final compliance deadline for the 2019 to 2022 trading period in December. The system's final auction was held in August, which saw the smallest number of bidders and steepest undersubscription rate ever as it cleared at the system's floor price.

While the cap-and-trade program set an overall cap on emissions each year, the OBPS allows emissions to increase over time if production increases. However, the Nova Scotia Department of Environment points out that the OBPS standards will become more stringent over time.

Final regulations and standards around reporting, applicable performance standards for industry and the electricity generation sector, and compliance are under development and are expected to be released in the first quarter of 2024.

In force
Under development
Under consideration

SECTORS

POWER

INDUSTRY

GREENHOUSE GASES

CO_2, CH_4, N_2O, SF_6, NF_3, HFCs, PFCs

OFFSET CREDITS

Allowed

ALLOCATION

Free Allocation

AVERAGE 2023 PRICES

CAD 65 (USD 48.15)

EMISSIONS & TARGETS OF NOVA SCOTIA

GHG EMISSIONS (EXCL. LULUCF), 2021

(in $MtCO_2e$, share of total in %)

Energy	13.3	(91%)
Industrial processes	0.5	(3%)
Agriculture	0.3	(2%)
Waste	0.5	(3%)
Total	**14.6**	

Energy industries	6.0	(41%)
Manufacturing industries and construction	0.3	(1%)
Transport	5.2	(36%)
Commercial, institutional, and residential	1.7	(12%)
Other energy	0.2	(1%)

GHG REDUCTION TARGETS

By 2030: 53% reduction below 2005 levels (Environmental Goals and Climate Change Reduction Act)
By 2050: Net-zero emissions (Environmental Goals and Climate Change Reduction Act)

ETS COVERAGE & PHASES

COVERED EMISSIONS

The OBPS began operating in 2023, no data is available yet.

CAP OR TOTAL EMISSIONS LIMIT

The total emission limit under the Nova Scotia OBPS is the sum of the annual emissions limits based on emissions intensity benchmarks for all individual covered entities. The limit is therefore not set ex-ante and is only known after the compliance period ends.

SECTORS AND THRESHOLDS

INCLUSION THRESHOLDS: Coverage is mandatory for facilities in the industrial and power sectors emitting ≥50,000 tCO_2e/year. Facilities under this threshold with annual emissions of ≥10,000 tCO_2e/year are permitted to opt-in to the Nova Scotia OBPS.

POINT OF REGULATION

Point source (industry, power)

TYPE OF ENTITIES

Facilities

NUMBER OF ENTITIES

15 (8 of which are voluntary market participants) in 2023

ALLOWANCE ALLOCATION & REVENUE

ALLOWANCE ALLOCATION

Allocation is determined in relation to annual emissions limits based on facility-level emissions-intensity standards (performance standards) set by the Nova Scotia OBPS.

Emissions up until the benchmark do not require payment, with only the surplus triggering the compliance obligation. Entities that emit less than their emissions limit receive performance credits (compliance units) free of charge, corresponding to the number of tonnes of CO_2e below the limit. This is similar to free allocation based on benchmarks. These performance credits can be banked as a way to meet future obligations, or they can be sold to other regulated entities that emit more than their emissions limits (see below for more details).

USE OF REVENUES

Climate mitigation

Low-carbon innovation

Revenues may be directed to the Nova Scotia Climate Change Fund, which funds a variety of GHG reduction programs and low-carbon innovation projects. Final regulations are expected to be released in the first quarter of 2024.

FLEXIBILITY & LINKING

BANKING AND BORROWING
Performance credits can be banked, transferred or retired by facilities subject to the Nova Scotia OBPS regulations to meet their reduction requirements.

OFFSET CREDITS
The use of offset credits is allowed to fulfil a facility's compliance obligation. Regulations still need to be finalized.

LINKS WITH OTHER SYSTEMS
The Nova Scotia OBPS is not linked with any other system. However, covered facilities can become eligible for certain exemptions from the Canada federal fuel charge.

COMPLIANCE

COMPLIANCE MECHANISM
Covered entities must surrender one compliance unit per tCO_2e that exceeds the facility's annual facility-level emissions-intensity standard set by the Nova Scotia OBPS.
A facility can meet its compliance obligations by paying into the Nova Scotia Climate Change Fund to obtain fund credits, purchasing and remitting performance credits from other regulated facilities or using offset credits.

The price of the fund credits and of the performance credits follow the federal government's backstop carbon price, which is CAD 80 (USD 59.26) in 2024, and will increase by CAD 15 (USD 11.11) annually until it reaches CAD 170 (USD 125.93) per tonne in 2030.

COMPLIANCE PERIOD
One year. The first compliance period for a regulated facility is the first year in which the facility becomes subject to the regulations.

MRV
REPORTING: GHG emission reports must be submitted.
VERIFICATION: These reports must be verified in accordance with the regulations.

ENFORCEMENT
If a covered facility fails to provide compensation, it must pay the amount of the obligation shortfall into the Nova Scotia Climate Fund. Obligations that remain unpaid will be subject to an interest rate set out in the Nova Scotia "Revenue Act Regulations" made under the "Revenue Act".

MARKET REGULATION

MARKET DESIGN
MARKET PARTICIPATION:
Compliance entities including mandatorily and voluntarily covered entities (for inclusion thresholds see 'Sectors and Thresholds' section).

MARKET TYPES:
Primary: Compliance units are currently not auctioned.
Secondary: Covered entities may purchase performance credits from other covered entities that have outperformed their compliance obligation.

MARKET STABILITY PROVISIONS
INSTRUMENT NAME: Nova Scotia Climate Fund (price ceiling)
TRIGGERS: To compensate for emissions exceeding the facility's annual emissions limit, facilities can pay into the Nova Scotia Climate Change Fund to obtain fund credits. The price paid into the Fund acts as a price ceiling and is aligned with the federal minimum carbon price (CAD 65 [USD 48.15] in 2023). The price increases by CAD 15 (USD 11.11) each year until 2030, resulting in a price of CAD 170 (USD 125.93) per tCO_2e in 2030.

OTHER INFORMATION

INSTITUTIONS INVOLVED
Nova Scotia Environment and Climate Change: Responsible for establishing the regulatory framework, implementing the Nova Scotia OBPS, and providing compliance and enforcement services for the Nova Scotia OBPS.

EVALUATION/ETS REVIEW
A progress report must be published no later than one year following the end of the first compliance year of 2023.

REGULATORY FRAMEWORK
- → Part XIB of the NS Environment Act
- → Output-Based Pricing System Reporting and Compliance Regulations
- → Output-Based Pricing System Reporting and Compliance Standard
- → Output-Based Pricing System Registration and Opt-in Regulations made under Section 112ZJ of the Environment Act

NEW YORK STATE

NEW YORK'S CAP-AND-INVEST PROGRAM (NYCI)

- **Governor Hochul committed to implement an economy-wide cap-and-invest program to help meet New York's statutory statewide emission limits**
- **State agencies released a pre-proposal outline and climate affordability study, that include three regulatory components: Cap-and-Invest, GHG Reporting and Auction rules**
- **The program aims for a 40% emission reduction by 2030 and 85% by 2050, from 1990 levels**

DESCRIPTION

New York's Cap-and-Invest Program (NYCI) is a comprehensive initiative aimed at reducing GHG emissions across the state's economy while maintaining economic stability and ensuring equitable investments. The program is anchored in the "Climate Leadership and Community Protection Act" of 2019, which requires a 40% reduction in GHG emissions by 2030 and at least an 85% reduction from 1990 levels by 2050. The NYCI program would cover all emitting sectors under a statewide cap. The cap would decrease over time, with the caps for 2030 and 2050 corresponding to statewide GHG emission limits.

Various NYS agencies are developing the program rules, including the New York State Energy Research and Development Authority (NYSERDA) and the Department of Environmental Conservation (DEC). The pre-proposal outline, published in December, describes the three main regulatory components:

- The "Mandatory Greenhouse Gas Reporting Program Rule", for the GHG emissions sources that would be required to report their emissions to DEC as well as the establishment of a GHG registry and reporting system.
- The "Cap-and-invest Rule", which would establish the program's compliance periods, and the cap's trajectory. The anticipated cap would incorporate both obligated and non-obligated GHG emissions sources. The rule would establish allowance budgets, compliance obligations and define stability provisions, including cost-containment mechanisms. The rule is also expected to address the treatment of emissions-intensive and trade-exposed (EITE) industries.
- The "Auction Rule" would describe the operation of allowance auctions. The rules will seek to maintain the integrity of the allowance market by preventing market manipulation and establishing cost containment and program stability mechanisms.

Covered sources under consideration are stationary sources, waste sector sources and fuel suppliers in the energy, industrial and product use sectors. Emission sources not subject to compliance obligations would be those from the agriculture and other land use change sectors, as well as non-stationary sources and fuel combustion from aviation and residential wood burning. The electricity sector obligations have not yet been determined, as sources in this sector in New York are currently subject to the Regional Greenhouse Gas Initiative (RGGI). Source categories not subject to allowance compliance obligations "non-obligated entities", would be monitored with the purpose of removing these GHG emissions from the statewide cap through the retirement of allowances. The allowance budget would reflect the statewide cap less adjustments for these non-obligated GHG emissions and other potential factors.

Allowances would mostly be allocated through auctioning. However, a direct allocation mechanism for qualifying sources in EITE industries is under consideration, to mitigate the risk of economic and/or carbon leakage. This may be effectuated through a consignment of allowances to eligible EITE entities through auction. Allowance banking would be allowed, except for the allowances issued in the first compliance period, and offset credits will have no role in the program. NYCI would be designed for the possibility of linkage with other ETSs.

In force

Under development

Under consideration

SECTORS

POWER

INDUSTRY

BUILDINGS

TRANSPORT

AVIATION

WASTE

NYSERDA will design, implement, and administer allowance auctions. Auctions would be held at least quarterly, and proceeds would be used in accordance with the "Climate Act" and relevant laws, with a focus on addressing affordability and investing in emissions reduction strategies and clean energy. At least, thirty percent of the revenues will be directed to a universal Consumer Climate Action Account to mitigate any increased energy prices for households. At least 35%, with a goal of 40% of the revenues will be directed to investments that benefit disadvantaged communities. NYSERDA and DEC have developed a Climate Affordability Study to consider the best way to distribute the collected revenues from the Consumer Climate Action Account.

Currently, NYCI is under development, with a focus on pre-proposal outreach to gather feedback from stakeholders.

YEAR IN REVIEW

In 2023, DEC and NYSERDA conducted stakeholder information sessions and third parties hosted an extensive set of learning sessions on the development of the economywide NYCI.

In August and September, NYSERDA and DEC hosted stakeholder feedback roundtables on matters of equity and climate justice and on just transition and labor, to ensure that NYCI is an equitable program that reduces greenhouse gas emissions and creates green jobs.

During January 2024, DEC and NYSERDA conducted workshops and webinars to engage the public and stakeholders in the development process, learning from successful emissions reduction programs implemented in other regions. Questions and feedback from all sessions are instrumental in the development of the regulations.

EMISSIONS & TARGETS OF NEW YORK STATE

GHG EMISSIONS (INCLUDING INDIRECT CO_2, EXCLUDING LULUCF)**, 2021**
(in $MtCO_2e$, share of total in %)

Energy	156.9	(83.7%)
Industrial processes and product use	12	(6.4%)
Agriculture, forestry, and other land use	9	(4.8%)
Waste	9.5	(5.1%)
Total	**187.4**	

Energy industries	25.3	(13.5%)
Manufacturing industries and construction	6.6	(3.5%)
Transport	64.2	(34.3%)
Commercial, institutional, and residential	54.9	(29.3%)
Other energy	5.9	(3.1%)

OTHER INFORMATION

INSTITUTIONS INVOLVED

Department of Environmental Conservation (DEC): Agency responsible for state programs designed to protect and enhance the environment; leads the development of regulations required to achieve the requirements of the Climate Act.

New York State Energy Research and Development Authority (NYSERDA): Public benefit corporation providing information and analysis, innovative programs, technical expertise, and support to increase energy efficiency, use renewable energy, and reduce reliance on fossil fuels in New York.

REGULATORY FRAMEWORK

→ **Final Scoping Plan**
→ **The Climate Leadership and Community Protection Act**

ONTARIO

ONTARIO EMISSIONS PERFORMANCE STANDARDS PROGRAM

- **Transitioned from federal OBPS in January 2022**
- **Compliance based on intensity of output of each covered entity**
- **Opt-in option for smaller emitters**

ETS DESCRIPTION

Ontario's Emissions Performance Standards (EPS) program came into effect in January 2022, replacing the federal output-based pricing system (OBPS) that was operational in Ontario from 2019 to 2021. It is an intensity-based ETS for large industrial emitters, in which each covered entity must surrender compliance units for emissions that exceed the facility's annual emissions limit. The annual emissions limit is based on facility-specific, sectoral, or historical emissions benchmarks, depending on the facility. The system applies to the same sectors and gases as the federal OBPS.

The federal fuel charge took effect in Ontario in 2019 and remains in effect, with the price rising CAD 15 (USD 11.11) each year until 2030, resulting in a price of CAD 170 (USD 125.93) per tCO_2e in 2030.

YEAR IN REVIEW

Ontario made regulatory amendments to the EPS program to meet the federal benchmark and continue the program from 2023 to 2030.

Aligning with the federal benchmark requirement pricing trajectory, the EPS program price rose to CAD 65 (USD 48.15) per tCO_2e in 2023 and increased to CAD 80 (USD 59.26) per tCO_2e in 2024.

Ontario strengthened the performance standard for generating electricity using fossil fuels and adjusted the factors applied to reduce the annual emissions limits of a facility.

Since 2023, the Ontario EPS has begun recognizing CO_2 emissions that are captured and stored permanently in certain carbon capture and storage (CCS) projects as emissions reductions at EPS covered facilities. Carbon capture and utilization (CCU) is not currently recognized as an emissions reduction method in the EPS.

In force

Under development

Under consideration

SECTORS

POWER

INDUSTRY

GREENHOUSE GASES

CO_2 , CH_4, N_2O, SF_6, HFCs, PFCs, NF_3

ALLOCATION

Free Allocation

AVERAGE 2023 PRICES

CAD 65 (USD 48.15)

TOTAL REVENUE

Revenue data not yet published

EMISSIONS & TARGETS OF ONTARIO

GHG EMISSIONS (INCLUDING INDIRECT CO_2, EXCLUDING LULUCF), 2021

(in $MtCO_2e$, share of total in %)

Energy	113.0	(75%)
Industrial processes	21.7	(14%)
Agriculture	9.6	(6%)
Waste	6.1	(4%)
Total	**151.0**	

Energy industries	10.4	(7%)
Manufacturing industries and construction	16.0	(11%)
Transport	52.4	(35%)
Commercial, institutional, and residential	31.9	(21%)
Other energy	2.5	(2%)

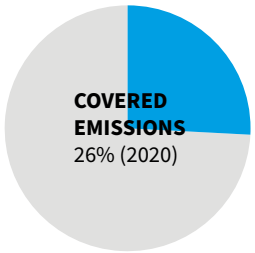
GHG REDUCTION TARGETS

By 2030: 30% below 2005 level by 2030

ETS COVERAGE & PHASES

COVERED EMISSIONS

ETS emissions (2020) 38.6 $MtCO_2e$



CAP OR TOTAL EMISSIONS LIMIT

The total emission limit under the Ontario EPS is the sum of the annual emissions limits based on emissions intensity benchmarks for all individual covered entities. The limit is therefore not set ex-ante and is only known after the compliance period ends. As of 2020, the system covered approximately 38.6 $MtCO_2e$.

SECTORS AND THRESHOLDS

SECTORS: Industry and electricity generation.

INCLUSION THRESHOLDS: Coverage is mandatory for facilities with emissions exceeding 50,000 tCO_2e/year. Smaller emitters (at or exceeding 10,000 tCO_2e/year) may also be covered by the system, on an opt-in basis.

POINT OF REGULATION

Point source (industry, electricity generation)

TYPE OF ENTITIES

Facilities

NUMBER OF ENTITIES

216 (2023)

ALLOWANCE ALLOCATION & REVENUE

ALLOWANCE ALLOCATION

Allocation is determined in relation to annual emissions limits based on emissions intensity benchmarks.

Entities that emit less than their emissions limit receive emissions performance units (EPUs), free of charge, corresponding to the number of tCO_2e below the limit. This is similar to free allocation based on benchmarks. These EPUs can be banked for up to five years or sold to entities that emit more than their emissions limits (see below for more details).

USE OF REVENUES

Climate mitigation

The approach to the use of proceeds is in development. The proceeds program will be launched in spring 2024.

The proceeds must be used to support GHG emissions reductions.

Total revenue data is not yet publicly available.

FLEXIBILITY & LINKING

BANKING AND BORROWING

Banking is allowed, but each emissions performance unit has an expiry date of 15 December in the year that is five years after the compliance period in which it is distributed.

Borrowing is not allowed.

OFFSET CREDITS

The use of offset credits is not allowed as a compliance option in the initial years of the system. Ontario is monitoring developments in the offset policy of the Canada federal OBPS and may consider allowing offsets in the future.

LINKS WITH OTHER SYSTEMS

The Ontario EPS is not linked with any other system. However, covered facilities can become eligible for certain exemptions from the Canada federal fuel charge.

COMPLIANCE

COMPLIANCE MECHANISM

Covered entities can achieve compliance through either:

- Reducing GHG emissions
- Obtaining compliance units, which include:
  1. excess emissions units (EEUs): generally non-tradeable units purchased from the Government of Ontario that must be used in the year in which they are purchased; and
  2. emissions performance units (EPUs), tradeable units that are distributed to facilities whose emissions are below their limit. These are bankable for up to five years.

Covered entities must surrender the number of compliance units equal to their compliance obligation (i.e., the amount of GHG emissions that exceed the facility's annual emissions limit).

Since 2023, the Ontario EPS has begun recognizing CO_2 emissions that are captured and stored permanently in certain CCS projects as emissions reductions.

Covered entities must have enough compliance units in their account to be surrendered by 15 December of the year following the compliance period.

COMPLIANCE PERIOD

One year

MRV

REPORTING: GHG emissions reports, including an electricity importation report, must be submitted annually by the start of June of the year following the reporting period.

VERIFICATION: The owner or operator must submit a verification statement and a verification report from an accredited verification body by the start of September of the year in which the report to be verified is required to be submitted.

FRAMEWORK: The rules for reporting GHG emissions are outlined in Ontario's "Greenhouse Gas Emissions: Quantification, Reporting and Verification" regulation.

ENFORCEMENT

If a covered entity does not meet its compliance obligation by 15 December of the year following the compliance period, the operator must ensure that additional compliance units are in their account equal to three times the amount of the compliance obligation shortfall by 15 February in the year that is two years after the compliance period.

MARKET REGULATION

MARKET DESIGN

MARKET PARTICIPATION: Compliance entities including mandatorily and voluntarily covered entities (for inclusion thresholds see 'Sectors and Thresholds' section.)

MARKET TYPES:

Primary: Compliance units are currently not auctioned. Facilities can purchase EEUs from the government to address any emissions in excess of their annual limits.

Secondary: Covered entities may purchase EPUs from other covered entities that have outperformed their emissions limit.

Transactions are reflected on a registry that is managed by the Director appointed by the Ontario Minister of Environment, Conservation and Parks.

MARKET STABILITY PROVISIONS

INSTRUMENT NAME: Price ceiling

TRIGGERS: Covered entities can purchase and surrender excess emissions units (EEUs) at the fixed cost set out in the regulation, which is aligned with the federal minimum carbon price (CAD 65, USD 48.15, in 2023). The regulated price of EEUs acts as a price ceiling for emissions performance units (EPUs). The price of EEUs increases by CAD 15 (USD 11.11) each year until 2030, resulting in a price of CAD 170 (USD 125.93) per tCO_2e in 2030.

OTHER INFORMATION

INSTITUTIONS INVOLVED

Ontario Ministry of the Environment, Conservation and Parks: Department responsible for administering and enforcing the regulatory framework in Ontario. The Director appointed by the Minister is in charge of the operation of the EPS program.

EVALUATION/ETS REVIEW

At least once every five years, the Minister shall cause a report to be prepared and published on the operation of the system's environmental penalties.

REGULATORY FRAMEWORK

- → Emissions Performance Standards Regulation (O. Reg. 241/19)
- → Greenhouse Gas Emissions: Quantification, Reporting, and Verification (O. Reg. 390/18)
- → GHG Emissions Performance Standards and Methodology for the Determination of the Total Annual Emissions Limit
- → Guideline for Quantification, Reporting and Verification of Greenhouse Gas Emissions, December 2022
- → Environmental Protection Act
- → Ontario's Climate Change Strategy

OREGON

- **Oregon’s Climate Protection Program was declared invalid after a court ruling in December**
- **Oregon's government has committed to redevelop the emissions pricing scheme**

DESCRIPTION

Oregon’s Environmental Quality Commission (EQC) is taking steps to reinstate the Climate Protection Program (CPP) after its invalidation due to a ruling by the Oregon Court of Appeals in December 2023.

Initially launched in 2022, the CPP aimed to reduce GHGs in the state and deliver benefits to Oregon communities. The CPP established a declining cap on regulated emissions for covered entities, which included natural gas utilities (referred to as "local distribution companies") and non-natural gas fuel suppliers. The cap for 2024 was set to cover ~40% of the state’s emissions, and planned to reduce each year, to reach 90% below 2017-2019 emissions levels by 2050.

Covered entities were allocated yearly allowances based on their emissions. Additionally, the program permitted these companies to meet up to 10% of their emissions reduction obligations using compliance offset credits sourced from within Oregon, a threshold planned to increase to 20% over time.

In December, the Oregon Court of Appeals ruled the CPP invalid, after considering that the regulatory process failed to comply with disclosure obligations under Oregon law, specifically “ORS 468A.327(1)”, which mandates rulemaking notice to facilities holding Title V permits under the federal “Clean Air Act”.

The Department of Environmental Quality (DEQ), responsible for administering the CPP, and the EQC will embark on a 12-month rulemaking process, aiming to address the administrative omission that led to the program's initial invalidation and to ensure that Oregon meets its climate protection goals. The state is currently developing an agenda for the upcoming rulemaking process and is considering potential changes to the program.

EMISSIONS & TARGETS OF OREGON

GHG EMISSIONS (INCLUDING INDIRECT CO_2, EXCLUDING LULUCF), **2021**

(in $MtCO_2e$, share of total in %)

Electricity use	18	(29%)
Natural gas use	7	(11%)
Agriculture	7	(11%)
Transport	22	(36%)
Other residential and commercial	4	(7%)
Other industrials	4	(7%)
Total	**62**	

GHG REDUCTION TARGETS

By 2035: 50% reduction from baseline by 2035

By 2050: Reduce GHG levels at least 75% below 1990 levels (Chapter 907 Oregon Laws 2007)

OTHER INFORMATION

INSTITUTIONS INVOLVED

Oregon Department of Environmental Quality (DEQ): Implementing state agency for the CPP.

Oregon Environmental Quality Commission (EQC): Panel appointed by the governor of Oregon to serve as DEQ's policy and rulemaking board. EQC adopted the CPP rules in 2021.

REGULATORY FRAMEWORK

→ Division 271 – Oregon Climate Protection Program

→ Division 12 – Enforcement Procedure and Civil Penalties

PENNSYLVANIA

- **Executive order for Pennsylvania to have a power sector ETS and participate in RGGI**
- **ETS regulation consistent with RGGI Model Rule finalized in April 2022**
- **However, court ruling prevents participation in RGGI**

In force

Under development[1]

Under consideration

ETS DESCRIPTION

In October 2019, Pennsylvania's Governor Tom Wolf signed an executive order directing the state's Department of Environmental Protection (DEP) to develop and present to the Environmental Quality Board (EQB) a proposal for an ETS covering CO_2 emissions from the electric power sector and its linkage to the Regional Greenhouse Gas Initiative (RGGI). The legal basis for developing an ETS is the state's "Air Pollution Control Act", which regulates air resources necessary for the protection of public health.

In April 2022, the final regulation to establish an ETS in Pennsylvania and to participate in RGGI was published. It set a base cap of 78 million short tons (70.8 $MtCO_2$) if Pennsylvania was a participating state of RGGI as of 1 January 2022. The cap decreases by 3% annually to 58.1 million short tons (52.7 $MtCO_2$) in 2030. The regulation includes the implementation of both emissions containment and cost containment reserves, as well as quarterly auctions to allocate allowances. It includes additional features such as set-aside accounts (accounts from which allowances may be transferred to the accounts of regulated units or retired on their behalf) for waste coal and cogeneration units (including combined heat and power systems), and a limited exemption for cogeneration units that supply less than 15% of their total energy to the electricity grid.

Pennsylvania's participation in RGGI would have represented 44% of the 2023 RGGI cap (see 'Year in Review' section).

YEAR IN REVIEW

Prior to its April 2022 publication, the regulation had been challenged by members of Pennsylvania's legislature. It was also subsequently disputed by a collection of local coal stakeholders, including power plant owners, coal mine owners, and workers' unions, who filed a lawsuit in front of the Commonwealth Court after it was published.

In April 2023, Governor Josh Shapiro convened a working group to assess Pennsylvania's participation in RGGI in the context of a three-part "test" (protection and creation of energy jobs, addressing climate change, and ensuring that the state had reliable, affordable, and clean power). The working group found consensus that cap-and-invest would be the optimal approach for Pennsylvania, but failed to reach consensus on a specific form the program would take.

In November, the Commonwealth Court ruled that money raised through the regulation constitutes a tax imposed by the DEP and EQB, and thus is in violation of the state's constitution. According to the ruling, participation in RGGI is only possible through legislation passed by the Pennsylvania General Assembly. Shortly after the Commonwealth Court's ruling, the Shapiro administration appealed the decision to the state's Supreme Court. There is currently no timeframe on when a decision could be reached.

SECTORS

POWER

GREENHOUSE GASES

CO_2

1 Regulation finalized but enjoined from implementation and enforcement.

EMISSIONS & TARGETS OF PENNSYLVANIA

GHG EMISSIONS (INCLUDING INDIRECT CO_2, EXCLUDING LULUCF)**, 2020**
(in $MtCO_2e$, share of total in %)

Electricity production	70.2	(29%)
Industrial	73.6	(31%)
Transportation	52.3	(22%)
Residential	18.1	(8%)
Commercial	10.8	(5%)
Agriculture	9.4	(5%)
Waste management	4.3	(2%)
Total	**238.7**	

GHG REDUCTION TARGETS

By 2025: 26% reduction below 2005 levels (Executive Order 2019-1)
By 2050: 80% reduction below 2005 levels (Executive Order 2019-1)

OTHER INFORMATION

INSTITUTIONS INVOLVED

Pennsylvania Department of Environmental Protection (DEP): Government agency responsible for implementing, administering, and enforcing the CO_2 Budget Trading Program (RGGI regulation)

REGULATORY FRAMEWORK

→ Executive Order 2019-07
→ CO_2 Budget Trading Program
→ Pennsylvania Commonwealth Court Ruling

QUÉBEC

QUÉBEC CAP-AND-TRADE SYSTEM

- **Covers ~80% of Québec's overall emissions**
- **Linked with California's Program since 2014**
- **First and largest linked market between subnational governments from different countries**

ETS DESCRIPTION

Québec's Cap-and-Trade System started in 2013 and covers ~80% of the province's GHG emissions.

The system covers fuel combustion emissions in the power, buildings, transport, and industrial sectors, as well as industrial process emissions. Covered entities must surrender allowances[3] for all their covered emissions. Most emission units are auctioned, with a portion freely allocated to emissions-intensive, trade-exposed (EITE) sectors and to electricity producers with fixed-price sales contracts concluded before the announcement of the system. Québec also keeps an emission units reserve account to sell to entities that do not have enough allowances to cover their obligations. Covered entities can also cover a part of their GHG emissions by using offset credits.

Québec has been a member of the Western Climate Initiative (WCI) since 2008 and formally linked its system with California's in 2014.

YEAR IN REVIEW

Over the second half of the year, Québec ran a series of stakeholder consultations to explore possible amendments to its Cap-and-Trade System. These are to ensure the system is aligned with achieving the 2030 target and reaching carbon neutrality by 2050. The process was run in coordination with California.

The two jurisdictions outlined possible amendments which impact both programs, including revisions to emissions caps and market control mechanisms. Aside from these, Québec also consulted its stakeholders on specific topics including publication of market data, compliance periods, global warming potential, offset credits, GHG storage and new green energy.

If the consultation process results in amendments to the Cap-and-Trade System, a draft regulation is expected to be published in summer 2024.

1 Also includes offset credits from linked jurisdictions (i.e., California).
2 Includes settlement prices of both current and future vintage units.
3 In Quebec's Cap-and-Trade System, the term 'emission allowance' includes emission units (i.e., the main compliance instrument, what other systems typically refer to as 'allowances'), offset credits, early reduction credits and any other emission allowance determined by regulation of the Government, each being equal to one tonne of GHG expressed in CO_2 equivalents.

In force
Under development
Under consideration

SECTORS

POWER
INDUSTRY
BUILDINGS
TRANSPORT

CAP

51.6 $MtCO_2e$ (2024)

GREENHOUSE GASES

CO_2, CH_4, N_2O, SF_6, NF_3, HFCs, PFCs

OFFSET CREDITS

Domestic[1]

ALLOCATION

Free Allocation: Benchmarking
Auctioning

AVERAGE 2023 PRICES

Average auction price: CAD 44.46[2] (USD 32.93)
Average secondary market price: CAD 45.57 (USD 33.76)

TOTAL REVENUE

CAD 8,419.1 billion (USD 6,463 billion) since beginning of program
CAD 1,419.3 billion (USD 1,051.4 billion) in 2023

EMISSIONS & TARGETS OF QUÉBEC

GHG EMISSIONS (INCLUDING INDIRECT CO_2, EXCLUDING LULUCF), **2021**
(in $MtCO_2e$, share of total in %)

Energy	52.3	(67.4%)
Industrial processes	13.2	(17.0%)
Agriculture	8.1	(10.4%)
Waste	4.0	(5.2%)
Total	**77.6**	

Energy industries (Public Electricity and Heat Production)	0.4	(0.5%)
Manufacturing industries and construction (Industrial Combustion)	11.6	(15%)
Transport	33.0	(43%)
Commercial, institutional, and residential	7.0	(9%)
Other energy (Fugitive emissions)	0.2	(0.3%)

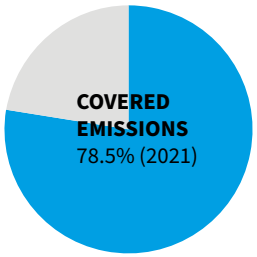
GHG REDUCTION TARGETS

By 2030: 37.5% reduction from 1990 GHG levels (Order in Council 1018-2015)
By 2050: Carbon neutrality (2030 Plan for a Green Economy)

ETS COVERAGE & PHASES

COVERED EMISSIONS

Verified ETS emissions 60.9 $MtCO_2e$ (2021)



COMPLIANCE PERIODS

FIRST COMPLIANCE PERIOD: Two years (2013 to 2014)
SECOND COMPLIANCE PERIOD: Three years (2015 to 2017)
THIRD COMPLIANCE PERIOD: Three years (2018 to 2020)
FOURTH COMPLIANCE PERIOD: Three years (2021 to 2023)
FIFTH COMPLIANCE PERIOD: Three years (2024 to 2026)

CAP OR TOTAL EMISSIONS LIMIT

A cap limits the total emissions allowed in the system.

FIRST COMPLIANCE PERIOD: The system started in 2013 with a cap of 23.2 $MtCO_2e$.

SECOND COMPLIANCE PERIOD: With the program expanding to include fuel distribution, the cap rose to 65.3 $MtCO_2e$ in 2015. The cap declined to 61 $MtCO_2e$ in 2017, at an average rate of 3.2% per year.

THIRD COMPLIANCE PERIOD: The cap started at 59.0 $MtCO_2e$ and declined at an average annual rate of 3.5% to reach 54.7 $MtCO_2e$ in 2020.

FOURTH COMPLIANCE PERIOD AND BEYOND: After a slight nominal increase in the cap in 2021, to 55.3 $MtCO_2e$, due to an adjustment of the global warming potential of different GHGs, the cap will be reduced annually by ~2.2% on average until 2030. This will result in a cap of 44.1 $MtCO_2e$ in 2030.

SECTORS AND THRESHOLDS

FIRST COMPLIANCE PERIOD: Producers and importers of electricity and industrial facilities.

SECOND COMPLIANCE PERIOD AND BEYOND: Sectors from Phase 1 as well as the distribution and importation of fuels used in the transport and building sectors and in small- and medium-sized businesses.

INCLUSION THRESHOLDS: Emissions equal to or greater than 25,000 tCO_2e per year. Fuel distributors that distribute 200L or more of fuel are also subject to inclusion.

VOLUNTARY EMITTERS (OPT-IN COVERED ENTITIES): Since 2019, emitters from capped sectors that have reported emissions equal to or greater than 10,000 tCO_2e per year but less than 25,000 tCO_2e per year may voluntarily register with the Cap-and-Trade System as a covered entity. If their production activity is eligible, they may receive free allocation.

POINT OF REGULATION

Upstream (buildings, transport); point source (industry, in-province power); imported electricity at the point of first delivery onto Québec's electricity grid.

TYPE OF ENTITIES

Industrial facilities, fuel distributors and electricity importers

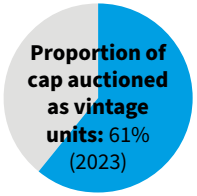
NUMBER OF ENTITIES

132 covered entities, representing 174 facilities (84 industrial facilities, 51 fuel distributors and 39 opt-in emitters)[4] (2022)

4 132 covered entities, but some entities operate more than one facility. These entities represent 174 emitting facilities.

ALLOWANCE ALLOCATION & REVENUE

ALLOWANCE ALLOCATION



Emission units are distributed via both auctions and free allocation by the government or can be directed to reserves for future sales.

FIRST TO THIRD COMPLIANCE PERIOD (2013 to 2020):

Free Allocation: EITE sectors receive a portion of their emission units for free because they are considered vulnerable to carbon leakage. Eligible sectors include aluminum, lime, cement, chemical and petrochemicals, metallurgy, mining and pelletizing, pulp and paper, petroleum refining, and others such as manufacturers of glass containers, gypsum products, and some agro-food products. Electricity producers with a fixed-price sales contract signed before 2008 that does not allow price adjustments to take into account the carbon cost are also eligible to receive free units. Free allocation is also issued to compensate for the carbon cost already paid on electricity imported from a non-WCI jurisdiction (for example, RGGI).

In most cases, the volume of free allocation is determined by recent levels of production or consumption of raw materials (depending on the reference unit for the sector), a declining intensity target based on historical averages, depending on the type of emissions (e.g., fixed process, combustion, and other, mainly fugitive emissions), and an assistance factor. Until 2020, the assistance factors for all EITE sectors were set at 100%. If insufficient historical data is available, an energy-based methodology is used to determine the amount of free allocation issued.

Over the first three compliance periods, ~148 million emission units, representing ~36% of the cap for the period, were allocated for free.

Auctioning: Electricity and fuel distributors (included since 2015) must buy 100% of their allowances, with some narrow exceptions (e.g., on contracts prior to 2008 that have not been renewed or extended). Emission units are auctioned quarterly. Units that remain unsold after an auction may be offered for sale again when the price at two consecutive auctions settles above the minimum price.

Over the first three compliance periods, ~256 million emission units, representing ~63% of cap for the period, were auctioned or directed to reserves.

FOURTH COMPLIANCE PERIOD (2021 to 2023):

Free allocation: For the fourth period, assistance factors were determined based on trade exposure and emissions intensity. These metrics grouped the industrial sector's carbon leakage risk into three categories ("low", "medium", and "high"), with assistance factors of 90%, 95%, and 100% respectively. An assistance factor of 60% applies for steam production for industrial purposes and off-site electricity producers with the fixed-price sales contracts signed before 2008. For 2021 and 2022, ~39 million emission units, representing ~36% of cap for the period, were allocated for free.

Auctioning: The same auctioning provisions apply from the first three periods. For 2021 and 2022, ~67 million emission units, representing ~65% of the annual cap, were allocated by auction or directed to reserves.

BEYOND THE FOURTH COMPLIANCE PERIOD:

Free allocation: New rules adopted in September 2022 will see a gradual decrease in the level of free allocation from 2024. The rate of reduction will be determined by three additional parameters: the cap decline factor of 2.34%; an extra expected effort based on the carbon leakage risk and the proportion of fixed process emissions; and a modulation adjustment factor, which will reduce the rate of reduction in the initial years and increase it in the later ones, with no net effect over the 2024 to 2030 period. A portion of the emission units resulting from the reduction in the level of free allocation will be consigned for auction on behalf of emitters. The proceeds from the auctioning of the consigned units will be set aside on behalf of each business to finance projects related to the climate transition. Average actual emissions from 2017 to 2019 will be progressively phased in to replace the existing intensity values based on 2007 to 2010 emissions.

Auctioning: The same auctioning provisions apply from the first four periods.

USE OF REVENUES

Climate mitigation

All auction revenues go to the Electrification and Climate Change Fund, which replaced the Green Fund in November 2020. The new fund, entirely dedicated to climate action, supports the implementation of mitigation and adaptation measures contained in the 2030 Green Economy Plan and includes energy efficiency, electrification, and public transport.

Since the beginning of the program, more than CAD 8.4 billion (USD 6.4 billion) has been raised.

FLEXIBILITY & LINKING

BANKING AND BORROWING

Banking is allowed, but the emitter is subject to a general holding limit on emission units to which all entities in the system are held. The holding limit decreases in line with the annual emission unit budget.

Borrowing is not allowed. However, some emission units from future vintages are offered at each auction and can be traded but not used for compliance until the compliance date for the respective vintage year.

OFFSET CREDITS

The use of offset credits is allowed.

QUALITATIVE CRITERIA: Offset credits generated in Québec from eligible projects are fungible in the WCI carbon market. A new regulatory framework based on ministerial regulations, which came into force in July 2021, will gradually replace the previous system of offset protocols. The ministerial regulations allow the following offset project types:

- Reclamation and destruction of methane from landfill sites;
- Destruction of halocarbons;
- Carbon sequestration through afforestation or reforestation on private lands; and
- Anaerobic digestion of manure.

For a transitionary period, the following project types will remain eligible under three protocols:

- Destruction of methane from covered manure storage facilities;
- Destruction of methane from drainage systems at active coal mines; and
- Destruction of methane from ventilation systems of active underground coal mines.

Technical work is currently underway to develop a draft regulation for the anaerobic digestion of manure. Other types of projects under consideration include fuel substitution in the marine transport sector, improvements in the application practices of agricultural fertilizers, and afforestation or reforestation on public lands.

Québec offset credits are 100% guaranteed. This means that in cases where offset credits issued for a project are later deemed illegitimate by the regulator, the offset promoter (i.e., project owner) is required to replace them. If credit recovery is not possible, an equivalent number of offset credits is retired from the government's environmental integrity account. This account is funded by the automatic withholding of 3% of offset credits issued from all offset projects.

QUANTITATIVE LIMITS: Offset credits can be used for up to 8% of each entity's compliance obligation.

Over the first three compliance periods (2013 to 2020), nearly 20 million offset credits were surrendered by entities in Québec, representing around 5% of the total compliance obligation. 95% of these surrendered offset credits were issued in California.

LINKS WITH OTHER SYSTEMS

Québec linked its system with California's in January 2014. The two extended their joint market by linking with Ontario in January 2018 until the termination of Ontario's system in mid-2018.

COMPLIANCE

COMPLIANCE MECHANISM

Covered entities must surrender one allowance per tCO_2e emitted for all their verified and reported emissions.

COMPLIANCE PERIOD

The Québec Cap-and-Trade System is structured around three-year compliance periods, except for the first period (see 'ETS Size & Phases' section). A cap trajectory until 2030 has been set (see 'Cap' section). Allowances must be surrendered by November following the end of a compliance period.

MRV

REPORTING FREQUENCY: Annually

VERIFICATION: All covered entities in the program require independent third-party verification of emissions reports.

FRAMEWORK: Regulation on the mandatory reporting of certain emissions of contaminants into the atmosphere is outlined in the "Environment Quality Act".

ENFORCEMENT

A covered entity that fails to cover its GHG emissions with enough allowances by the compliance deadline must remit each missing allowance plus three additional allowances for each allowance it failed to surrender.

For non-compliance, entities can be fined CAD 3,000-600,000 (USD 2,222-444,444) for each tCO_2e not covered.

In addition, the Minister of the Environment, the Fight against Climate Change, Wildlife and Parks may suspend emission unit allocation to any non-compliant emitter.

MARKET REGULATION

MARKET DESIGN

MARKET PARTICIPATION: Compliance entities, including entities that opt into the system ("emitters"). Non-compliance entities with an establishment in Canada and individuals domiciled in Canada ("participants") can participate through:

- purchasing, holding, selling or retiring compliance instruments;
- operating an offset project registered with the Ministry; or
- providing clearing services as qualified entities.

Emitters and participants must have an account in the Compliance Instrument Tracking System Service (CITSS). Additional eligibility criteria apply.

MARKET TYPES:

Primary: The majority of allowances are distributed via auctioning. Four auctions of emission units, held jointly with California, take place each year. Participants must have an approved account in CITSS and apply to take part in auctions at least 30 days in advance. Auctions are administered by the Western Climate Initiative, Inc.

Secondary: Exchange trading of allowances (emission units and offsets) issued by both California and Québec takes place on platforms such as the Intercontinental Exchange (ICE), the CME group or the Nodal Exchange. Allowances are traded through futures and options contracts. Any company qualified to access these platforms can trade directly or through a future commission merchant. Companies can also trade directly over the counter. All transactions must be notified to the Ministry, with information such as the quantity and vintage of allowances and the settlement price.

LEGAL STATUS OF ALLOWANCES: Under the "Environmental Quality Act", emission allowances include emission units, offset credits, early reduction credits and any other emission allowance determined by regulation of the Government, each being equal to 1 tCO_2e. They can be used to comply with the pertinent regulation. They do not constitute financial instruments in Québec.

MARKET STABILITY PROVISIONS

AUCTION RESERVE PRICE: The auction reserve price sets the minimum price at which emission units are available at auction. It is equivalent to the annual minimum price of the previous year, increased by 5% and an Indexation rate based on the Price Index Consumption (CPI) as established by the "Financial Administration Act". For 2024, it is set at CAD 22.93 (USD 16.98) for Québec and USD 24.04 for California. For joint auctions with California, the highest value in USD between Québec's and California's auction reserve prices, based on the exchange rate of the Bank of Canada the day prior to the auction, will be the reserve price for that sale.

RESERVE ACCOUNT: Québec maintains an emission unit reserve to sell to entities that do not have enough allowances to cover their obligations ("sales by mutual agreement"). The reserve is filled with set portions of the annual cap (4% for 2021 and beyond).

Sales by mutual agreement are held a maximum of four times per year at three price categories that contain an equal share of emission units on offer. Only covered entities in Québec are eligible to purchase units from the reserve, and only if they do not have enough compliance instruments that can be used to cover emissions for the current period in their general account. To date, no sales by mutual agreement have been held.

In December 2020, Québec amended the prices of its three tiers to align more closely with California. For 2024, the prices of the three tiers are CAD 54.67 (USD 40.50), CAD 70.24 (USD 52.15), and CAD 85.83 (USD 63.58). However, if partner entities have set higher prices per unit for a corresponding category, Québec units would be sold at the highest of the prices of both jurisdictions according to the daily average exchange rate of the Bank of Canada published on its website on the day preceding the sale. Unlike California, the highest tier will not act as a price ceiling for Québec. Just like auction reserve prices, reserve prices increase annually by 5% plus inflation.

OTHER INFORMATION

INSTITUTIONS INVOLVED

Ministère de l'Environnement, de la Lutte contre les changements climatiques, de la Faune et des Parcs (Ministry of the Environment, the Fight against Climate Change, Wildlife and Parks): Overall responsibility for implementing the Cap-and-Trade System in Québec.

Western Climate Initiative, Inc.: Non-profit organization that provides cost-effective administrative and technical solutions for supporting the coordinated development and implementation of participating jurisdictions' GHG emissions trading programs, such as administering auctions and maintaining the system registry.

EVALUATION/ETS REVIEW

The regulation is adjusted almost annually to implement changes and, where necessary, maintain harmonization with linked jurisdictions.

REGULATORY FRAMEWORK

- → Regulation respecting a cap-and-trade system for greenhouse gas emission allowances
- → Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere
- → Amendments to the cap-and-trade regulations
- → Ministerial regulations respecting the issuance of offset credits
- → Environment Quality Act

REGIONAL GREENHOUSE GAS INITIATIVE

- First mandatory GHG ETS in the United States
- A third program review is ongoing

ETS DESCRIPTION

The Regional Greenhouse Gas Initiative (RGGI) launched in 2009 and is the first mandatory GHG ETS in the United States. It started operating with ten states (**Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island,** and **Vermont**). RGGI's development was based on the "2005 RGGI Memorandum of Understanding" (MOU) and on the "2006 RGGI Model Rule". Through statutes or regulations based on the Model Rule, each state then established individual CO_2 budget trading programs. New Jersey withdrew from RGGI at the end of the first phase, or "control period" (see 'Compliance' section) in December 2011 and later rejoined in 2020, while **Virginia** joined in 2021 and has left as of 2024.

RGGI covers power sector emissions in participating states. In 2020, it covered around 14% of the aggregate participant states' emissions; in 2021, 228 facilities were covered by the state regulations. The aggregate cap will decrease by 30% compared to 2020 between 2021 and 2030. Under the ETS, covered entities must surrender allowances for all their covered emissions. Covered entities obtain most of their allowances through regular auctions, while some states have "set-aside" accounts from which they may transfer a limited number of allowances to entities' compliance accounts.

RGGI has undergone two review processes that updated the Model Rule and enshrined tighter caps and adjustments to system design. RGGI's third review process is currently ongoing.

YEAR IN REVIEW

The RGGI states initiated the Third Program Review in summer 2021 to analyze the program's successes, impacts, potential additional reductions to the cap post-2030, and other design elements.

As part of the process, in September, the RGGI states presented the Spring Modelling Framework, which originally considered five illustrative allowance supply scenarios:

1. Current RGGI trajectory (baseline): with a flat cap post-2030
2. Extend reduction: extends the reduction trajectory post-2030
3. Zero by 2040: the cap trajectory goes to zero between 2030 and 2040
4. Zero by 2040: start in 2026: the cap trajectory goes to zero between 2026 and 2040
5. Zero by 2035: the cap goes to zero by 2035.

The states will update the baseline scenario and not pursue the "extend reduction" scenario. The model thus analyzes the "zero by 2040" and "zero by 2035" scenarios. The model considered three sets of assumptions, in which more renewables and electrification are modelled, and presented results on RGGI-affected emissions, allowance price projections, and capacity mix, in the period 2025 to 2035. The RGGI states also presented the draft RGGI emissions dashboard for review and public comment. RGGI's third review process is currently ongoing.

Virginia repealed its CO_2 Budget Trading Program following executive action started by the state's administration in 2022. The repealing regulation was approved by the state's Air Pollution Control Board in June and became effective by the end of August. The state thus stopped participating in RGGI in December.

SECTORS

POWER

CAP

69 million short tons CO_2 or 63 $MtCO_2$ (2024)[1]

GREENHOUSE GASES

CO_2

OFFSET CREDITS

Domestic (within RGGI states only)

ALLOCATION

Auctioning

AVERAGE 2023 PRICES

Weighted average auction price: USD 12.81

TOTAL REVENUE

USD 7,160 million since the beginning of the program
USD 1,265 million in 2023

MEMBER STATES

Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island, Vermont.

1 These values do not include Pennsylvania nor Virginia.

EMISSIONS & TARGETS OF RGGI

GHG EMISSIONS (EXCL. LULUCF), 2021[1]

(in $MtCO_2e$, share of total in %)

Energy	550.5	(87%)
Industrial processes	40.9	(6%)
Agriculture	20.7	(3%)
Waste	19.7	(3%)
Total	**631.8***	

GHG REDUCTION TARGETS

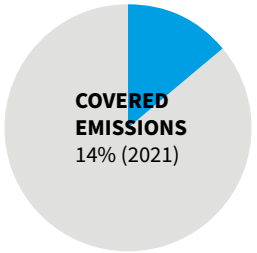
By 2030: 30% reduction in power sector emissions compared to the 2020 CO_2 emissions cap (2017 Model Rule)

Note: Participating states have their own emission targets; economy-wide targets are not defined at the level of RGGI.

ETS COVERAGE & PHASES

COVERED EMISSIONS

Verified ETS emissions 96.8 $MtCO_2$ (2021)*



PHASES

FIRST PHASE: 2009 to 2011
SECOND PHASE: 2012 to 2014
THIRD PHASE: 2015 to 2017
FOURTH PHASE: 2018 to 2020
FIFTH PHASE: 2021 to 2023
SIXTH PHASE: 2024 to 2026

CAP OR TOTAL EMISSIONS LIMIT

A cap limits the total emissions allowed in the system. A cap trajectory until 2030 has been set.

Phases in RGGI are also known as “control periods”.

FIRST PHASE (2009-2011): 564 million short tons CO_2 or 512 $MtCO_2$ (188 million short tons CO_2 or 171 $MtCO_2$ per year)

SECOND PHASE (2012-2014): 413 million short tons CO_2 or 374 $MtCO_2$
2012 and 2013: 165 million short tons CO_2 or 150 $MtCO_2$ per year
2014: 83 million short tons CO_2 or 75 $MtCO_2$

THIRD PHASE (2015-2017): 194 million short tons CO_2 or 176 $MtCO_2$
2015: 67 million short tons CO_2 or 61 $MtCO_2$
2016: 65 million short tons CO_2 or 59 $MtCO_2$
2017: 62 million short tons CO_2 or 57 $MtCO_2$

FOURTH PHASE (2018-2020): 193 million short tons CO_2 or 175 $MtCO_2$
2018: 60 million short tons CO_2 or 55 $MtCO_2$
2019: 58 million short tons CO_2 or 53 $MtCO_2$
2020: 74 million short tons CO_2 or 67 $MtCO_2$

FIFTH PHASE (2021-2023):* 291 million short tons CO_2 or 264 $MtCO_2$
2021: 101 million short tons CO_2 or 91 $MtCO_2$
2022: 97 million short tons CO_2 or 88 $MtCO_2$
2023: 93 million short tons CO_2 or 85 $MtCO_2$

SIXTH PHASE (2024-2026):**
2024: 69 million short tons CO_2 or 63 $MtCO_2$

By 2012, verified emissions under RGGI were more than 40% below the cap, so the states tightened the cap in 2014. There was a 2.5% annual reduction factor from 2015 through 2018. The revised regulations extended the 2.5% annual reduction factor through 2020.

The RGGI states further adjusted the caps between 2014 and 2020 to account for banked CO_2 allowances from the first and second phases. The annual reduction factor between 2021 and 2030 as set out in the “2017 Model Rule” is ~3% of the 2020 cap.

The caps above include New Jersey from 2020 and Virginia from 2021, but the latter only until 2023.

SECTORS AND THRESHOLDS

SECTORS: Fossil fuel electric generating units (i.e., fossil fuel-fired stationary boilers, combustion turbines, or combined cycle systems). Sources (i.e., governmental, institutional, commercial, or industrial structures, installations, plants, buildings, or facilities that emit or have the potential to emit any air pollutant) that include one or more units.

1 This value includes Virginia but not Pennsylvania. Values presented here are taken from the “Inventory of U.S. Greenhouse Gas Emissions and Sinks by State” by the Environmental Protection Agency (EPA, available **here**), aggregated for the RGGI states. While each state publishes official inventory data and the values published by the EPA should not be viewed as official state data, the EPA estimates are presented here to ensure the methodological consistency of data collection and aggregation for inventory categories across RGGI states, as well as to ensure a common reporting year in the data. There may be differences between the EPA estimates and the official state inventories.
* These values do not include Pennsylvania.
** These values do not include Pennsylvania nor Virginia.

INCLUSION THRESHOLDS: Most RGGI states cover units with capacity equal to or greater than 25 MW.

In New York, since January 2021, the program applies to power plants that have nameplate capacity equal to or above 15 MW and reside at a covered generating unit or near two or more units of the same source.

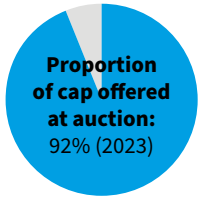
POINT OF REGULATION
Point source (power sector)

TYPE OF ENTITIES
Units that serve an electricity generator with the nameplate capacity defined in the regulation.

NUMBER OF ENTITIES
195** (current control period)

ALLOWANCE ALLOCATION & REVENUE

ALLOWANCE ALLOCATION



CO_2 allowances issued by each RGGI state are distributed through quarterly auctions. States hold a limited amount in "set-aside" accounts and distribute them according to state-specific regulations.

Of the 93 million 2023 allowances (after the adjustment for banked allowances), 92% were sold at auction and a minimum amount were sold at fixed price. The remainder were either transferred from, retired, or remained in set-aside accounts. No offset allowances were awarded. Additionally, 5 and a half million allowances from the cost containment reserve were sold (see 'Market Stability Provisions' section).

USE OF REVENUES

Climate mitigation

Assistance for individuals, households, and businesses

Revenues from the quarterly auctions are returned to the RGGI states and have been primarily invested in the following consumer benefit programs: energy efficiency, direct bill assistance, beneficial electrification, GHG abatement, and clean and renewable energy. A report released in June 2023 found that the direct lifetime benefits of RGGI investments made in 2021 include USD 1.2 billion in lifetime energy bill savings and 4.4 million short tons of CO_2 (4 $MtCO_2$) emissions avoided.

The distribution of RGGI investments in 2020 was: energy efficiency (51%); direct bill assistance (13%); beneficial electrification[3] (13%); greenhouse gas abatement[4] (11%); and clean and renewable energy (4%).

FLEXIBILITY & LINKING

BANKING AND BORROWING
Banking is allowed without restrictions. Current regulations include provisions to adjust the cap to address the aggregate bank, so that allowances available for auction are reduced by the number of allowances not used for compliance in previous control periods (see also 'Cap' section above). The RGGI states are currently implementing the third adjustment for banked allowances, which runs until 2025. As part of the RGGI review process, RGGI states are considering whether to address or adjust for banked allowances into the future if a bank of surplus allowances remains in circulation after 2025.

Borrowing is not allowed.

OFFSET CREDITS
The use of offsets is allowed.

QUALITATIVE LIMIT: Currently, the program allows offset credits from three offset types located in RGGI states:

1. landfill methane capture and destruction;
2. sequestration of carbon due to reforestation, improved forest management, or avoided conversion; and
3. avoidance of methane emissions from agricultural manure management operations.

** This value does not include Pennsylvania nor Virginia.
3 Programs implementing or facilitating replacement of fossil fuel use with electric power.
4 Programs promoting the research and development of advanced energy technologies, the reduction of vehicle miles traveled, GHG reductions in the power generation sector, tree-planting projects designed to increase carbon sequestration, and other initiatives to reduce GHGs.

Some states have discontinued specific offset protocols, but all accept offset allowances issued by any participating state. To date, only one offset project (landfill methane capture and destruction) has been approved under RGGI.

QUANTITATIVE LIMIT: 3.3% of an entity's liability may be covered by offset credits. This share will remain unchanged between 2021 and 2030.

Between the first and the fourth control periods (2009 to 2020), no CO_2 offset allowances were deducted. As of the 2022 interim compliance summary report, no CO_2 offset allowances had been deducted in the fifth control period (2021 to 2023).

LINKS WITH OTHER SYSTEMS

RGGI is a cooperative effort between participating states. Each state establishes an individual CO_2 budget trading program based on the RGGI Model Rule. Covered sources in each participating state can surrender allowances issued by any participating state for compliance and participating states use joint auctions.

COMPLIANCE

COMPLIANCE MECHANISM

Covered entities must surrender one allowance per short ton of CO_2 emitted.

COMPLIANCE PERIOD

Three years. Compliance is evaluated at the end of each three-year phase (control period). From the third phase, covered entities must surrender allowances corresponding to 50% of their verified emissions in each of the first two years of a phase. They must cover 100% of the remaining allowances at the end of the three-year phase.

As part of the third RGGI review process, RGGI states are considering whether to modify the control period so that covered entities need to surrender allowances for 100% of their regulated emissions every year.

MRV

REPORTING FREQUENCY: Quarterly

VERIFICATION: Emission data reports and their underlying data are required to undergo periodic quality assurance and quality control procedures in accordance with US Environmental Protection Authority (EPA) regulations.

FRAMEWORK: Emissions data are recorded in the US EPA's Clean Air Markets Division database in accordance with state CO_2 budget trading program regulations and agency regulations. Provisions are based on the US EPA monitoring provisions. Data are then automatically transferred to the electronic platform of the RGGI CO_2 Allowance Tracking System (COATS), which is publicly accessible.

ENFORCEMENT

In cases of excess emissions (i.e., if entities do not surrender all required allowances), allowances equivalent to three times the amount of excess emissions must be surrendered. Furthermore, covered entities may also be subject to specific penalties imposed by the RGGI state where it is located.

MARKET REGULATION

MARKET DESIGN

MARKET PARTICIPATION: Compliance entities, non-compliance entities (domestic and international), and individuals can participate if they provide a financial security.

MARKET TYPES:

Primary: Most CO_2 allowances issued by each RGGI state are distributed through quarterly regional auctions. The RGGI COATS records and tracks data for each state's CO_2 budget trading program, including the transfer of allowances offered for sale by the states and purchased by the winning qualified bidders in the quarterly auctions. Auctions are open to all parties with financial security, with a maximum bid of 25% of the volume on offer per sale. There is no allowance holding limit. Auctions are managed by Enel X.

Secondary: The secondary market for RGGI CO_2 allowances comprises the trading of physical allowances and financial derivatives, including futures, forwards, call options, and put options. RGGI COATS facilitates participation in the secondary market and enables the public to view and download RGGI data and CO_2 allowance market activity reports. Financial derivatives are traded on the ICE platform.

Potomac Economics, an independent market monitor, monitors the performance and efficiency of the RGGI CO_2 allowance auctions and the secondary CO_2 allowance market.

LEGAL STATUS OF ALLOWANCES: The RGGI Model Rule specifies that allowances are limited authorizations by the participating state's regulatory agencies to emit up to one ton of CO_2.

MARKET STABILITY PROVISIONS

AUCTION PRICE FLOOR: USD 2.56 per short ton in 2024, increasing by 2.5% per year (to reflect inflation).

RESERVES: Since 2014, RGGI has operated with a cost containment reserve (CCR), consisting of a number of allowances in addition to the cap held in reserve and only released to the market if certain trigger prices are reached. Beginning in 2021, allowances provided within the CCR are equal to 10% of the regional cap. The trigger price is USD 15.92 in 2024 and increases by 7% per year. It had previously increased by 2.5% annually between the years 2017 and 2020, from a starting value of USD 10.

Triggers: The CCR was triggered in 2014 and 2015, when all 15 million allowances it contained were sold. The CCR was also triggered in the last quarterly auction of 2021, where 3.9 million of the available 11.9 million allowances were sold. It was triggered again the final auction of 2023, with 5.6 million of the 11.2 million CCR units on offer sold.

In 2021, RGGI started implementing an emissions containment reserve (ECR). Under the ECR, allowances are withheld from auction if certain trigger prices are reached, up to an annual withholding limit of 10% of the emission budgets (i.e., the share of each state in the regional cap) of participating states. Allowances withheld will not be re-offered for sale, effectively adjusting the cap downward. In 2024, the trigger price is USD 7.35, in-creasing by 7% per year. Maine and New Hampshire are not participating in the ECR.

OTHER INFORMATION

INSTITUTIONS INVOLVED

Statutory and/or regulatory authority of each RGGI state: Each state implements the program under its particular statutory authority.
Environmental and energy agencies for each RGGI state: Agencies implementing the respective CO_2 budget trading programs.
RGGI Inc.: Non-profit cooperative supporting RGGI's development and implementation. This includes engaging contractors for various tasks such as allowance and emissions tracking, market monitoring, and management of the auctions.
Potomac Economics: Monitors the conduct of market participants in the auctions and in the secondary market to identify indications of anti-competitive conduct.
Enel X: Manages the auctions.

EVALUATION/ETS REVIEW

The RGGI participating states periodically review the ETS to consider program successes, impacts, and design elements. The first program review process (known as the 2012 Program Review) was completed in early 2013. A second review process was completed in 2017, resulting in the "2017 Model Rule". Program reviews were accompanied by stakeholder meetings to facilitate stakeholder engagement and the submission of comments from interested parties.

The RGGI states initiated the third review in summer 2021 to analyze program successes, impacts, potential additional reductions to the cap post-2030, and other design elements. The review is ongoing.

REGULATORY FRAMEWORK

- → 2017 RGGI Model Rule
- → 2017 RGGI Model Rule Updates (Summary)
- → RGGI States' Statutes & Regulations
- → RGGI Program Design

SASKATCHEWAN

SASKATCHEWAN OUTPUT-BASED PERFORMANCE STANDARDS PROGRAM

- **Compliance based on intensity of output of each covered facility**
- **Opt-in possible for smaller emitters**
- **Coverage expanded from January 2023 with the discontinuation of the Federal OBPS in Saskatchewan**

ETS DESCRIPTION

Saskatchewan's Output-Based Performance Standards (OBPS) Program came into effect in 2019. It is an intensity-based ETS for large industrial emitters, in which covered entities are required to fulfill a compliance obligation for emissions that exceed the facility's annual permitted emissions. Emissions limits are based on production levels multiplied by an emissions intensity value. Each facility's baseline draws on historical emissions and production data. All emissions up until the limit do not require payment, with only the surplus triggering the compliance obligation. A compliance obligation may be fulfilled by retiring performance credits (compliance units) generated within the OBPS Program or by making a payment at a prescribed rate per tCO_2e into the Saskatchewan Technology Fund. The system applies to the same gases and covers equivalent sectors as those under the federal system, and follows the same price trajectory, rising CAD 15 (USD 11.11) each year until 2030, resulting in a price of CAD 170 (USD 125.93) per tCO_2e for 2030 emissions. The inclusion thresholds are set lower than in the Canadian federal system, covering GHG emissions from facilities in covered sectors with emissions exceeding 25,000 tCO_2e/year and with a voluntary opt-in option for any emitting facility that is in a sector already covered by Saskatchewan's OBPS Program or that demonstrates that it operates in an emissions-intensive, trade-exposed sector.

YEAR IN REVIEW

In November 2022, the Canada federal government announced that the Saskatchewan OBPS program meets the federal benchmark requirements, and the provincial system expanded its sectoral coverage from 1 January 2023. After the 2023 expansion, all covered industrial emitters in Saskatchewan transferred to the provincial OBPS. Coverage was expanded to include electricity generation and natural gas transmission pipeline sectors.

In force

Under development

Under consideration

SECTORS

POWER

INDUSTRY

GREENHOUSE GASES

CO_2 , CH_4, N_2O, SF_6, HFCs, PFCs

ALLOCATION

Free Allocation

AVERAGE 2023 PRICES

CAD 65 (USD 48.15)

TOTAL REVENUE

CAD 29.3 million (USD 22.5 million) in the 2022-2023 fiscal year

EMISSIONS & TARGETS OF SASKATCHEWAN

GHG EMISSIONS (INCLUDING INDIRECT CO_2, EXCLUDING LULUCF), 2021

(in $MtCO_2e$, share of total in %)

Energy	53.9	(80%)
Industrial processes	0.9	(1%)
Agriculture	11.0	(16%)
Waste	1.3	(2%)
Total	**67.1**	

Energy industries	23.2	(35%)
Manufacturing industries and construction	1.2	(2%)
Transport	16.0	(24%)
Commercial, institutional, and residential	3.4	(5%)
Other energy	10.0	(15%)

GHG REDUCTION TARGETS

By 2050: Net zero

ETS COVERAGE & PHASES

COVERED EMISSIONS

Emissions from current ETS covered sectors

28.9 $MtCO_2e$ (As of 18 December 2023)

PHASES

PHASE ONE: Three years (2019 to 2022)

PHASE TWO: From 2023 (expanded scope to include electricity generation and natural gas transmission pipeline sectors, and lowered threshold for voluntary opt-in to zero)

CAP OR TOTAL EMISSIONS LIMIT

The total emission limit under the Saskatchewan OBPS is the sum of the annual emissions limits for all individual covered entities. The emissions limit for each facility is determined based on the applicable emissions intensity standard for the year and the level of production in the year. The limit is therefore not set ex-ante and is only known after the compliance period ends. As of 18 December 2023, the system had covered approximately 28.9 $MtCO_2e$.

SECTORS AND THRESHOLDS

PHASE ONE (2019-2022): Industry

PHASE TWO (from 2023): Industry plus electricity generation and natural gas transmission pipeline sectors.

INCLUSION THRESHOLDS: Coverage is mandatory for industrial facilities with emissions exceeding 25,000 tCO_2e/year and electricity facilities with emissions exceeding 10,000 tCO_2e/year. Other emitters may also be covered by the system, on an opt-in basis if they are in a sector already covered by Saskatchewan's OBPS Program or demonstrate that they operate in an emissions-intensive, trade-exposed sector. Prior to the expansion of the Saskatchewan OBPS in January 2022, the minimum threshold for voluntary opt-in coverage was 10,000 tCO_2e/year.

POINT OF REGULATION

Point source (power, industry)

TYPE OF ENTITIES

Facilities

NUMBER OF ENTITIES

166 registered facilities (as of December 2023)

ALLOWANCE ALLOCATION & REVENUE

ALLOWANCE ALLOCATION

Allocation is determined in relation to annual permitted emissions based on emissions intensity benchmarks. Entities that emit less than their emissions limit receive compliance units, free of charge, corresponding to the number of tCO_2e below the limit. This is similar to free allocation based on benchmarks. These compliance units can be sold to entities that emit more than their emissions limits (see below for more details).

USE OF REVENUES

Climate mitigation

Money collected in the Saskatchewan Technology Fund is used to fund industry-driven projects that reduce, sequester, or capture emissions. Funds are awarded through a merit-based application process.

Saskatchewan announced the first intake for the Saskatchewan Technology Fund in fall 2023. This first intake will award approximately CAD 25 million (USD 18.5 million) to projects.

FLEXIBILITY & LINKING

BANKING AND BORROWING
Performance credits (compliance units) may be banked for future compliance years.

Borrowing is not allowed.

OFFSET CREDITS
The use of offset credits is not allowed.

LINKS WITH OTHER SYSTEMS
The Saskatchewan OBPS is not linked with any other system. However, a covered facility can receive an exemption certificate from the Canada Revenue Agency, so it does not have to pay the federal fuel charge on purchases from fuel distributors.

COMPLIANCE

COMPLIANCE MECHANISM
Facilities that have exceeded their annual emissions limit incur a compliance obligation. They can fulfill this obligation by retiring performance credits, CCUS credits, or paying into the Saskatchewan Technology Fund for each tCO_2e by which the emissions limit was exceeded.

COMPLIANCE PERIOD
One year

MRV
REPORTING: GHG emissions for covered entities must be reported by June of the year following the reporting period.

When registering baselines, covered entities that do not have new products must submit their verified baseline submission within six months of the date of registration. Facilities with a new product must submit their verified baseline submissions by June of the first and second compliance years.

VERIFICATION: Covered entities must ensure that emissions and production data are verified and reviewed by an accredited verification body. Flexibility in verification is provided to small oil and gas aggregate facilities (regulated facilities comprised of two or more small oil and gas facilities that are owned or operated by the same company). An aggregate facility with emissions below 1,000 tCO_2e is not required to verify emissions.

FRAMEWORK: There are three standards that prescribe reporting requirements for the Saskatchewan OBPS Program: the Industrial Facility Standard, the Electricity Facility Standard, and the Aggregate Facility Standard.

ENFORCEMENT
An unfulfilled compliance obligation becomes a debt owing to the Government of Saskatchewan, which it may recover by any legally authorized manner. The debt bears interest at a rate equal to the prime lending rate of the bank holding of Saskatchewan's general revenue fund plus three percentage points. The maximum administrative penalty the environment minister may assess with respect to each contravention is CAD 10,000 (USD 7,408).

MARKET REGULATION

MARKET DESIGN
MARKET PARTICIPATION: Compliance entities including mandatorily and voluntarily covered entities (for inclusion thresholds see 'Sectors and Thresholds' section.)

MARKET TYPES:
Primary: Compliance units are currently not auctioned.

Secondary: Covered entities may purchase compliance units from other covered entities that have outperformed their compliance obligation. Transactions are conducted via a registry that is managed by the Minister of Environment.

MARKET STABILITY PROVISIONS
INSTRUMENT NAME: Technology Fund (price ceiling)

TRIGGERS: Covered entities can pay directly into Saskatchewan's Technology Fund to compensate for emissions exceeding performance limits. The price paid into the Fund acts as a price ceiling and is aligned with the federal minimum carbon price (CAD 65, USD 48.15, in 2023). The price increases by CAD 15 (USD 11.11) each year until 2030, resulting in a price of CAD 170 (USD 125.93) per tCO_2e in 2030.

OTHER INFORMATION

INSTITUTIONS INVOLVED

Saskatchewan Ministry of Environment: Regulates the OBPS program, ensures compliance obligations are fulfilled, and maintains regulatory and policy oversight over the Technology Fund.
Innovation Saskatchewan: Government office that receives and tracks compliance payments and performs general accounting of the Technology Fund.

EVALUATION/ETS REVIEW

Saskatchewan has a mandatory ten-year review for regulations. In addition, Saskatchewan's OBPS Program is likely to undergo review again as part of the 2026 federal benchmark.

REGULATORY FRAMEWORK

- → The Management and Reduction of Greenhouse Gases Act
- → The Management and Reduction of Greenhouse Gases (General and Electricity Producer) Regulations
- → The Management and Reduction of Greenhouse Gases (Reporting and General) Regulations
- → The Management and Reduction of Greenhouse Gases (Reporting) Standard
- → The Management and Reduction of Greenhouse Gases (Standards and Compliance) Regulations, 2023
- → 2023 Standards for Regulated Emitters
- → Saskatchewan Technology Fund: Governance, Administration and Operations Standard

WASHINGTON

CAP-AND-INVEST PROGRAM

- Started in 2023
- Covers around 70% of state emissions
- Preliminary decision taken to explore linkage with California and Quebec

ETS DESCRIPTION

Washington's cap-and-invest program began operating in January 2023. It covers around 70% of the state's emissions, and its cap trajectory is consistent with the long-term target to reduce statewide emissions to 95% below 1990 levels by 2050.

The program covers around 150 entities in the energy, industrial, buildings, and transport sectors. Many of the cap-and-invest program's design elements are similar to those of California's Cap-and-Trade Program. Covered entities must surrender allowances for all their covered emissions. Allowances are distributed through auctioning and free allocation, with the latter based primarily on benchmarking. The program has a cost containment reserve and auction reserve price to support market stability and moderate covered entities' compliance costs.

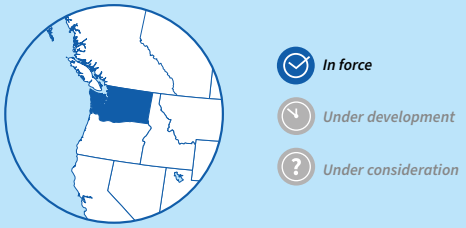
The cap-and-invest program was established by the "Climate Commitment Act" (CCA), signed into law by Governor Jay Inslee in May 2021. Washington is the second state in the United States to pass a law requiring such an economy-wide program, after California. Launched as a standalone system, the CCA directed the Department of Ecology to pursue linking if it was found to be beneficial to Washington.

YEAR IN REVIEW

2023 marked the first full year of operation of the cap-and-invest program. Settlement prices at the May and August auctions were above the lower price threshold of the Allowance Price Containment Reserve, set at USD 51.90. This triggered two further sales from the reserve, held in August and November.

The Department of Ecology continued to explore the possibility of linking to the joint California-Québec market. Between January and May, several outreach events were held to collect input from the public. In October, the Department of Ecology published its preliminary analysis. It found that most of the legislative criteria were likely to be met under a link with California and Québec. The preliminary decision to pursue linking was announced in November. All three jurisdictions will now further assess the case for linking their programs, and whether regulatory changes would be required, before making a final decision. If linking is pursued, it is not anticipated to come into effect until at least 2025.

In March, the first two registries were approved as offset credit suppliers for the program: the American Carbon Registry and Climate Action Reserve.



SECTORS

POWER

INDUSTRY

BUILDINGS

TRANSPORT

CAP

58.5 $MtCO_2e$ (2024)

GREENHOUSE GASES

CO_2, N_2O, PFCs, CH_4, SF_6, HFCs, NF_3, other fluorinated GHGs

OFFSET CREDITS

Domestic

ALLOCATION

Free Allocation: Grandparenting
Free Allocation: Benchmarking
Auctioning

AVERAGE 2023 PRICES

Average auction price (current vintage): USD 53.10
Average secondary market price: USD 52.88

TOTAL REVENUE

~ USD 1.8 billion of state revenue in 2023 (and ~ USD 2.2 billion including consigned auctions).

EMISSIONS & TARGETS OF WASHINGTON

GHG EMISSIONS (EXCL. LULUCF), 2019

(in $MtCO_2e$, share of total in %)

Energy	88.2	(86%)
Industrial processes	5.3	(5%)
Agriculture	6.2	(6%)
Waste	2.4	(2%)
Total	**102.1**	

Electricity	21.9	(21%)
Transport	40.3	(40%)
Commercial, Industrial and Residential	25.3	(25%)
Other energy	0.7	(1%)

GHG REDUCTION TARGETS

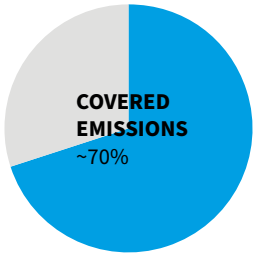
By 2030: 45% reduction from 1990 GHG levels (Greenhouse Gas Emission Limits – Amendment 2020)

By 2040: 70% reduction from 1990 GHG levels (Greenhouse Gas Emission Limits – Amendment 2020)

By 2050: 95% reduction of total GHG emissions below 1990 levels and achievement of net-zero emissions (Greenhouse Gas Emission Limits – Amendment 2020)

ETS COVERAGE & PHASES

COVERED EMISSIONS



PHASES

FIRST COMPLIANCE PERIOD: Four years (2023-2026)

SECOND COMPLIANCE PERIOD: Four years (2027-2030)

THIRD COMPLIANCE PERIOD: Four years (2031-2034):

CAP OR TOTAL EMISSIONS LIMIT

A cap limits the total emissions allowed in the system.

FIRST COMPLIANCE PERIOD (2023-2026): The cap for 2023 was set at 63 $MtCO_2e$, which is equal to 93% of average emissions levels of covered entities between the years 2015-2019. The cap declines annually by 7%, to reach 49 $MtCO_2e$ in 2026.

SECOND COMPLIANCE PERIOD (2027-2030): The cap for 2027 will be set at 93% of the sum of the 2026 cap and emissions from new entities entering the program for the second compliance period. The cap declines by 7% annually through 2030.

THIRD COMPLIANCE PERIOD (2031-2034 AND BEYOND): The cap for 2031 will be set at 98.2% of the sum of the 2030 cap and emissions from new entities entering the program for the third compliance period. In the period 2032-2042, the cap declines annually by 1.8%.

In 2043-2049, the cap declines annually by 2.6%, reaching a 95% reduction from 1990 emissions levels by 2050.

SECTORS AND THRESHOLDS

FIRST COMPLIANCE PERIOD (2023-2026): All facilities with emissions over 25,000 tCO_2e, including industrial facilities, electricity generators, importers of electricity, fuel distributors, and natural gas suppliers. Excludes emissions from waste-to-energy and solid waste management.

SECOND COMPLIANCE PERIOD (2027-2030): Waste-to-energy facilities with emissions over 25,000 tCO_2e will be added.

THIRD COMPLIANCE PERIOD (2031-2034): Railroad companies with emissions over 25,000 tCO_2e will be included.

INCLUSION THRESHOLDS: For the first compliance period, eligible facilities are those with emissions over 25,000 tCO_2e in at least one year between 2015-2022. For the second compliance period, waste-to-energy with emissions over 25,000 tCO_2e in at least one year between 2023-2025. For the third compliance period, railroad companies with emissions over 25,000 tCO_2e in at least one year between 2027-2029.

VOLUNTARY OPT-IN PARTICIPATION: Any facility that is already covered by the mandatory MRV system but with emissions below the 25,000 tCO_2e cap-and-invest program inclusion threshold may voluntarily participate as an opt-in entity. Other facilities can also participate as opt-in entities, following the voluntary reporting requirements of the MRV regulation.

POINT OF REGULATION

Upstream (building, power (imported electricity) transport); point source (industry, power).

TYPE OF ENTITIES

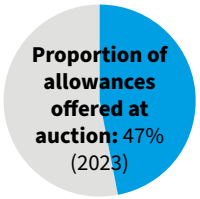
Installations, fuel distributers

NUMBER OF ENTITIES

~150 (2023)

ALLOWANCE ALLOCATION & REVENUE

ALLOWANCE ALLOCATION



Allowances are distributed via free allocation, free allocation with consignment, and auction.

FREE ALLOCATION: Emissions-intensive, trade-exposed facilities receive free allowances to mitigate the risk of carbon leakage. Allocation is done using facility-specific benchmarks, based on their average carbon intensity over the period 2015-2019.

Only in instances where facilities were unable to calculate the emissions intensity of their production over this period could they request free allocation based on their average emissions (i.e., grandparenting).

FIRST COMPLIANCE PERIOD (2023-2026): Set at 100% of the benchmark multiplied by actual production, or historical emissions level.

SECOND COMPLIANCE PERIOD (2027-2030): Set at 97% of the benchmark multiplied by actual production, or historical emissions level.

THIRD COMPLIANCE PERIOD (2031-2034): Set at 94% of the benchmark multiplied by actual production, or historical emissions level.

FREE ALLOCATION WITH CONSIGNMENT: Electricity utilities receive free allowances based on forecasts of the electricity supply and administrative costs associated with complying with the cap-and-invest program. During the first compliance period, they can choose to consign up to 100% of their allowances to auction. Natural gas facilities received an initial free allocation equal to 93% of their average emissions in the period 2015-2019. The amount reduces annually in line with the cap decline factor. In 2023, 65% of free allowances must be consigned for auction. This amount increases by 5% each year, reaching full consignment in 2030. Freely allocated allowances that are not consigned for auction may only be used for surrender and cannot be traded.

AUCTIONING: Auctions occur four times a year. Unsold allowances are held for future auctions and only sold if the settlement price is above the auction floor price for two consecutive auctions. Any that remain unsold within 24 months are transferred to an emissions containment reserve (see 'Market Stability Provisions' section).

USE OF REVENUES

- Climate mitigation
- Pursuit of other development objectives, such as education and health
- Assistance for individuals, households, and businesses

USE OF REVENUE FROM FREE ALLOWANCES CONSIGNED FOR AUCTION: Revenues raised from the auctioning of free allowances to electricity utilities and natural gas facilities must be used to benefit rate payers or customers, prioritizing those from low-income groups. In most cases how the revenues are used is determined by the state's Utilities and Transportation Commission.

USE OF REVENUES FROM ALLOWANCES AUCTIONED BY THE DEPARTMENT OF ECOLOGY: Proceeds from auctions must be invested in climate projects focused on improving clean transportation options, increasing climate resilience in ecosystems and communities, and addressing issues of environmental justice and health inequity in Washington. At least 35% of funds must be invested in projects that benefit overburdened communities, and a minimum of an additional 10% must go to projects with tribal support.

FLEXIBILITY & LINKING

BANKING AND BORROWING

Unlimited banking is allowed between periods; however, covered entities are subject to general holding limits, which depend on the cap level. Allowances held in a compliance account or that are to be consigned for auction do not count towards the holding limit.

Borrowing is not allowed.

OFFSET CREDITS

The use of offset credits is allowed.

QUALITATIVE LIMITS: Washington has adopted – with modifications – the following offset credit protocols developed under the California cap-and-trade program:

- Livestock projects;
- Ozone depleting substance projects;
- US forest projects; and
- Urban forestry projects.

QUANTITATIVE LIMITS: The following limits apply:

First compliance period (2023-2026): Up to 5% of an entity's compliance obligation from projects not located on federally recognized tribal land. An additional 3% can be met from projects located on federally recognized tribal land.

Second compliance period (2027-2030): Up to 4% of an entity's compliance obligation from projects not located on federally recognized tribal land. An additional 2% can be met from projects located on federally recognized tribal land.

Third compliance period (2031-2034) and beyond: Up to 4% of an entity's compliance obligation, which can include projects located on federally recognized tribal land. An additional 2% can be met from projects located on federally recognized tribal land.

In the event of a link to another trading system, at least 50% of offset credits must provide direct environmental benefits to the state (DEBS) in the first compliance period, rising to 75% from the second compliance period. Without a link, all offset credits must provide DEBS.

LINKS WITH OTHER SYSTEMS

The Washington cap-and-invest program is not currently linked with any other system. However, in November 2023, the Department of Ecology announced that it would pursue linkage with the cap-and-trade programs of California and Québec. If implemented, linkage is not expected to come into effect until at least 2025.

COMPLIANCE

COMPLIANCE MECHANISM

Covered entities must surrender one allowance per tCO_2e emitted for all their covered emissions.

COMPLIANCE PERIOD

Except for the year following the last year of a compliance period, compliance instruments equal to at least 30% of the previous year's verified emissions must be surrendered annually, by the start of November (or the first business day thereafter). Compliance instruments equal to all remaining emissions must be surrendered by the start of November (or the first business day thereafter) of the year following the last year of a compliance period.

MRV

REPORTING FREQUENCY: Annual

VERIFICATION: All reports are verified by independent third-party verifiers and by Ecology.

FRAMEWORK: The MRV framework was established by the regulation "Reporting of Emissions of Greenhouse Gases".

ENFORCEMENT

Should an entity have insufficient allowances to cover its annual and final compliance obligations, within six months of the deadline it must submit four penalty allowances for each missing allowance it did not surrender. If the entity fails to comply, a fine of up to USD 10,000 per day per missing allowance will be incurred. Under certain circumstances this fine could increase to USD 50,000.

MARKET REGULATION

MARKET DESIGN

MARKET PARTICIPATION: Compliance entities, including opt-in entities; non-compliance entities, including offset project participants; individuals with primary residence in the United States.

MARKET TYPES:

Primary: Auctions are held four times per year, with a calendar giving dates and volumes published in January of each year. Participants must have an account in the Compliance Instrument Tracking System Service (CITSS). Auctions are delivered through the Western Climate Initiative, Inc.

Secondary: Futures and options contracts for allowances are traded on the Intercontinental Exchange and Nodal Exchange. Allowances can be traded over the counter directly between market participants.

MARKET STABILITY PROVISIONS

AUCTION FLOOR PRICE: USD 24.02 for 2024. The auction reserve price increases by 5% plus inflation, as measured by the Consumer Price Index.

ALLOWANCE PRICE CONTAINMENT RESERVE (APCR): The APCR is a separate account managed by the Department of Ecology, from which allowances can be auctioned at pre-defined prices in the event of unexpectedly high allowance costs. The APCR was frontloaded, with 5% of the caps in the first and second compliance periods (2023-2030) set aside at the outset of the program. The APCR has two price tiers, which in 2024 are set at USD 56.16 and USD 72.15 for Tiers 1 and 2 respectively. Prices increase annually by 5% plus inflation, as measured by the Consumer Price Index.

Auctions from the APCR are held if the settlement price in the last auction reaches the Tier 1 price level. These sales may only be held once a year before the compliance deadline, and only covered and opt-in entities can participate. Bids must be at one of the two tier price levels. Purchased allowances are deposited directly into entities' compliance accounts and cannot be traded on secondary markets. Any unsold allowances are carried over to future APCR auctions.

PRICE CEILING UNITS: If there are no units remaining in the APCR, price ceiling units are made available to covered entities with insufficient allowances to meet their compliance obligations. Price unit sales only occur following the request of a covered entity, which must be at least ten days before the compliance deadline. The ceiling price is USD 88.15 for 2024, increasing annually by 5% plus inflation, as measured by the Consumer Price Index.

EMISSIONS CONTAINMENT RESERVE (ECR): Up to 10% of allowances can be withheld from an auction and placed in the ECR if auction settlement prices fall below the ECR trigger price. The trigger price is currently suspended, and this provision is therefore not operational.

OTHER INFORMATION

INSTITUTIONS INVOLVED

Department of Ecology: Responsible for the program rules and implementation of the cap-and-invest program.
Western Climate Initiative Inc.: Non-profit organization responsible for administering auctions, the CITSS registry, and conducting market surveillance.

EVALUATION/ETS REVIEW

By December 2027, and every four years afterwards, the Department of Ecology is required to submit a comprehensive review of the program to the legislature.

REGULATORY FRAMEWORK

→ Climate Commitment Act
→ Climate Commitment Act Program Rule

ARGENTINA

- Proposal for an ETS is being considered by the Argentinian Parliament
- Across all sectors and subsectors of the economy, starting with the energy sector.
- Aims to contribute to Argentina's emissions reduction targets, adopted under the Paris Agreement

In force

Under development

Under consideration

ETS DESCRIPTION

The Argentinian Parliament is considering a proposal for an ETS. The proposed scheme would initially cover the energy sector, but later expand to other sectors.

The framework of the ETS, as outlined in Section IX of the "Omnibus" bill, is yet to provide explicit references to critical elements such as caps, thresholds for participation, and the types of entities involved. It is anticipated that these details will become clearer once the bill is approved. However, the bill specifies that designing the emission rights allocation method will require technical meetings with stakeholders from national and provincial public and private sectors, academia, and civil organizations. Article 320 of the bill authorizes the National Executive Power to allocate GHG emission rights, in line with Argentina's 2030 emission goals under the Paris Agreement. Article 321 extends this, authorizing the setting of annual emission limits for public and private sector entities. Article 322 underscores the need for monitoring emissions and implementing penalties for non-compliance. Article 323 establishes the foundation of the ETS by creating a market for trading emission rights. Article 324 outlines the rules for this market, including provisions for the registries of transactions and safeguards against monopolistic practices.

Currently, the ETS proposal within the bill project is under review and subject to extensive discussion in Congress. Due to the bill's extensive range, covering issues well beyond environmental and climate matters, it is anticipated that the discussions will be far-reaching. The course of the year is likely to bring about additional consultations and debates specifically addressing the ETS and the evolution of carbon markets in Argentina. The final approval of the bill and the implementation of the ETS are dependent on the results of these legislative debates.

EMISSIONS & TARGETS OF ARGENTINA

GHG EMISSIONS (EXCL. CATEGORIES "3B LAND" AND "3D PRODUCTS OF COLLECTED WOOD"), **2020**

(in $MtCO_2e$, share of total in %)

Energy	170.8	(55%)
Industrial processes	18.5	(6%)
Agriculture	101.7[1]	(33%)
Waste	17.5	(6%)
Total	**308.5**	

Energy Industries	54.5	(32%)
Manufacturing Industries and Construction	25.7	(15%)
Transport	40.1	(23%)
Commercial, Institutional, and Residential	31.6	(19%)
Other Energy	18.9	(11%)

GHG REDUCTION TARGETS

By 2030: Argentina aims to limit its net emissions to 349 $MtCO_2e$, representing a 21% decrease in emissions compared to the historical peak in 2007.

By 2050: Climate neutrality, as submitted to the UNFCCC in November 2022.

OTHER INFORMATION

INSTITUTIONS INVOLVED

Ministry of Economy: Oversees the economic aspects of Argentina's proposed Emission Trading System (ETS), including carbon pricing and emission reduction incentives, pending the system's implementation.

Undersecretariat of Environment and Sustainable Development: Manages environmental and climate policies, focusing on the potential of various sectors to achieve the country's 2030 mitigation goals, and develops calculations for greenhouse gases in the National Inventory (INGEI in Spanish).

Secretariat of Energy: Collects data from the energy sector to develop a ETS pilot, analyzing potential emission caps and the required permits for the initial phase.

REGULATORY FRAMEWORK

Omnibus Bill Project (second version – January 22, 2024)

1 This value only includes categories 3A, 3B and 3C.

BRAZIL

BRAZILIAN GREENHOUSE GAS EMISSIONS TRADING SYSTEM

In force

Under development

Under consideration

- **Draft bill 2148/2015 in advanced stage of consideration**
- **Draft bill establishes governance framework and legal foundation for covered entities' obligations**
- **Scope, cap, allocation, and other elements to be determined in coming years**

ETS DESCRIPTION

In 2009, Brazil adopted the "National Policy on Climate Change" (*Política Nacional sobre Mudança do Clima, PNMC*), aiming to identify, plan, and coordinate actions and measures for GHG abatement and to adapt to climate change. The PNMC lays out the basis for a carbon pricing regulation and is currently being reviewed, with a view to updating it based on the commitments assumed under the Paris Agreement.

Between 2016 and 2020, as part of its activities under the World Bank's Partnership for Market Readiness, the government carried out studies on the possible implementation of market instruments to meet its emissions targets and reduce overall mitigation costs. These included the development of design options, economic and regulatory impact assessments, and an analysis of potential interactions between carbon pricing instruments and existing policies. The federal government's proposal for the establishment of the Brazilian Greenhouse Gas Emissions Trading System (*Sistema Brasileiro de Comércio de Emissões de Gases de Efeito Estufa, SBCE*) was guided by the recommendations of the PMR Brazil project, which indicated the adoption of a cap-and-trade as the most desirable carbon pricing option within the PNMC.

Under draft bill (*Projeto de Lei, PL*) "PL 412/2022" the government proposal was approved with minor modifications by the Senate in October 2023. Under draft bill "2148/2015", the Chamber of Deputies modified and approved the establishment of the SBCE in late December 2023. The reviewed proposal will be sent back to the Senate for new appreciation under PL 2148/2015, and the National Congress is expected to approve it in 2024.

PL 2148/2015 would establish the governance framework and the legal foundation for obligations by covered entities, with key design elements (such as scope, cap, and allocation) to be determined in the coming years. The ETS would impose compliance obligations on entities emitting more than 25,000 tCO_2e per year, though reporting obligations apply to those emitting more than 10,000 tCO_2e per year. Covered entities would have to surrender allowances for all their covered emissions, with compliance and reporting obligations incurring annually. The sectoral scope of the system is not yet defined, but agricultural activities are exempt.

The system would be overseen by a Superior and Deliberative Board, operated by an ETS administrator body, and supported by a technical body. National Allocation Plans – to be published regularly – would set out the cap and its expected trajectory, allocation methods, the percentage of offset credits allowed for compliance, market stability provisions, as well as provisions to protect against reversals and leakage, among others. The cap is to be set in accordance with Brazilian climate targets. Revenues from the trade of allowances and offset credits would be subject to net gains and capital gains tax. Non-compliance would be punishable by fines and embargoes, among others.

Covered entities would be allowed to surrender domestic offset credits to meet part of their compliance obligation. Projects would have to be verified through an "independent conformity assessment". Once registered in the SBCE registry as Verified Emissions Reduction or Removal Certificates (CRVE), the offset credits will become eligible for use under the SBCE. The agriculture, land-use change and forestry sectors – responsible for more than 60% of emissions in Brazil – are expected to play a key role in the generation of CRVE. Provisions for REDD+ credits are already included in the draft bill.

The draft bill also explicitly defines the rights of indigenous peoples and traditional communities with regard to carbon crediting. This includes the right to commercialize offset credits generated on lands they traditionally occupy, as well as the compensation for any damages resulting from offset credit projects. Actors involved in offset credit projects would also have to adhere to a benefit-sharing regulation.

The draft bill also stipulates that both SBCE allowances and CRVE would be eligible for international transfers under Article 6 of the Paris Agreement, subject to authorization by a designated national entity. The Superior and Deliberative Board would establish conditions for such authorizations. The SBCE registry will track both national and international transactions.

Once the law is approved, the system would be fully operational in five years. Implementing regulations would be developed over the first one to two years, covered entities would implement emissions monitoring and reporting provisions over the third year, and covered entities would be subject to reporting obligations (without compliance obligations) in the final two years.

EMISSIONS & TARGETS OF BRAZIL

GHG EMISSIONS BY CRF CATEGORY, 2020

(in $MtCO_2e$, share of total in %)

Energy	392.5	(22%)
Industrial processes	102.2	(6%)
Agriculture	555.0	(31%)
LULUCF	644.5	(36%)
Waste	91.4	(5%)
Total	**1,785.6**	

Energy industries	70.2	(4%)
Manufacturing industries and construction	63.4	(4%)
Transport	186.9	(10%)
Commercial, institutional, and residential	50.8	(3%)
Other energy	0.7	(0%)

GHG REDUCTION TARGETS

By 2030: 1.2 $GtCO_2e$ (53.1% below 2005)

By 2050: Long-term objective to achieve climate neutrality by 2050

OTHER INFORMATION

INSTITUTIONS INVOLVED

As per draft bill 2148/2015:

Superior and Deliberative Body: responsible for general guidance and regulatory framework

ETS administrator body: Implementing authority, responsible for setting the cap, receiving emissions report, run the registry among other responsibilities.

Permanent Consulting Technical Committee: Advisory body responsible for presenting inputs and recommendations for improving the SBCE

REGULATORY FRAMEWORK

N/A

CHILE

- **Provisions for a system of GHG emissions limits contained in the Framework Law on Climate Change**
- **Energy Agenda, and 2023-2030 Green Hydrogen Action Plan (under public consultation), propose an ETS pilot for the energy sector**
- **Plans to increase carbon price trajectory between 2025 and 2030**

In force

Under development

Under consideration

ETS DESCRIPTION

In June 2022, Chile enacted its "Framework Law on Climate Change", which sets a 2050 carbon neutrality goal and describes the national, regional, and local climate policies that Chile will implement to achieve it. These include Chile's NDC, Long-Term Climate Strategy, Climate Change Financial Strategy, and sectoral mitigation and adaptation plans.

Article 14 of the law mandates the Ministry of Environment to specify GHG emissions limits set by technology, sector, or activity. GHG emissions limits may be set as emissions benchmarks for individual installations or in aggregate, for a group of installations or a sector. If set in aggregate, GHG emissions limits could be akin to a cap. According to Article 15, installations that perform better than their benchmark will have their surplus emissions reductions certified, which may then be used by other regulated entities for compliance with their respective emissions limits.

The specific design of the emissions limits system is not yet defined and could be implemented either as an ETS or a tradable performance standard. In November 2023, the Ministry of Environment published the "Draft Rules for the Development of GHG Emissions and Short-Lived Climate Pollutant Limits" for public consultation. The document specifies procedures and characteristics of the emission limits to be developed under the Framework Law.

Based on Article 37 of the Law, which provides a basis for the development of market-based, fiscal, and financial instruments to address the negative impacts of GHG emissions, the country's "2022-2026 Energy Agenda" states that a pilot ETS project for the energy sector will be developed. Work around this will be supported by the World Bank's Partnership for Market Implementation.

Between December 2023 and February 2024, the "2023-2030 Green Hydrogen Action Plan" was subject to public consultation. Among others, it also proposes an ETS for the energy sector, with the aim of promoting the implementation of projects for the consumption of green hydrogen and derivatives in the economy.

Chile has had a carbon tax in place since 2017. The country's "Long-Term Climate Strategy", presented in October 2021, specifies that Chile will set an increasing trajectory for its carbon price between 2025 and 2030. It also specifies that the country seeks to have an integral carbon pricing portfolio to deliver coherent and predictable price signals. In line with this, the government launched its "National Energy Policy by 2050", which states that carbon prices in Chile should reach USD 35/tCO_2e by 2030 and USD 80/tCO_2e by 2040.

EMISSIONS & TARGETS OF CHILE

GHG EMISSIONS (INCLUDING INDIRECT CO_2, EXCLUDING LULUCF)**, 2020**
(in $MtCO_2e$, share of total in %)

Energy	79.7	(76%)
Industrial processes	6.9	(7%)
Agriculture	11.2	(11%)
Waste	7.7	(7%)
Total	**105.6**	

Energy industries	29.8	(28%)
Manufacturing industries and construction	15.5	(15%)
Transport	26.1	(25%)
Commercial, institutional, and residential	6.6	(7%)
Other energy	0.8	(1%)

GHG REDUCTION TARGETS

By 2025: Peak GHG emissions (updated NDC). Revert the increasing trend of methane emissions (NDC Strengthening Annex)
By 2030: GHG emissions of 95 $MtCO_2e$. Minimum 25% reduction of total emissions of black carbon, as compared to 2016. Carbon budget of 1,100 $MtCO_2e$ between 2020 and 2030 (updated NDC)
By 2050: Climate neutrality (Framework Law on Climate Change)

FLEXIBILITY & LINKING

OFFSET CREDITS

Article 14 of the Framework Law on Climate Change stipulates that emissions reduction or removal certificates from projects implemented within Chile may be used for compliance with the emissions standards defined in Articles 14 and 15 of the law. The Draft Rules for the Development of GHG Emissions and Short-Lived Climate Pollutant Limits specify that a limit of 5% for the use of emissions reduction or removal certificates in lieu of the compliance obligation of entities regulated under Article 14 of the Framework Law.

The government has also developed a National Mitigation Actions Registry (*Registro Nacional de Acciones de Mitigación – RENAMI*). This will allow the implementation of the offset scheme approved in the carbon tax reform and would constitute a key element for other instruments, such as the scheme proposed in the Framework Law on Climate Change or emerging instruments under Article 6 of the Paris Agreement.

As per the "Agreement N°17/2022 - Regulation of Projects for The Reduction of Pollutant Emissions to Offset Taxable Emissions Pursuant to Article 8 of Law No. 20.780", entities under the carbon tax scheme can use offset credits to meet their compliance obligations. Third-party verification is required to issue offset credits.

COMPLIANCE

MRV

The current GHG MRV system primarily serves the implementation of the carbon tax. Entities that emit more than 25,000 tCO_2 and/or 100 tonnes of particulate matter due to combustion processes per year are required to monitor and report emissions through government-approved methodologies. Current methodologies are expected to be updated in the future to incorporate all possible regulated fixed sources.

VERIFICATION: Verification procedures are administered by the Superintendency of the Environment under the Ministry of the Environment (no third-party verification is currently used).

FRAMEWORK: The government has developed a "Unified Atmospheric Emissions Report" (*Reporte Único de Emisiones Atmosféricas*) under the "Pollutant Release and Transfer Register" for entities regulated under the tax and other norms. This has streamlined various reporting needs and aims to improve the quality of the information provided. This system is considered a basis for Chile to advance the development of a Unified GHG Emissions Report, which will help evaluate Chile's National Climate Policy.

OTHER INFORMATION

INSTITUTIONS INVOLVED

Ministry of Energy: Responsible for the development and implementation of the 2022-2026 Energy Agenda, the Energy Policy for 2050, the Energy Sector Decarbonization Plan (under development) and the carbon budgets, the market instruments and mitigation plan under the Framework Law on Climate Change.
Ministry of Environment: Responsible for the development and implementation of the system specified in Articles 14 and 15 of the Framework Law on Climate Change.
Ministry of Finance: Responsible for revising the carbon tax under the Tax Reform.
Ministry of Foreign Affairs: Leads the national board under the Joint Crediting Mechanism and cooperation agreements in the context of Article 6.
Ministry of Agriculture: Leads discussions on carbon credits in the non-energy sector, specifically, LULUCF and Nature-Based Solutions.
Inter-Ministerial Committee on Climate Change: Proposes declarations, draft laws, and administrative acts on climate change to the President of the Republic.

REGULATORY FRAMEWORK

- → Framework Law on Climate Change
- → Draft Rules for the Development of GHG Emissions and Short-Lived Climate Pollutant Limits
- → Energy Agenda 2022-2026
- → Energy Policy for 2050
- → Green Hydrogen Action Plan
- → Agreement N°17/2022 - Regulation of Projects for The Reduction of Pollutant Emissions to Offset Taxable Emissions Pursuant to Article 8 of Law No. 20.780

COLOMBIA

NATIONAL PROGRAM OF TRADABLE GREENHOUSE GAS EMISSION QUOTAS

- **Climate Action Law creates an obligation for legal persons to report GHG emissions**
- **ETS pilot phase expected to start in the next years**
- **Full ETS operation expected by 2030**

ETS DESCRIPTION

In 2018, Colombia adopted a law for climate change management, which outlines basic provisions for the establishment of an ETS, or the "National Program of Tradable GHG Emission Quotas" (*Programa Nacional de Cupos Transables de Emisión de Gases de Efecto Invernadero – PNCTE*).

Covered entities will have to surrender allowances for all their covered emissions. The Ministry of Environment and Sustainable Development (Minambiente) will determine the number of allowances in line with Colombia's national mitigation targets. Minambiente is also in charge of allocation, which will take place primarily via auctions. Non-compliance is to be punishable by a fine of up to double the auction price. Auction revenues, as updated by Article 262 of Law 2294 of 2023, will now be allocated to the "Fund for Life and Biodiversity" (formerly the "Fund for Sustainability and Climate Resilience"). These funds are designated for purposes set by the national carbon tax, as well as for administering the PNCTE and the Mandatory Emissions Report under Law 2169 of 2021. The Climate Change law also includes crediting provisions: voluntary actions of non-regulated entities that generate GHG emissions reductions or removals may be issued allowances if they are verified, certified, and registered in the National Emission Reductions Registry (*Registro nacional de reducción de emisiones de GEI – Renare*), and deemed eligible for the program.

The PNCTE will complement Colombia's revised carbon tax, now set at COP 23,394.60 (approximately USD 4.30) per tonne of CO_2e according to Resolution 12 of 2023 by the National Directorate of Taxes and Customs. The 2018 "Climate Change Management Law" states that the government may recognize tonnes paid through the carbon tax as part of the compliance obligation of regulated entities under the PNCTE.

The ETS design is currently being analyzed by the government. The 2021 "Climate Action Law" (*Ley de Acción Climática*) sets a goal to fully implement the ETS by 2030. This has also set an obligation for legal persons to report direct and indirect GHG emissions, following criteria to be set by Minambiente. It also appoints an independent group of experts (the Study Commission) to provide recommendations and promote and develop carbon markets in Colombia. These recommendations are to be considered by the environment and finance ministries.

EMISSIONS & TARGETS OF COLOMBIA

GHG EMISSIONS (EXCL. CATEGORIES "3B LAND" AND "3D PRODUCTS OF COLLECTED WOOD"), 2018[1]

(in $MtCO_2e$, share of total in %)

Energy	92.9	(52%)
Industrial processes	10.5	(6%)
Agriculture[2]	56.8	(31%)
Waste	20.5	(11%)
Total	**180.7**[1]	

Energy industries	24.5	(14%)
Manufacturing industries and construction	13.2	(7%)
Transport	37.8	(21%)
Commercial, institutional, and residential	7.0	(4%)
Other energy	10.4	(6%)

GHG REDUCTION TARGETS

By 2030: 51% reduction of GHG emissions compared to BAU by 2030. 40% reduction of black carbon emissions compared to 2014 (updated NDC)

By 2050: Carbon neutrality (Climate Action Law 2021)

OTHER INFORMATION

INSTITUTIONS INVOLVED

Ministry of Environment and Sustainable Development: Responsible for defining national environmental policy and promoting the recovery, conservation, protection, ordering, management, use and exploitation of renewable natural resources.

Department of National Planning: Entity of the national government that coordinates, articulates, and supports Colombia's short-, medium-, and long-term planning and guides the cycle of public policies and the prioritization of investment resources.

Ministry of Finance: Coordinates macroeconomic policy; defines, formulates, and executes the fiscal policy of the country; and manages the nation's public resources from the budgetary and financial perspective.

National Climate Change System (SISCLIMA): A set of state, private, and non-profit entities, policies, standards, processes, resources, plans, strategies, instruments, mechanisms, and information related to climate change applied to manage the mitigation of greenhouse gases and adaptation to climate change in the country.

Ministry of Mines and Energy: Responsible for formulating and adopting policies aimed at the sustainable use of mining and energy resources.

REGULATORY FRAMEWORK

→ Climate Change Law **(Ley 1931 de 2018: Ley de Cambio Climático)**

→ Climate Action Law **(Ley 2169 de 2021: Ley de Acción Climática)**

1 Land emissions (category 3B), not included here, accounted for 98.5 $MtCO_2e$ of total net emissions in 2018, whereas category 3D, Products of collected wood, accounted for 0.6 $MtCO_2e$ in absorptions.

2 Colombia uses the sectors defined in the latest IPCC guidelines (2006 IPCC Guidelines for National Greenhouse Gas Inventories) for the preparation of its inventory, in which the Agriculture and the LULUCF sectors are integrated into "Agriculture, Forestry and Other Land Use." In an effort to make the display of overall GHG emissions comparable with other jurisdictions, the figure shown here excludes the categories "3B Land" and "3D Products of collected wood", but includes the categories "3A Livestock" and "3C Aggregate sources and non-CO_2 emissions sources on land".

MEXICO

MEXICAN EMISSIONS TRADING SYSTEM

- First ETS in operation in Latin America
- Pilot phase started in 2020, with 2022 as a transition year to the operational phase
- Covers direct emissions from fixed sources of entities emitting at least 100,000 tCO_2

ETS DESCRIPTION

The Mexico ETS, the first in Latin America, started in January 2020. It covers direct CO_2 emissions from fixed sources in the energy and industry sectors emitting at least 100,000 tCO_2 per year, representing around 40% of national GHG emissions and 90% of emissions reported in the National Emissions Registry (RENE).[2] Under the Mexico ETS, participating entities must surrender allowances for all of their covered emissions. Allowances are allocated through grandparenting based on historical emissions, which are verified annually. The level of free allocation is expected to be reduced from the first year of the operational phase, expected to begin in 2024.

The Mexican ETS started with a Pilot Program with two phases: a pilot phase between 2020 and 2021, and a transition phase in 2022. The Pilot Program aimed to test system design, contribute to the NDC and other national mitigation goals, enhance the quality of emissions data, and build capacity in emissions trading, ultimately improving the design of the operational phase.

The regulation of the Pilot Program ("the Agreement on the establishment of the preliminary basis of the Pilot Program of the Emissions Trading System") remains in force until the regulation for the operational phase has been published.

YEAR IN REVIEW

In 2023, the fourth allocation took place. 84% of participants complied with their surrender obligations in 2023.

The rules for the operational phase are yet to be announced. The Ministry of Environment and Natural Resources (SEMARNAT) is expected to publish them in 2024. In the meantime, the regulation of the pilot remains in force.

A consultation document on the Strategy of Sustainable Finance Mobilization of the Ministry of Finance proposes to improve the coherence between different carbon pricing instruments between 2023 and 2030, as well as to develop the auctioning mechanism and determine the fiscal treatment of allowances. In the medium term, it proposes to develop the tools needed for the auctioning mechanism.

The country is expected to implement its domestic crediting mechanism for certified emissions mitigation, reduction, removals, capture or absorptions from national mitigation projects. Eligibility rules for the use of offset credits within the ETS are being developed based on a mapping of activities and projects that could be used for this purpose.

1 The Ministry of Environment and Natural Resources is in the process of establishing a domestic offsetting program.
2 According to SEMARNAT.

In force
Under development
Under consideration

SECTORS

POWER

INDUSTRY

CAP

273.1 $MtCO_2$ (2021)

GREENHOUSE GASES

CO_2

OFFSET CREDITS

Domestic[1]

ALLOCATION

Free Allocation: Grandparenting

AVERAGE 2023 PRICES

No information on secondary market prices during 2023 available

EMISSIONS & TARGETS OF MEXICO

GHG EMISSIONS (INCLUDING INDIRECT CO_2, EXCLUDING LULUCF), 2021

(in $MtCO_2e$, share of total in %)

Energy	444.6	(62%)
Industrial processes	70.6	(10%)
Agriculture, forestry, and other land use[3]	135.1	(19%)
Waste	63.8	(9%)
Total	**714.0**	

Energy industries	167.7	(23%)
Manufacturing industries and construction	44.2	(6%)
Transport	148	(21%)
Commercial, institutional, and residential[4]	24.2	(3%)
Other energy	60.5	(8%)

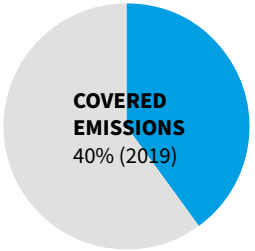
GHG REDUCTION TARGETS

By 2030: Unconditional 35% below BAU GHG emissions baseline (Updated NDC)
By 2050: 50% below 2000 GHG levels (aspirational, included in the "General Law of Climate Change")

ETS COVERAGE & PHASES

PHASES

PILOT PHASE: 2 years (2020-2021)
TRANSITIONAL PHASE: 1 year (2022)
OPERATIONAL PHASE: From 2024 (The regulation of the Pilot Program remains in force until the regulation for the operational phase has been published).



CAP OR TOTAL EMISSIONS LIMIT

A cap limits the total emissions allowed in the system.

PILOT (2020-2021):
2020: 271.3 $MtCO_2$
2021: 273.1 $MtCO_2$[5]

Three reserves will be filled each year with allowances additional to the cap:

- auctions reserve (equivalent to 5% of the cap, for regular auctions, which have not yet happened);
- new entrants' reserve (equivalent to 10% of the cap, for new entrants as well as increases in production among existing regulated entities); and
- general reserve (equivalent to 5% of the cap, for ex-post adjustment allocation for entities with higher emissions relative to their baselines).

The reserves function as safeguards to avoid economic impacts on regulated entities during the Pilot phase, as required by the "2018 General Law on Climate Change".

SECTORS AND THRESHOLDS

PILOT (2020-2021): The Pilot ETS covered the energy and industrial sectors. The energy sector encompasses electricity generation, transmission, and distribution, as well as fossil fuel extraction, production, transport, and distribution.

The industrial sector includes automobile manufacturing, cement, lime, chemicals, food and beverages, glass, iron and steel, metals, mining, petrochemicals, and pulp and paper, as well as other industrial sub-sectors generating direct CO_2 emissions from stationary sources at or above the threshold.

Inclusion thresholds: The Pilot ETS covers installations with annual direct emissions from stationary sources amounting to at least 100,000 tCO_2.

OPERATIONAL PHASE: Sectors and thresholds are not expected to change during the operational phase.

POINT OF REGULATION

Point source (all sectors)

TYPE OF ENTITIES

Installations of the power and industry sectors with annual direct emissions from stationary sources of at least 100,000 tCO_2.

NUMBER OF ENTITIES

~295 currently[6]

3 Mexico uses the sectors defined in the latest IPCC guidelines (2006 IPCC Guidelines for National Greenhouse Gas Inventories) for the preparation of its inventory, in which the Agriculture and the LULUCF sectors are integrated into "Agriculture, Forestry and Other Land Use." In an effort to make the display of overall GHG emissions comparable with other jurisdictions, the figure shown here excludes the categories "3B Land" and "3D1 Products of collected wood" but includes the categories "3A Livestock" and "3C Aggregate sources and non-CO_2 emissions sources on land".
4 Corresponding to categories 1A4a and 1A4b
5 The increase in the cap between 2020 and 2021 is due to an extension in the sectoral allocation for regulated entities categorized as "others".
6 According to SEMARNAT.

ALLOWANCE ALLOCATION & REVENUE

ALLOWANCE ALLOCATION

PILOT (2020-2021): The Pilot featured free allocation with the following specifications:

Initial Allocation: Entities receive free allowances equivalent to 100% of their most recent verified emissions. New entrants receive free allowances based on their verified emissions in the year in which they first crossed the 100,000 tCO_2 threshold. For participants that have not yet verified their emissions, initial allocation is done based on their historical emissions as reported to RENE.

Ex-Post Adjustment: An adjustment allocation is carried out from the general reserve for those participants that did not receive a quantity of free allowances equivalent to their verified emissions.

Participants may request additional allowances when an expansion in their production results in additional direct CO_2 emissions from stationary sources.

Plant Closures: When an installation closes permanently, it may have to surrender the allowances that it has for the compliance period of the year before its closure. As well, it should return the free allowances received for the compliance period in which it closes. Whether the installation has to only surrender allowances, return allowances, or both, depends on the date of the year in which it closes. SEMARNAT then cancels these allowances.

Auctions: SEMARNAT may auction allowances from the auction reserve.

OPERATIONAL PHASE: Free allocation is expected to be reduced from the beginning of the operational phase. SEMARNAT is in the process of developing the auctioning mechanism.

USE OF REVENUES

SEMARNAT is developing institutional arrangements to manage revenues during the operational phase.

FLEXIBILITY & LINKING

BANKING AND BORROWING

Allowances allocated during Pilot will not be eligible for banking into the operational phase. Moreover, for the operational phase, banking will be allowed between phases and compliance years.

Although the possibility of borrowing is not explicitly stated, surrender of allowances for a given compliance period is done after allocation of allowances for the subsequent compliance period takes place.

OFFSET CREDITS

The use of offset credits will be allowed.

QUALITATIVE LIMITS: Two types of flexibility instruments are foreseen, both of which will generate offset credits eligible for use under the ETS: offset credits and early action.

Offset credits: SEMARNAT will establish a domestic program for the generation of offset credits that can be surrendered for compliance. Domestic projects that have been validated and verified under internationally or domestically recognized protocols (still to be specified) will be eligible. Emission reductions related to all GHGs will be eligible, except for those related to direct CO_2 emissions.

Early action: Offset credits generated by mitigation projects operating in Mexico under recognized protocols before the pilot came into force (2020) can be eligible for use in the ETS. SEMARNAT issues offset credits only if a certificate of cancellation is presented and if they were not used for other compliance proposes. These projects will be expected to continue generating offset credits during the operational phase.

QUANTITATIVE LIMITS: Participants can meet up to 10% of their compliance obligations with offset or early action credits.

SEMARNAT is currently working on the regulations to implement the offset and early action provisions in the Pilot ETS. The eligibility rules for the use of offset credits within the ETS are being developed based on a mapping of activities and projects that could be used for this purpose.

Articles 89 and 90 of the General Law of Climate Change provide the general framework for the registry of mitigation outcomes, whereas articles 26-29 of the RENE regulation provide additional specifications on the projects that can be registered, such as the procedure for registration and basic information on which certificates from international registries are to be accepted.

LINKS WITH OTHER SYSTEMS

The Mexico ETS is not linked with any other system, though the General Law of Climate Change provides for linkages with other systems.

Various cooperation activities have taken place in recent years. Mexico signed a Memorandum of Understanding with California in 2014 and with Québec in 2015 that includes cooperation on emissions trading. In August 2016, Mexico, Québec, and Ontario issued a joint declaration on carbon markets collaboration. Additionally, in December 2017, Mexico – together with four countries and seven subnational governments – issued the Paris Declaration on Carbon Pricing in the Americas for carbon pricing implementation, which creates a platform for cooperation in the region.

COMPLIANCE

COMPLIANCE MECHANISM

Covered entities must surrender one allowance per tCO_2 emitted for all their covered emissions.

COMPLIANCE PERIOD

One calendar year. SEMARNAT is evaluating the surrender date of allowances based on the experience obtained during the pilot.

MRV

REPORTING FREQUENCY: Annual self-reporting based on electronic templates prepared by SEMARNAT.

VERIFICATION: Verification by independent accredited verifiers is required by the end of June of the subsequent year.

Reporting and verification should be made according to the criteria and procedures of the RENE. [7]

FRAMEWORK: A monitoring plan is expected to be required in the operational phase from all regulated entities as a part of their obligations.

Verified annual CO_2 emissions are reported both to the RENE (in addition to other obligations that regulated entities have to report to the RENE) and to the ETS registry.

Under RENE, emitters with annual emissions of at least 25,000 tCO_2e in the energy, industrial, transport, agricultural, waste, commercial, and services sectors are required to report the six key GHGs identified by UNFCCC, as well as black carbon, chlorofluorocarbons (CFCs), hydrochlorofluorocarbons (HCFCs), halogenated ethers, halocarbons, and their mixes. Articles 87 and 88 of the General Law of Climate Change provide the general framework for GHG reporting to RENE.

ENFORCEMENT

The Pilot Program is designed to pose no economic impact on regulated entities; how-ever, noncompliant entities lose the opportunity to bank unused allowances into subsequent compliance periods within the pilot and will receive fewer allowances in the first allocation of the operational phase of the ETS (two fewer allowances for each nondelivered allowance during the pilot).

Sanctions are expected to be implemented in the operational phase of the ETS.

MARKET REGULATION

MARKET DESIGN

MARKET PARTICIPATION: Under the pilot rules, market participation is limited to compliance entities and those that provide offset credits. SEMARNAT is designing and developing the process and rules to allow participants without obligations.

MARKET TYPES:

Primary: As of the end of 2023, there had been no auctions in the Mexican ETS pilot. SEMARNAT is preparing institutional arrangements to implement auctions during the operational phase.

Secondary: There is no exchange that trades allowances. As of the end of 2023, transactions can only take place via negotiation between participants.

LEGAL STATUS OF ALLOWANCES: Allowances in the Mexican ETS Pilot are “administrative instruments” and are not considered financial instruments. They are expected to remain as such in the operational phase.

OTHER INFORMATION

INSTITUTIONS INVOLVED

SEMARNAT: Ministry in charge of implementing the ETS.

COCOSCE: Formal technical forum for consultation, orientation, social participation, and advice for the Pilot ETS. Its members are representatives from the ministries of Finance, Environment and Natural Resources, Energy, and Economy; a representative from the National Institute of Ecology and Climate Change; a representative of the Confederation of Industrial Chambers; a representative from the Coordinating Business Council; and representatives of the regulated sectors.

EVALUATION/ETS REVIEW

Article 10 of the Agreement on the establishment of the preliminary basis of the Pilot Program provided for SEMARNAT to annually review the Pilot, publishing reports on topics such as price behavior and emissions reductions achieved. SEMARNAT developed an internal evaluation on the ETS´s components during the Pilot, in order to improve and update the regulation of the operational phase.

Moreover, an evaluation of the Pilot, supported by the COCOSCE, has been conducted to determine if adjustments to the ETS design are necessary.

7 According to SEMARNAT.

COCOSCE's working groups have developed different recommendations to the Federal Government on the cap and allocation methods, offset credits, as well as key topics on the energy sector and legal recommendations.

REGULATORY FRAMEWORK

- → **General Law of Climate Change**
- → **Agreement on the establishment of the preliminary basis of the Pilot Program of the Emissions Trading System** (implementing regulation of the pilot)
- → **Regulation of the General Law of Climate Change on the National Emissions Register**
- → **Notice on the cap for the years 2020 and 2021**
- → **Notice on the reserve and sectoral allocation of allowances for the years 2020 and 2021**
- → **Mexico Emissions Trading System Website**
- → **Strategy of Sustainable Finance Mobilization of the Ministry of Finance**

AUSTRALIA

SAFEGUARD MECHANISM

- **Reforms to the Safeguard Mechanism entered into force in July 2023**
- **Intensity-based system, regulating the largest industrial emitters**
- **Facility-level baselines reduced by 4.9% per year to 2030**

ETS DESCRIPTION

The Safeguard Mechanism assigns mandatory emissions baselines for over 200 large facilities in Australia. Facility-level baselines are calculated using output-based benchmarking based on emissions intensity.

Facilities emitting above their baseline must offset excess emissions by surrendering Safeguard Mechanism Credits (SMCs) or Australian Carbon Credit Units (ACCUs). In some cases, facilities can also apply to average their emissions over a longer period or borrow from a future year.

The Safeguard Mechanism was introduced in 2016 but had not been classified as a baseline-and-credit system as no tradeable permits were issued. However, as of July 2023, the government issues SMCs to facilities that over-achieve on their baseline. This reform was accompanied by a tightening of baselines and a default decline rate of 4.9% per year, to align the outcome with Australia's 2030 targets.

YEAR IN REVIEW

Legislation to reform the Safeguard Mechanism was passed in March, with changes entering into force from July. The Safeguard Mechanism now assigns emissions baselines to over 200 large facilities, with those emitting above their baseline required to offset excess emissions. The reforms tightened emissions baselines for covered facilities and now allow the issuance of credits to facilities that overachieve on their baseline. This in effect turned the Safeguard Mechanism into a baseline-and-credit system.

In force

Under development

Under consideration

SECTORS

- INDUSTRY
- TRANSPORT
- AVIATION
- WASTE

GREENHOUSE GASES

CO_2, CH_4, N_2O, SF_6, HFCs, PFCs

OFFSET CREDITS

Domestic

ALLOCATION

Free Allocation

EMISSIONS & TARGETS OF AUSTRALIA

GHG EMISSIONS (EXCLUDING LULUCF), 2020

(in $MtCO_2e$, share of total in %)

Energy	415.8	(79%)
Industrial processes	32.7	(6%)
Agriculture, forestry, and other land use	67.8	(13%)
Waste	11.7	(2%)
Total	**528.1**	

Energy industries	207.6	(39%)
Manufacturing industries and construction	41.7	(8%)
Transport	93.4	(18%)
Commercial, institutional, and residential	22.5	(4%)
Other energy	50.6	(10%)

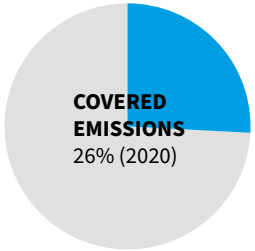
GHG REDUCTION TARGETS

By 2030: 43% below 2005 levels (updated NDC)
By 2050: Net zero emissions (NDC)

ETS COVERAGE & PHASES

COVERED EMISSIONS

Verified ETS emissions 136.9 $MtCO_2e$ (2020)



PHASES

The current 4.9% baseline decline rate of facilities under the Safeguard Mechanism has been fixed to 2030, aligning with Australia's NDC. Multi-year monitoring periods equally cannot extend beyond 2030.

CAP OR TOTAL EMISSIONS LIMIT

The total net emissions limit under the Safeguard Mechanism is the sum of the annual emissions limits (baselines) based on emissions intensity benchmarks for all individual covered entities. The limit is therefore not set ex-ante and is only known after the compliance period ends.

The facility-level baselines are calculated using output-based benchmarking based on emissions intensity (see 'Allowance Allocation' section for details). A default decline rate of 4.9% per year applies to standard and landfill baselines up to 2030.

As a headline target, net emissions from all Safeguard facilities should not exceed 100 million tCO_2e in the 2029 to 2030 financial year and should reach zero from FY2049 to 2050.

Total emissions from all Safeguard facilities must also reduce over time, measured on a five-year rolling average. From the beginning of July 2025, the rolling average of Safeguard-covered emissions over the previous five years must be lower than the five-year rolling average from three years earlier; and from the beginning of July 2027, the five-year rolling average of Safeguard-covered emissions must be lower than the five-year rolling average from two years earlier.

SECTORS AND THRESHOLDS

The Safeguard Mechanism covers all direct (scope 1) GHG emissions from facilities emitting over 100,000 tCO_2e per year in the electricity, mining, oil and gas production, manufacturing, transport, domestic aviation, and waste sectors. For the transport and domestic aviation sectors, this threshold refers to the annual total emissions of the respective companies (road and rail freight companies and airlines).

Grid-connected electricity facilities are covered by one combined "sectoral" baseline that is not expected to be exceeded and is not declining. Individual grid-connected electricity generators are not covered as long as total emissions do not exceed the sectoral baseline. Grid-connected power sector facilities are thus formally covered by the Safeguard Mechanism, but in practice they do not face a compliance obligation. Off-grid generators, including electricity generation integrated into Safeguard facilities, are not covered by the sectoral baseline and are treated the same as other Safeguard facilities.

In the transport sector, only the largest rail and road freight companies and airlines exceeding the inclusion threshold are covered.

In the waste sector, only a very small share of total sectoral emissions (~1%) is covered as the majority of installations do not exceed the inclusion threshold.

INCLUSION THRESHOLDS: Facilities and companies (for the transport and domestic aviation sectors) with annual scope 1 emissions over 100,000 tCO_2e.

POINT OF REGULATION

Point source

TYPE OF ENTITIES

Installations, companies (rail/road freight transport and domestic aviation)

NUMBER OF ENTITIES
~215 (2023)

ALLOWANCE ALLOCATION & REVENUE

ALLOWANCE ALLOCATION
Under the reformed Safeguard Mechanism, baselines are set based on production levels multiplied by an emissions intensity value. This value is initially set based on a facility's current emissions intensity. However, over the seven years to 2030, baselines will transition to being set based on an industry average emissions intensity value. A sectoral baseline applies to grid-connected electricity generation, based on historical emissions. For facilities with no other baseline determined, a default of 100,000 tCO_2e is applied.

Facilities that overachieve on their baseline (with the exception of landfills and facilities accessing borrowing arrangements) are issued SMCs that can be banked for future use or sold to other facilities.

Facilities that are considered at risk of carbon leakage ("trade-exposed baseline-adjusted", or TEBA facilities) can apply for reduced baseline decline rates (see 'Compliance Mechanism' section).

FLEXIBILITY & LINKING

BANKING AND BORROWING
Unlimited banking of SMCs is allowed up to 2030. The option to use banked SMCs after 2030 will be considered in the 2026 to 2027 review of the Safeguard Mechanism (see 'Evaluation/ETS review' section).

Borrowing up to 10% of a facility's baseline each year will be allowed until 2030, with a 10% interest rate applied in the year after borrowing occurs. For the first two years, this interest rate will be lower, at 2%. The facility's baseline would then decrease by a corresponding amount the following year, plus:
- 2% interest for the 2024 to 2025 and 2025 to 2026 financial years, and
- 10% interest for financial years from 2026 to 2027 onwards.

OFFSET CREDITS
The use of ACCUs issued under the domestic offset scheme is allowed.

QUALITATIVE LIMITS: Only ACCUs allowed for compliance.

QUANTITATIVE LIMITS: None. However, if a facility surrenders ACCUs equal to more than 30% of its baseline, it must submit a statement to the Clean Energy Regulator (CER) setting out why onsite abatement has not been undertaken. This statement is then published on the CER's website.

LINKS WITH OTHER SYSTEMS
The Safeguard Mechanism is not linked with any other system.

COMPLIANCE

COMPLIANCE MECHANISM
Covered entities must surrender one SMC or ACCU unit per tCO_2e that exceeds the installation's annual emissions baseline, and the annual emissions baseline is based on an emissions intensity benchmark.

The benchmark is initially set based on a facility's current emissions intensity but, over the seven years to 2030, baselines will transition to being set based on an industry-average emissions intensity value.

A default decline rate of 4.9% per year applies to the baselines of existing and new facilities until 2030. Post-2030 decline rates will be in predictable five-year periods, aligned with future updates to the Australian NDC targets. There is also a reserve in place for baseline decline rate calculations to ensure that the 2030 target is met.

For trade exposed facilities that are considered at risk of carbon leakage (TEBA facilities), the decline rate can be reduced on application to as low as 1% per year for the manufacturing sector, or 2% per year for other sectors.

In some cases, facilities can apply for a five-year monitoring period (i.e., multi-year baselines) to smooth their obligation and abatement trajectories up to 2030, but this mechanism is only available for facilities undertaking significant emissions reduction activities during the extended monitoring period.

COMPLIANCE PERIOD
Annual reporting and compliance
- End of compliance period: end of June
- Reporting deadline: end of October
- SMC issuance: end of January
- Surrendering deadline: end of March

MRV

MONITORING: Emissions monitoring according to the guidelines defined in the "National Greenhouse and Energy Reporting Act" (NGER Act). Facilities need to apply for a site-specific emissions intensity value for the first compliance year.

REPORTING: Annual self-reporting according to the guidelines defined in the NGER Act.

VERIFICATION: Verification according to the guidelines defined in the NGER Act. All facilities with emissions greater than 1 $MtCO_2e$ per year are required to undergo an independent emissions audit each year.

ENFORCEMENT

The maximum civil penalty is set at one penalty unit per tonne of excess emissions per year. As of January 2023, a penalty unit is AUD 275 (USD 182). The infringement notice is charged at one-third of the maximum civil penalty to a maximum of 150,000 penalty units.

MARKET REGULATION

MARKET DESIGN

MARKET PARTICIPATION: Compliance entities, non-compliance entities (for ACCUs and SMCs).

MARKET TYPES:

Primary: Allowances are currently not auctioned.

Secondary: The CER is currently in the process of establishing an Australian Carbon Exchange that will clear and settle ACCUs and potentially other types of carbon units and certificates issued by the CER. The national carbon exchange is expected to be launched in 2024.

LEGAL STATUS OF ALLOWANCES: ACCUs and SMCs are treated as financial products under "Australia's Corporations Act (2001)". Certain exemptions apply.

MARKET STABILITY PROVISIONS

COST CONTAINMENT MEASURE: Price cap

TRIGGERS: Safeguard facilities that exceed their baseline may apply to the CER to purchase the required number of ACCUs at a fixed price. The price of these ACCUs is set at AUD 75 (USD 49.6) in the 2023 to 2024 financial year and will be indexed in future financial years by the Consumer Price Index (CPI) plus an additional 2% per year. This measure is intended to provide certainty to Safeguard facilities about the maximum compliance costs they will face under the reformed scheme.

OTHER INFORMATION

INSTITUTIONS INVOLVED

Clean Energy Regulator (CER): Federal authority overseeing the mechanism; tasked with calculating and setting baselines, collecting and publishing emissions data, issuing SMCs and approving discounted decline rates for TEBA facilities.

Department of Climate Change, Energy, Environment and Water (DCEEW): Federal ministry responsible for climate policy and the Safeguard Mechanism.

Climate Change Authority (CCA): Independent advisory body providing expert advice to the Australian government on climate policy.

EVALUATION/ETS REVIEW

The Government will review Safeguard Mechanism policy settings in 2026 to 2027, to ensure they are appropriately calibrated.

As part of this review, the CCA will advise the government on the extent to which on-site abatement is being driven by the reforms, and whether any additional incentives are required (such as a discount on ACCUs when used for more than a certain percentage of a baseline or any circumstances where limits on the use of ACCUs may be appropriate).

REGULATORY FRAMEWORK

- → National Greenhouse and Energy Reporting Act 2007 (NGER Act)
- → National Greenhouse and Energy Reporting (Safeguard Mechanism) Rule 2015
- → Climate Change Act 2022

BEIJING

BEIJING PILOT EMISSIONS TRADING SYSTEM

- One of three Chinese pilots with ETS regulation passed by regional congress
- Pioneered cross-regional trading and a price corridor as price stability mechanism
- Wide coverage of sectors and experience of scope expansion

ETS DESCRIPTION

The Beijing Pilot ETS was launched in November 2013 and is one of three Chinese pilots with ETS regulation passed by its regional congress. Beijing applies a bottom-up approach to cap-setting. The ETS covers 30% of the city's total emissions, including those from: heat, cement, petrochemicals, and other industrial enterprises; manufacturers; the service sector; and public transport. Covered entities must surrender allowances for all their covered emissions, and allocation is based on auctions or free allocation.

Beijing is the only regional pilot in China that uses a price floor (CNY 20, USD 2.82) and ceiling (CNY 150, USD 21.17) as a price stability mechanism. In cases of consecutively high or low average prices, the government can auction or buy back extra allowances. The Beijing pilot has seen a relatively high carbon price level compared to the other ETS pilots in China.

Beijing plays a supporting role in the national offset crediting program. The Beijing Green Exchange operates the China Certified Emissions Reduction (CCER) national registry.

YEAR IN REVIEW

In April, the Beijing Municipal Ecology and Environment Bureau (EEB), which manages the pilot, released a notice on the "Management of Key Carbon Emission Units and the Pilot Work of Carbon Emissions Trading in 2023", which included several documents on MRV, allowance allocation, and offset credits. In this document, the EEB also introduced a methodology to develop hydrogen fuel cell vehicle offset projects. Like in the previous year, the EEB moved the compliance deadline for 2022 emissions to late October.

Beijing organized two auctions in August and October. The Beijing EEB auctioned 1,528 thousand tonnes of allowances for a total of CNY 161 million (USD 22.72 million).

In force
Under development
Under consideration

SECTORS

POWER[1]
BUILDINGS
INDUSTRY
TRANSPORT

CAP

~44 $MtCO_2$ (2022)

GREENHOUSE GASES

CO_2

OFFSETS AND CREDITS

Domestic (national and provincial)

ALLOCATION

Free Allocation: Grandparenting
Free Allocation: Benchmarking
Auctioning

AVERAGE 2023 ALLOWANCE PRICE

Average auction price: CNY 115 (USD 16.26)
Average secondary market price: CNY 90.96 (USD 12.84)

TOTAL REVENUE

CNY 274 million (USD 38.67 million) since beginning of program
CNY 161 million (USD 22.72 million) in 2023

1 The power sector transferred to the national ETS in 2020. However, one power company remains covered by the Beijing pilot ETS for management reasons.

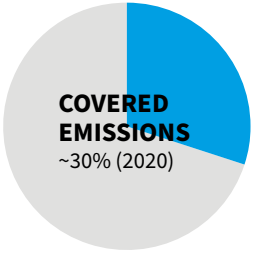
EMISSIONS & TARGETS OF BEIJING

OVERALL GHG EMISSIONS (INCLUDING INDIRECT CO_2, EXCLUDING LULUCF)
132.1[2] $MtCO_2e$ (2020)

GHG REDUCTION TARGETS

By 2025: At least 10% reduction in CO_2 emissions (excluding passenger and cargo aviation) compared to the peaking level; reduce CO_2 intensity by ~18% compared to 2020 levels (Beijing 14th Five-Year Plan on Environment Protection)
By 2030: Peak Beijing CO_2 emissions (Beijing Carbon Peaking Plan)
By 2035: "Significant" reduction of CO_2 emissions (Beijing 14th Five-Year Plan on Energy Saving and Climate Change)

ETS COVERAGE & PHASES



COVERED EMISSIONS

~30% (2020)

PHASES

2013 and ongoing[3]

CAP OR TOTAL EMISSIONS LIMIT

The cap under the Beijing Pilot ETS is the sum of the bottom-up installation level for all individual covered entities. Caps over the past years have been as follows:
2020: ~50 $MtCO_2$
2021: ~35 $MtCO_2$[4]
2022: ~44 $MtCO_2$[5]

SECTORS AND THRESHOLDS

Industrial and non-industrial companies and entities, including grid, heating, cement, petrochemicals, other industrial enterprises, manufacturers, the service sector, public transport, and domestic aviation.[6] The power sector transferred to the national ETS in 2019; however, one entity remains covered by the Beijing pilot ETS for management reasons.

INCLUSION THRESHOLDS:
Until 2015: 10,000 tCO_2 per year, considering both direct and indirect emissions.
From 2016 onwards: 5,000 tCO_2 per year, considering both direct and indirect emissions.
MANDATORY REPORTING: 2,000 tonnes of coal equivalent (tce) energy consumption per year.

POINT OF REGULATION

Point source (power and industry); downstream (indirect emissions from electricity and heat consumption).

TYPE OF ENTITIES

Companies

NUMBER OF ENTITIES

909 within the pilot. In addition, 388 other entities had mandatory reporting but no surrender obligations for the 2022 compliance year.

ALLOWANCE ALLOCATION & REVENUE

ALLOWANCE ALLOCATION

Beijing carbon emission allowances (BEAs) are distributed for free, using benchmarking or grandparenting. For sectors using benchmarking or historical intensity methods, a pre-allocation method is adopted for the annual allowance allocation. Allocation is then adjusted ex-post to reflect the actual production in the respective compliance year.

FREE ALLOCATION: Free allocation through grandparenting based on historical emissions or emissions intensity in the baseline years (the previous three years).

Benchmarking is used for new entrants and entities with expanded capacity in the power sector, heat production, cement, and data centers (three new sectors with benchmarking from 2020).

AUCTIONING: Beijing may set aside up to 5% of allowances for regular and irregular auctions (see 'Market Stability Provisions' section).

USE OF REVENUES

General budget, including debt reduction

Revenues are attributed to the city treasury.

2 No data is publicly available for recent years; the data here is estimated by local experts.
3 In the short term, the existing Chinese regional carbon markets operate in parallel with the national Chinese carbon market. When the national ETS expands to new sectors, covered entities in these sectors will be integrated into the national ETS from the regional markets.
4 Lower than 2020 mainly due to transfer of the power sector to the national ETS.
5 Higher than 2021 mainly due to 41 new covered entities in Beijing ETS.
6 Currently, the domestic aviation sector is only subject to mandatory reporting.

FLEXIBILITY & LINKING

BANKING AND BORROWING

Banking is allowed.

Borrowing is not allowed.

OFFSETS AND CREDITS

The use of offset credits is allowed. These are Chinese domestic, project-based offset credits (CCERs). In addition, Beijing has also introduced a local offset program focusing on carbon sinks, low-carbon transport, and energy saving.

QUANTITATIVE LIMIT: The use of offset credits is limited to 5% of the annual allocation.

QUALITATIVE LIMIT: CCERs from energy conservation projects and forestry carbon sink projects are eligible, whereas credits from hydropower, HFC, PFC, N_2O, and SF_6 projects are not. CCERs must come from projects that began operating from 2013 onwards (with exceptions for carbon sink projects, for which the date is February 2005).

Of the 5% limit, at least 50% must come from projects within the jurisdiction of the city of Beijing. Among non-Beijing CCERs, priority is given to those with regional climate or pollution control cooperation agreements (e. g., Hebei and Tianjin).

LINKS WITH OTHER SYSTEMS

The Beijing Pilot ETS is not linked with any other system.

COMPLIANCE

COMPLIANCE MECHANISM

Covered entities must surrender one allowance per tCO_2e emitted for all their covered emissions, and allocation is based on auctions or free allocation.

COMPLIANCE PERIOD

One calendar year: covered entities have until mid-June of the following year to surrender allowances.[7]

MRV

MONITORING: Covered entities are required to set up monitor plans and monitor their emission based on these plans.

REPORTING: Annual

VERIFICATION: Third-party verification is required. In addition, the government organizes expert review of all verification reports; 30% are subject to further fourth-party verification.

FRAMEWORK: The Beijing EEB has general rules for monitoring and reporting, as well as for sector-specific guidelines for the following sectors: heat production and supply, thermal power generation, cement, petrochemicals, public transport, aviation, other industrial enterprises, and the service sector.

OTHER: In addition to covered entities under the ETS, all legal entities with energy consumption over 2,000 tce must report their emissions. Verification is not required.

ENFORCEMENT

Penalties for failing to submit emissions or verification reports on time can result in fines of up to CNY 50,000 (USD 7,058). Furthermore, companies failing to surrender enough allowances to match their emissions are fined up to five times the average market price over the previous six months for each missing allowance. Other non-financial penalties include negative impacts on access to bank loans and subsidy programs.

MARKET REGULATION

MARKET DESIGN

MARKET PARTICIPATION: Covered entities, domestic non-compliance entities, and domestic individuals that meet the requirements of the carbon emission trading rules set up by Beijing Green Exchange.

MARKET TYPES:

Primary: BEAs are distributed through free allocation. Beijing may set aside to 5% of allowances for regular and irregular auctions.

Secondary: Trading consists of five spot products: BEAs, CCERs, forest certified emission reductions (FCER), green transport certified emission reductions (PCER),[8] and energy-saving project certified emission reductions. The Beijing Green Exchange manages the trading of all five products. The Beijing Pilot ETS also allows over-the-counter trading.

Due to financial market regulations in China, no forward markets or derivatives are allowed.

LEGAL STATUS OF ALLOWANCES: Allowances are not considered financial instruments

7 In recent years, compliance deadlines have been postponed to later dates, for reasons such as the COVID-19 pandemic.
8 Acronym is related to the Chinese rather than English name.

MARKET STABILITY PROVISIONS

PRICE FLOOR AND CEILING: The competent authority can auction extra allowances if the weighted average price exceeds CNY 150 (USD 21.17) for ten consecutive days. It can also buy back allowances from the market using a special funding source from the municipal budget if the price is below CNY 20 (USD 2.82).

EXCHANGE: The Beijing Green Exchange implements a system of limits on price increases and decreases for trading over the exchange. This is 20% above or below the reference price (the weighted average price of all transactions on the previous trading day) to prevent large price fluctuations. It also sets the maximum position limit for the different market participants: the sum of their annual allocated allowances plus one million tonnes for compliance entities, one million tonnes for institutional investors, and 50,000 tonnes for natural persons.

RESERVE: The competent authority may set aside up to 5% of allowances for regular and irregular auctions.

OTHER INFORMATION

INSTITUTIONS INVOLVED

Beijing Municipal Commission of Development and Reform: Responsible for establishing the Beijing ETS until governmental restructure in 2019.
Beijing Ecology and Environment Bureau: Responsible for the Beijing ETS after governmental restructure in 2019.
Beijing Green Exchange (previously known as the Beijing Environment Exchange): Responsible for the trading platform.
Beijing Research Center for Climate Change: Responsible for the registry

EVALUATION/ETS REVIEW

No public information is available about the evaluation or review system. However, the local carbon exchange has published annual reports with an overview of the system's performance from 2014 to 2018. In addition, research on improving legislation, MRV, and benchmarking, among other issues, has been funded by the local government.

REGULATORY FRAMEWORK

- Beijing Municipal People's Congress ETS Pilot Bill (2013)
- Interim Measures for the Management of Emissions Trading in Beijing (2014)
- Beijing EEB Notice on the Management of Key Carbon Emission Units and the Pilot Work of Carbon Emission Rights Trading in 2020
- Beijing EEB Notice on the Management of Key Carbon Emission Units and the Pilot Work of Carbon Emission Rights Trading in 2021
- Beijing Local MRV Standards for Seven Industries (power generation, cement, petrochemical, heat production, service, road transportation and other industries) (2021)
- Beijing EEB Notice on the Management of Key Carbon Emission Units and the Pilot Work of Carbon Emission Rights Trading in 2022
- Beijing EEB Notice on the Management of Key Carbon Emission Units and the Pilot Work of Carbon Emission Rights Trading in 2023

CHINA

CHINA NATIONAL EMISSIONS TRADING SYSTEM

- **Became operational in 2021 as the world's largest ETS, covering around 5 billion tCO_2**
- **Operates as an intensity-based ETS**
- **Covers the power sector initially and will expand to other sectors over time**

ETS DESCRIPTION

China's national ETS began operating in 2021, with the objective of contributing to the effective control and gradual reduction of carbon emissions. China's national ETS is the world's largest in terms of covered emissions, estimated to cover around 5 billion tCO_2 and accounting for over 40% of the country's CO_2 emissions.

The China national ETS regulates more than 2,000 companies from the power sector with annual emissions of more than 26,000 tCO_2, including combined heat and power, as well as captive power plants in other sectors. Covered entities must surrender allowances for all their covered emissions, and allocation is based on intensity, with allowances freely allocated using benchmarks and based on actual production levels. Compliance obligations are currently limited and vary between different types of power generation. The system's coverage will expand to other sectors over time.

The national ETS builds on the successful experience of pilot carbon markets implemented in eight regions. These pilots continue to operate in parallel with the national ETS, covering sectors and entities not included in the national system. As the national system expands, entities covered by regional systems are expected to be integrated into it.

YEAR IN REVIEW

In March, the Chinese Ministry of Ecology and Environment (MEE) released the retroactive "Allocation and Compliance Work Plan" for the second compliance period (2021 to 2022) of the national ETS. This announcement followed a public consultation process held in December 2022 on the draft version of the allocation plan. The allocation plan includes several significant changes compared to the allocation plan for 2019 to 2020, including allowing borrowing future allowance and significantly tightening benchmarks.

In February, the MEE published the "Work Plan on the Management of Power Enterprise GHG Emissions Reporting and Verification in 2023–2025" and, in October, the "Work Plan on the Management of Industrial Enterprise GHG Emissions Reporting and Verification in 2023–2025". These two documents laid out earlier MRV submission deadlines for enterprises in various sectors, including power generation, cement, electrolytic aluminum, and steel. The verification of emissions reports of enterprises in other key industries should be completed by the end of the year. For the cement, electrolytic aluminum and steel sectors, the MEE also updated the MRV guidelines to require installation data and detailed measuring of different parameters, which would help the MEE to set the benchmarks for these sectors.

In July, the MEE published a notice regarding compliance in the national ETS in 2021 and 2022. This document confirmed the unlimited banking allowed from the first compliance period and published detailed requirements for borrowing.

1 Captive power plants in other sectors are also covered.

In force
Under development
Under consideration

SECTORS

POWER[1]

CAP

~5,000 $MtCO_2$ (2021 and 2022)

GREENHOUSE GASES

CO_2

OFFSET CREDITS

Domestic (national)

ALLOCATION

Free Allocation: Grandparenting
Free Allocation: Benchmarking
Auctioning

AVERAGE 2023 PRICES

Average secondary market price: CNY 68.35 (USD 9.65)

In January 2024, China launched its domestic offsetting scheme, the Chinese Certified Emissions Reduction scheme (CCER), after six years of suspension during which time it was undergoing reform (see 'Offset Credits' section). In October 2023, the MEE published the new regulations for the CCER, followed by four new methodologies including forestation, mangrove cultivation, solar thermal power, and grid-connected offshore wind power projects. In November, the National Center for Climate Change Strategy Research and International Cooperation published guidelines for the CCER registry. The Beijing Green Exchange has also published guidelines for CCER trading and clearing. In December, the SAMR (State Administration for Market Regulation) published the guidelines of the validation of CCER Projects and Verification of Emission Reduction, including the basic processes and general requirements of validation and verification. The Certification and Accreditation Administration (CNCA) started to accredited verifiers in January 2024, after which project owners can commence their applications.

In February 2024, the State Council of People's Republic of China published a regulation for the national ETS, which significantly increased the punishment for non-compliance, data fraud and market manipulation behaviors.

EMISSIONS & TARGETS OF CHINA

OVERALL GHG EMISSIONS (EXCLUDING LULUCF), 2018

($MtCO_2e$)

Energy	10,155	(78%)
Industrial processes	1,887	(14%)
Agriculture	793	(6%)
Waste	200	(2%)
Total	**13,035**	

CO_2 emissions from fuel combustion ($MtCO_2$)

Energy industries	4,403	(34%)
Manufacturing industries and construction	3,344	(26%)
Transport	982	(8%)
Other energy	697	(5%)

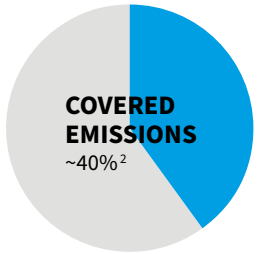
GHG REDUCTION TARGETS

By 2025: Reduction in carbon emissions per unit of GDP of 18% compared to 2020 levels (14^{th} Five-Year Plan)

By 2030: Peak CO_2 emissions; reduction of CO_2 emissions per unit of GDP by over 65% from 2005 levels ('1+N' policy framework; updated NDC)

By 2060: Carbon neutrality ('1+N' policy framework; updated NDC)

ETS COVERAGE & PHASES



COVERED EMISSIONS

PHASES

There are currently no specific phases for the Chinese national ETS. The current rules only apply to the first and second compliance periods, which cover 2019 to 2020 and 2021 to 2022.

CAP OR TOTAL EMISSIONS LIMIT

The cap under the China national ETS is the sum of the bottom-up total allowance allocation to all individual covered entities. The cap changes according to the actual production levels.

The national ETS is estimated to have had a cap of ~4,500 $MtCO_2$ in 2019 and 2020; and ~5,000 $MtCO_2$ in 2021 and 2022.

SECTORS AND THRESHOLDS

Power sector (including combined heat and power, as well as captive power plants of other sectors). Compliance obligations are currently limited (see 'Enforcement' section).

The scope is expected to be gradually expanded to cover seven other sectors: petrochemicals, chemicals, building materials, steel, nonferrous metals, paper, and domestic aviation. Entities in these sectors have MRV obligation since 2015. There is no specific timeline for this expansion.

INCLUSION THRESHOLDS:

For 2019 to 2020: Entities with annual emissions of 26,000 tCO_2 or greater in any year from 2013 to 2019.

For 2021 to 2022: Entities with annual emissions of 26,000 tCO_2 or more in any year from 2020 to 2021.

POINT OF REGULATION

Point source (industry); downstream (indirect emissions from electricity and heat consumption).

TYPE OF ENTITIES

Companies

NUMBER OF ENTITIES

2,257 (2021 and 2022)

2 Of CO_2 emissions

ALLOWANCE ALLOCATION & REVENUE

ALLOWANCE ALLOCATION

Allowances are distributed for free, using benchmarking. A pre-allocation method is adopted for the annual allowance allocation. Allocation is then adjusted ex-post to reflect the actual production in the respective compliance year.

FREE ALLOCATION: Output-based benchmarking is used as the main allocation method, with four distinct benchmarks: conventional coal plants below 300 MW; conventional coal plants above 300 MW; unconventional coal; and natural gas.

In March 2023, the MEE proposed benchmark values for allocation for the 2021 to 2022 compliance period. These propose a significant tightening, especially for coal-fired power plants.

Entities received allowances at 70% of their 2021 verified emissions. Allocation was subsequently adjusted to reflect actual generation in 2021 and 2022. A unit load (output) adjustment factor distributed more allowances for entities operating at load rates lower than 85%. This may have provided more allowances to less efficient power units.

AUCTIONING: Allocation currently takes place through free allocation, but the Interim Regulations clarify that auctioning is to be introduced and gradually expanded. There is currently no timeline for this.

FLEXIBILITY & LINKING

BANKING AND BORROWING

Borrowing was not allowed in 2019 to 2020. In the 2021 to 2022 allocation plan, borrowing is allowed. Companies with a shortfall of 10% or more can apply to borrow from a pre-approved allocation for 2023, up to 50% of the shortfall. Banking from 2019 to 2020 was allowed in 2021 to 2022. Future rules on banking are not yet defined.

OFFSET CREDITS

The use of offset credits is allowed.

QUANTITATIVE LIMITS: Covered entities can use CCERs generated from projects not covered by the national ETS for up to 5% of their verified emissions.

QUALITATIVE LIMITS: There were no additional project or vintage restrictions.

Development of the CCER scheme began in 2009 alongside the development of the regional ETS pilots. In 2012, the NDRC issued the "Interim Measures for the Management of Voluntary GHG Emissions Reduction Transactions", which provided guidelines for the issuance of CCERs. The registration of CCER projects started in 2015 but the program was suspended in 2017 while regulations were reviewed. MEE launched the new CCER system with new methodologies, registry, verifiers and exchange in January 2024.

The National Center for Climate Change Strategy and International Cooperation (NCSC) operates the CCER registry. The Beijing Green Exchange is dedicated to CCER trading platforms.

LINKS WITH OTHER SYSTEMS

The China national ETS is not linked with any other system.

COMPLIANCE

COMPLIANCE MECHANISM

Covered entities must surrender one allowance per tCO_2e emitted for all their covered emissions, and allocation is based on an emissions intensity benchmark.

COMPLIANCE PERIOD

Two calendar years. Covered entities were requested to surrender allowances in 2021 for emissions from 2019 and 2020. Covered entities had to surrender allowances in 2023 for emissions from 2021 and 2022.

MRV

MONITORING: Covered entities are required to set up monitor plans and monitor their emission based on these plans.

REPORTING FREQUENCY: Covered entities must submit the previous year's emissions reports by the end of April each year.

VERIFICATION: Provincial-level ecological and environmental authorities are responsible for organizing the verification of GHG reports. They may commission technical service agencies to provide verification services. Verification of emissions from the power sector must be complete by the end of June. Verification of the cement, electrolytic aluminum and steel industries should be completed before the end of September each year. Verification of other key industries should be completed by before the end of the year.

FRAMEWORK: MRV guidelines, supplementary data sheets, verification guidelines, and other guidance are available for the eight sectors expected to be covered by the ETS. This MRV framework has evolved continuously since 2013 (see 'Sectors and Thresholds' section).

OTHER: The MEE amends the existing MRV guidelines and technical specifications for the national ETS every year.

ENFORCEMENT

According to the 2021 to 2022 allocation plan, compliance obligations are limited. Gas-fired plants only need to surrender allowances up to their level of free allocation as per the benchmarks. For coal-fired plants with free allowance less than 80% of their verified emissions will have their allocation adjusted upwards to 80% of their verified emissions. This means that 20% remains the maximum shortfall, similar to the first compliance period.

Covered entities that "undertake major tasks to safeguard people's livelihoods" that are unable to meet obligations can apply to borrow allowances from future compliance periods.

According to the Interim Regulation, fines for failing to submit a report would increase from CNY 10,000–30,000 (USD 1,411–4,234) to CNY 50,000–200,000 (USD 7,058–28,232), while fines for failing to comply would increase from CNY 20,000–30,000 (USD 2,822–4,234) to five to ten times the market value of and the missing allowances, based on the average price in the month before the compliance deadline. In serious cases, the gap would be deducted from the following year's allocation and the government may require the entity to stop business.

The regulation introduced the requirement to technical services organizations and market participants. If consultancies, third-party verifiers and testing labs participate in MRV data fraud, they will face penalties up to ten times of their illegal income, as well as disqualification in their business. Similar punishments also apply to market manipulation behaviors. Individuals involved in these cases would face penalties and disbarment.

MARKET REGULATION

MARKET DESIGN

MARKET PARTICIPATION: Compliance entities. The Interim Regulations indicate that other types of institutions or individuals may in the future also be allowed to participate in the market; however, there is no specific timeline for this.

MARKET TYPES:

Primary: Allowances are currently only distributed by free allocation. The Interim Regulations state the intention to introduce auctioning, though without a specific timeline.

Secondary: China Emission Allowances (CEA) can be traded on a dedicated trading platform managed by the Shanghai Environment and Energy Exchange. CEAs for the 2019 to 2020 period, CEAs for 2021, and CEAs for 2022 are categorized as three different products on the exchange, and have similar prices.

Due to financial market regulations, other products (i. e., derivatives) are currently not allowed.

LEGAL STATUS OF ALLOWANCES: Allowances are not considered financial instruments. For financial accounting purposes, the Ministry of Finance published an interim policy that categorizes only purchased allowances, and not those received for free, as assets in financial statements.

MARKET STABILITY PROVISIONS

In May 2021, the MEE announced the option of establishing a market-regulating and protection mechanism. This would enable the MEE to respond to abnormal fluctuations in trading prices, for instance through buy-back, auctioning, or adjusting the rules related to CCER use. The necessary triggers and specifics of this mechanism are yet to be defined.

OTHER INFORMATION

INSTITUTIONS INVOLVED

The China national ETS has a multi-level governance structure involving three levels of government:

Ministry of Ecology and Environment (MEE): Acts as the national competent authority setting the rules and overseeing the system, jointly with other national regulators.
Provincial-level MEE subsidiaries: Oversee the implementation of the ETS, including identifying covered entities, organizing MRV, hiring verifiers, calculating allowance, managing provincial registry account, oversee compliance.
Municipal-level authorities: Responsible for managing covered entities directly.
China Carbon Emissions Registration and Clearing Co., Ltd.: Responsible for operating the CEA registry and clearing platform.
Shanghai Environment and Energy Exchange: Operates the CEA trading platform.
National Center for Climate Change Strategy and International Cooperation (NCSC): Operates the CCER registry.
The Beijing Green Exchange: Responsible for operating the CCER trading and clearing platform.

EVALUATION/ETS REVIEW

An evaluation framework is currently under development.

REGULATORY FRAMEWORK

- → The National Measures for the Administration of Carbon Emission Trading (trial) (2021)
- → Allocation Plan for the Power Sector (2019–2020) and list of covered entities (2021) (English translation)
- → Guidelines for Enterprise Greenhouse Gas Verification (trial) (2021)
- → Notice on Strengthening the Management of Enterprise Greenhouse Gas Emissions Reporting (2021)
- → Allocation Plan for the Power Sector (2021–2022)
- → CCER regulation (2023)
- → Guidelines for GHG Monitoring and Reporting for various sectors (2013, 2014, and 2015)
- → Updated Guidelines for GHG Monitoring and Reporting for the power sector (2023)
- → Updated Guidelines for GHG Monitoring and Reporting for industrial sectors (2023)
- → Interim Regulations on the Administration of Carbon Emission Trading (2024)

CHONGQING

CHONGQING PILOT EMISSIONS TRADING SYSTEM

- The only Chinese pilot to cover non-CO_2 gases
- Auctioning introduced in 2021
- Absolute caps used in 2014 to 2020 but replaced with intensity-based caps in 2021

ETS DESCRIPTION

Chongqing launched its pilot ETS in June 2014. The ETS covered around 40% of the city's emissions in 2020. Among the eight Chinese pilots, the Chongqing ETS is the only one that covers non-CO_2 gases.

The Chongqing Pilot ETS covers 308 entities in the electrolytic aluminum, ferroalloys, calcium carbide, cement, caustic soda, iron and steel, and other industrial sectors. From 2014 to 2020, the Chongqing Pilot ETS operated with an absolute cap with an annual reduction rate applied to the base-year emissions level (i. e., the sum of each covered entity's highest annual emissions from 2008 to 2012). Until 2015[1], the annual reduction rate was 4.13% and thereafter 4.85%. Auctioning was introduced in 2021 to provide compliance entities with additional supply to meet their compliance demand. Covered entities must surrender allowances for all their covered emissions, and allocation is based on auctions or free allocation.

The Chongqing Ecology and Environment Bureau (EEB) revised the ETS management rules in 2022, including general management rules and specific rules for MRV, managing allowances, allocation, and the registry. Since the revision, there has been no absolute cap for the system. Output-based methods are now applied in several industrial sectors.

In the short term, the Chongqing Pilot ETS operates in parallel with the national Chinese carbon market. When the national ETS expands to new sectors, the covered entities in these sectors will be integrated into the national ETS from the regional markets.

YEAR IN REVIEW

In March, the Chongqing EEB published the "Management rules of Emissions Trading in Chongqing" to replace the 2014 "Interim Management Rules". This new set of rules changed the competent authority from the Chongqing Municipal Commission of Development and Reform to the Chongqing EEB and defined that the Chongqing EEB operates in parallel with the national ETS.

In September, the Chongqing EEB issued the "Management Rules of Allowances in Chongqing".

In November, the Chongqing EEB issued the "2021–2022 Allocation Plan for the Chongqing ETS". This announcement followed a public consultation process held in December 2022 on the draft version of the allocation plan. The published plan laid out a benchmarking method, historical intensity method, and grandparenting method for the Chongqing ETS for the first time. The plan also states that the compliance obligation is limited to 20% of the maximum shortfall of emissions and allows borrowing from 2023 pre-allocated allowance. These changes are in line with the national ETS.

In 2022, the Chongqing EEB issued for public consultation several draft documents, including management rules for the registry and verification agencies in Chongqing, as well as MRV guidelines for the ETS. These drafts are expected to be finalized in the near future.

1 Chongqing ETS launched in 2014, covering the emissions from 2013 in the first compliance period.

In force
Under development
Under consideration

SECTORS

INDUSTRY

CAP

78.39 $MtCO_2e$ (2020)

GREENHOUSE GASES

CO_2, CH_4, N_2O, HFCs, PFCs, SF_6

OFFSET CREDITS

Domestic (national and provincial)

ALLOCATION

Free Allocation: Grandparenting
Free Allocation: Benchmarking
Auctioning

AVERAGE 2023 PRICES

Average secondary market price: CNY 29.82 (USD 4.09)

TOTAL REVENUE

CNY 336 million (USD 47.43 million) since beginning of program

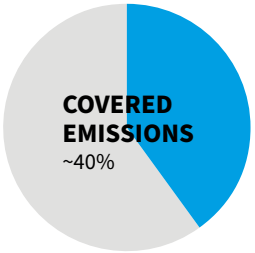
EMISSIONS & TARGETS OF CHONGQING

OVERALL GHG EMISSIONS (INCLUDING INDIRECT CO_2, EXCLUDING LULUCF)
188.1 $MtCO_2e$ (2020)[2]

GHG REDUCTION TARGETS

By 2030: Peak emissions (Chongqing Working Guidance for Carbon Dioxide Peaking and Carbon Neutrality in Full and Faithful Implementation of the New Development Philosophy)
By 2060: Climate neutrality (Chongqing Working Guidance for Carbon Dioxide Peaking and Carbon Neutrality in Full and Faithful Implementation of the New Development Philosophy)

ETS COVERAGE & PHASES



COVERED EMISSIONS

PHASES

2013 and ongoing

CAP OR TOTAL EMISSIONS LIMIT

Currently, the total emissions limit under the Chongqing Pilot ETS is the sum of the bottom-up output-based level for all individual covered entities. Previously, the system used absolute caps that declined annually at a pre-determined rate. The cap was set in 2013 at 125 $MtCO_2e$. Until 2015, the annual reduction rate of the cap was 4.13%. From 2016 onwards, it was revised to 4.85%. Caps for the following years were:
2018 and 2019: 97 $MtCO_2e$
2020: 78.4 $MtCO_2e$

The system of absolute caps was replaced by intensity-based caps in 2021.

SECTORS AND THRESHOLDS

Unlike most other Chinese pilots, Chongqing does not pre-define which sectors are covered under its ETS; rather, it sets a threshold which applies to all entities in the industrial sectors, including electrolytic aluminum, ferroalloys, calcium carbide, cement, caustic soda, and iron and steel, and other industrial sectors. Entities in these sectors with emissions above the threshold are covered by the ETS.

The power sector was covered until 2019, after which it transitioned to the national ETS.

INCLUSION THRESHOLDS:

Until 2020: 26,000 tCO_2 per year or energy consumption of 10,000 tonnes of coal equivalent (tce) per year.
From 2021 to 2022: In the allocation plan, Chongqing lowered the threshold to 13,000 tCO_2 per year or energy consumption of 5,000 tce per year.

POINT OF REGULATION

Point source (power and industry); downstream (indirect emissions from electricity and heat consumption).

TYPE OF ENTITIES

Companies

NUMBER OF ENTITIES

308 (2021 to 2022)

ALLOWANCE ALLOCATION & REVENUE

ALLOWANCE ALLOCATION

FREE ALLOCATION: From 2014 to 2020, Chongqing employed free allocation through grandparenting based on historical emissions: the highest number in the period spanning 2008 to 2012. Covered entities submitted their allowance allocation demand on a yearly basis, forming the basis of their free allocation. This value was adjusted if it exceeded the highest historical annual emissions (from 2008 to 2012) of the respective entities, by using the average of the two numbers. In addition, if the sum of the allocation for all the entities exceeded the top-down cap (see 'Cap or Total Emissions Limit' section), a reduction factor was applied to all the covered entities.

In the 2021 to 2022 allocation plan, the Chongqing EEB introduced both a historical intensity method and benchmark method for allocation. There are four methods in the plan. Benchmarks are now used in cement clinker and electrolytic aluminum production. The historical intensity is used for other procedures in the cement and aluminum sector. Grandparenting is used in all other sectors. For incineration waste power generation, shell gas production, new entrants, non-CO_2 emissions in all sectors, allocation will be the same as the emissions.

Chongqing used free allocation in 2021 and 2022. In 2023, in the absence of the final allocation plan, the government pre-allocated allowances to covered entities, which accounted for 70% of the region's emissions of 2022.

2 No data is publicly available for recent years. Data here is provided by local experts.

AUCTIONING: Auctioning was introduced in 2021. A small share of the annual cap could be auctioned. The main purpose of auctions is to provide compliance entities with additional supply to meet their compliance demand. To date, auctions have been held on an ad hoc basis. Three auctions have been held, in November and December 2021, and February 2022.

USE OF REVENUES

General budget, including debt reduction

Revenues are attributed to the city treasury.

FLEXIBILITY & LINKING

BANKING AND BORROWING

Banking is allowed. Borrowing was not allowed from 2014 to 2020. In the 2021 to 2022 allocation plan, borrowing was allowed. Companies with a shortfall of 10% or more could apply to borrow from a pre-allocated allocation for 2023, up to 50% of the shortfall.

OFFSET CREDITS

The use of offset credits is allowed. Since September 2021, a local carbon offset program has been also operationalized which generates Chongqing Certified Emission Reduction (CQCER) credits for both compliance and voluntary use.

QUANTITATIVE LIMITS: Domestic offset credits (CCERs) and CQCERs are allowed for up to 8% of an entity's compliance obligation. At least 80% of the credits used must be generated within Chongqing city. Credits generated in Chengdu city may be used to meet up to 10% of the compliance obligation.

QUALITATIVE LIMITS: Offset credits from hydropower projects are not allowed.

LINKS WITH OTHER SYSTEMS

In February 2022, the Chongqing city government and the Sichan provincial government released the "Joint Action Plan for Carbon Neutralization in the Twin Cities Economic Circle of Chengdu and Chongqing". It provides impetus for advancing the development of compliance carbon markets as well as offset projects in the two cities as well as enhancing their collaboration.

COMPLIANCE

COMPLIANCE MECHANISM

Covered entities must surrender one allowance per tCO_2e emitted for all their covered emissions, and allocation is based on auctions or free allocation.

COMPLIANCE PERIOD

One calendar year. The exact date for the covered entities to surrender allowances is set by the government on an annual basis and varies across years.

MRV

MONITORING: Covered entities are required to set up monitor plans and monitor their emission based on these plans.

REPORTING: Reporting of GHG emissions must be complete by the end of April for the previous year.

VERIFICATION: Third-party verification is required.

FRAMEWORK: The competent authority has published a guidance document for monitoring and reporting that includes methods for different emissions sources, including combustion, industrial processes, and electricity consumption.

ENFORCEMENT

There are no financial penalties for non-compliance. Non-financial penalties may include public reporting, and a record entered in the Chongqing City Enterprise environmental credit system.

According to the 2021 to 2022 allocation plan, compliance obligations are limited. Covered entities with free allowance that account for less than 80% of their verified emissions will have their allocation adjusted upwards to 80%, meaning a maximum 20% shortfall.

MARKET REGULATION

MARKET DESIGN

MARKET PARTICIPATION: Compliance and non-compliance entities and individuals that meet the requirements of the carbon emission trading rules.

MARKET TYPES:

Primary: Allowances thus far have largely been allocated for free, with auctioning introduced in 2021 without a fixed schedule.

Secondary: There is a spot market at Chongqing Carbon Emissions Trading Center for trading of allowances, CCERs and CQCERs. Due to the financial market-related regulations in China, no forward markets or derivatives are allowed yet.

LEGAL STATUS OF ALLOWANCES: Allowances are not considered financial instruments.

MARKET STABILITY PROVISIONS

5% of allowances from the total emissions limit may be set aside for market stability.

OTHER INFORMATION

INSTITUTIONS INVOLVED

Chongqing Ecology and Environment Bureau: Responsible for establishing the Chongqing ETS after governmental restructure in 2020.
Chongqing Carbon Emissions Trading Center: Responsible for operating the trading platform, which belongs to the **Chongqing Asset and Equity Exchange**.
Chongqing Resource and Environment Trading Center: Responsible for the registry.

EVALUATION/ETS REVIEW

No public information is available about the evaluation or review system. However, the Chongqing EEB has been revising the major managements rules since 2021.

REGULATORY FRAMEWORK

- Management rules of Emissions Trading in Chongqing (2023)
- Chongqing EEB Notice on Carrying out ETS Work for Compliance Year 2019
- Chongqing EEB Notice on Carrying out ETS Work for Compliance Year 2020
- Chongqing Working Guidance For Carbon Dioxide Peaking and Carbon Neutrality in Full and Faithful Implementation of the New Development Philosophy (2021)
- Chongqing Allowance Allocation Plan for 2021–2022 (2023)
- Management Rules of Allowance in Chongqing (2023)
- Management Rules of Registry in Chongqing (draft for comments) (2022)
- Measures for Management of Verification agency in Chongqing (draft for comments) (2022)
- MRV Guidelines for Chongqing ETS (draft for comments) (2022)

FUJIAN

FUJIAN EMISSIONS TRADING SYSTEM

- **Not one of the seven regional pilots originally assigned by NDRC**
- **Focus on carbon sinks and forestry in ETS, developing own provincial offset credits**
- **Broad sectoral coverage, with 100% compliance rate for seven consecutive years**

ETS DESCRIPTION

The province of Fujian launched its ETS in September 2016. It covers around half of the province's emissions and nearly 300 entities in nine sectors: electricity grid, petrochemicals, chemicals, building materials, iron and steel, nonferrous metals, paper, aviation, and ceramics. The ETS covered electricity generation until 2019, after which the sector was incorporated into the national ETS.

Covered entities must surrender allowances for all their covered emissions, and allocation is based predominantly on free allocation, using benchmarking or grandparenting based on production levels. Auctioning may take place when considered appropriate by the ETS authorities. The Fujian ETS pilot has a special focus on carbon sinks. In 2017, the Fujian government outlined a plan to promote forestry offset projects in the province. By the end of 2020, 2.8 million forestry offset credits had traded in the Fujian ETS.

Unlike other Chinese pilots, which were mandated by the National Development and Reform Commission (NDRC), the mandate for the Fujian ETS came from the State Council with the endorsement of the "National Ecological Civilization Pilot Area (Fujian) Implementation Plan". In the short term, it operates in parallel with the national carbon market. As the national ETS expands to new sectors, covered entities in these sectors will be integrated into the national ETS from the regional markets.

YEAR IN REVIEW

In January, the Fujian Provincial Ecology and Environment Bureau (EEB) announced that the ETS had achieved a 100% compliance rate for 2021 – for the seventh year running – with all 296 covered entities having submitted allowances as required on time.

In July, the EEB released the 2022 allocation plan, which introduced benchmarking as the allocation method for ordinary steel making.

SECTORS

INDUSTRY

DOMESTIC AVIATION

CAP

116.2 $MtCO_2$ (2022)

GREENHOUSE GASES

CO_2

OFFSET CREDITS

Domestic (national and provincial)

ALLOCATION

Free Allocation: Grandparenting
Free Allocation: Benchmarking
Auctioning

AVERAGE 2023 PRICES

Average secondary market price: CNY 23.25 (USD 3.28)

TOTAL REVENUE

CNY 1.25 million (USD 185,460) since beginning of program[1]

1 The Fujian ETS has held only one auction, in 2016, which provided 50,000 allowances at a floor price of CNY 25 (USD 3.53) per tonne. The exchange did not disclose the final volume and price. The calculation here assumes that all allowances were sold at the floor price.

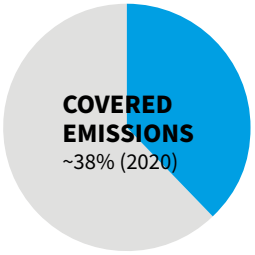
EMISSIONS & TARGETS OF FUJIAN

OVERALL GHG EMISSIONS (EXCLUDING LULUCF)
299.81 $MtCO_2$ (2021)[2]

GHG REDUCTION TARGETS
By 2030: Peak CO_2 emissions (Carbon Working Guidance)
By 2060: Achieve carbon neutrality (Carbon Working Guidance)

ETS COVERAGE & PHASES

COVERED EMISSIONS



PHASES
2016-ongoing

CAP OR TOTAL EMISSIONS LIMIT
A cap limits the total emissions allowed in the system.
The cap in recent years has been as follows:
2016 to 2018: ~200 $MtCO_2$
2019: ~220 $MtCO_2$[3]
2020: ~126 $MtCO_2$
2021: 131.72 $MtCO_2$
2022: 116.22 $MtCO_2$

The cap comprises three elements: existing entities' allowances, the new entrants' reserve, and the market stability reserve.

SECTORS AND THRESHOLDS
Electricity grid, petrochemical, chemical, building materials, iron and steel, nonferrous metals, paper, aviation, and ceramics. Electricity production was covered until 2019, after which it transitioned to the Chinese national ETS.

INCLUSION THRESHOLDS:
2016 to 2019: Energy consumption of 10,000 tonnes of coal equivalent (tce) per year, for any year between 2013 and 2019.

2020 to 2021: Emitters with energy consumption of 5,000 tce or more in any year from 2013 to 2020 were also included.

2022: Emitters with energy consumption of 5,000 tce or more in any year from 2019 to 2022 were also included.

POINT OF REGULATION
Point source (industry); downstream (indirect emissions from electricity and heat consumption).

TYPE OF ENTITIES
Companies

NUMBER OF ENTITIES
293 (2022)

ALLOWANCE ALLOCATION & REVENUE

ALLOWANCE ALLOCATION
Allowances are distributed for free, using benchmarking or grandparenting. A pre-allocation method is adopted for the annual allowance allocation. Allocation is then adjusted ex-post to reflect the actual production in the respective compliance year.

FREE ALLOCATION:
Benchmarking: Benchmarking is applied to the grid, cement, ordinary steel, aluminum, plate glass, chemical and aviation sectors.

Grandparenting: The remaining sectors are allocated allowances based on historical carbon intensity. These entities can also apply for more allowances as a reward for early mitigation action.

AUCTIONING: Auctioning may take place when considered appropriate by the ETS authorities (see 'Market Stability Provisions' section) and may be introduced as a method for allowance allocation over time. Up to 10% of the total cap is reserved for market intervention.

In order to increase market liquidity and price discovery, the Fujian DRC organized a discriminatory (non-uniform price) auction of 50,000 allowances in 2016 from the government reserve, with the settlement prices ranging from CNY 26.50 (USD 3.74) to CNY 30 (USD 4.23). No further auctions have taken place to date.

USE OF REVENUES

General budget, including debt reduction

Revenues are attributed to the central treasury.

2 No data is publicly available for more recent years. Data here is provided by local experts. Previously reported data is based on public sources from the launch year of the ETS in 2014, or 240.0 $MtCO_2$.
3 There is no public data on the total cap or its elements. This number is based on an estimate by experts. The cap for 2019 was estimated to cover 87% of carbon emissions.

FLEXIBILITY & LINKING

BANKING AND BORROWING

Banking is allowed.

Borrowing is not allowed.

OFFSET CREDITS

The use of domestic project-based carbon offset credits (CCERs) and Fujian Forestry Certified Emission Reduction credits (FFCERs) is allowed.

QUANTITATIVE LIMITS: The use of CCERs is limited to 5% of the annual compliance obligation. The limit is increased to 10% for companies that use both FFCER and CCER offset credits.

QUALITATIVE LIMITS: Eligible offset credits are restricted to those generated in Fujian province from entities not regulated under the ETS, and from CO_2 or CH_4 reduction projects. Hydropower-related offset credits are not eligible. FFCER projects from three project types (afforestation, forest management, and bamboo management) are eligible if implementation took place after mid-February 2005 and if the project developers have independent legal personality.

LINKS WITH OTHER SYSTEMS

The Fujian ETS is not linked with any other system.

COMPLIANCE

COMPLIANCE MECHANISM

Covered entities must surrender one allowance per tCO_2e emitted for all their covered emissions, and allocation is based on auctions or free allocation.

COMPLIANCE PERIOD

One calendar year. Covered entities have until the end of June of the following year to surrender allowances.[4]

MRV

MONITORING: Covered entities are required to set up monitor plans and monitor their emission based on these plans.

REPORTING: Annual reporting of CO_2 emissions to the competent authority before the end of February of the following year.

VERIFICATION: Third-party verification is required for all annual emissions reports. In addition, further validation is carried out by government-assigned experts for ~30% of the reports to further enhance accuracy; this process is also called "fourth-party verification" in China.

FRAMEWORK: The Fujian DRC and the Fujian Statistical Bureau jointly released a guiding document on monitoring and reporting that includes a monitoring plan template, using national measuring and reporting guidelines. In addition, the Fujian DRC and the Fujian Quality and Technical Supervision Bureau jointly released criteria for the administration of third-party verifiers.

ENFORCEMENT

According to the 2022 allocation plan, compliance obligations are limited. For sectors using the benchmarking method, the surplus or shortfall was limited to 20% of their verified emissions. For sectors using historical intensity methods, the surplus or shortfall is limited to 3–10% of verified emissions. On top of this limitation, the maximum amount of surplus or shortfall is 200,000 tonnes.

REGULATED ENTITIES: Penalties for failing to submit an emission or verification report on time, providing false information, or disturbing the verification process range from CNY 10,000 (USD 1,412) to CNY 30,000 (USD 4,235). Companies failing to surrender enough allowances to match their emissions are fined between one to three times the average market price of the past 12 months per allowance, with a maximum limit of CNY 30,000 (USD 4,235). Additionally, twice the amount of the missing allowances can be withdrawn from the account of the company or deducted from the following year's allocation.

TRADING INSTITUTIONS: Penalties for the misconduct of trading entities, such as not publishing relevant trading information, failing to establish and implement a risk management system or leaking commercial secrets, can range from CNY 10,000 (USD 1,411) to CNY 30,000 (USD 4,235).

THIRD-PARTY VERIFIERS: Penalties for misconduct, such as publishing false reports, reporting with errors, leaking commercial secrets, or participating in the market, can range from CNY 10,000 (USD 1,411) to CNY 30,000 (USD 4,235).

In addition, in 2018, the Fujian DRC released guidelines concerning ETS credit information management, providing further details on recording and misbehaviors and corresponding incentives and penalties. Incentives for ETS compliance include priority lending, priority approval for project administration, and reduced frequency of inspections. Punishments for non-compliance include restrictions on approval of new projects, increased frequency of inspections, and a record in the bank credit system.

4 This is according to the "Interim Measures of the Fujian ETS". In practice, the provincial government releases executive notices to guide the timeline of the annual compliance circle.

MARKET REGULATION

MARKET DESIGN

MARKET PARTICIPATION: Compliance entities and institutional investors (domestic only) that meet the requirements of the emissions trading rules set up by Fujian EEB.

MARKET TYPES:

Primary: While most allowances are allocated for free, the Fujian Haixia Equity Exchange organizes ad hoc auctions for the primary market. So far, only one auction has been held.

Secondary: Spot trading of Fujian Emission Allowances (FJEA), CCERs and FFCERs takes place on the Fujian Haixia Equity Exchange.

LEGAL STATUS OF ALLOWANCES: Allowances are not considered financial instruments.

MARKET STABILITY PROVISIONS

RESERVE: 5% of the total cap is kept as a government reserve for market stabilization.

TRIGGER: According to the (trial) "Implementation Rules of Emissions Trading Market Management in Fujian Province", the Fujian Economic and Information Center under the guidance of the competent authority – in consultation with an advisory committee – can buy or sell allowances to stabilize the market under certain conditions. These conditions include: market fluctuations (i.e., if the cumulative increase or decrease of allowance prices for ten consecutive trading days reaches a certain percentage); severe imbalances between supply and demand; or liquidity issues. More specifically, high prices may trigger allowance auctions from government reserves through the Haixia Equity Exchange. Low prices may trigger authorities to buy allowances from the market through governmental funds.

OTHER INFORMATION

INSTITUTIONS INVOLVED

Fujian Provincial Ecology and Environment Bureau: Responsible for establishing the Fujian ETS after governmental restructure in 2019.

Fujian Haixia Equity Exchange: Responsible for operating the trading platform.

Fujian Economic and Information Center: Responsible for operating the registry, market management, and MRV administration.

EVALUATION/ETS REVIEW

Research on improving the Fujian ETS has been undertaken every year, funded by the local government.

REGULATORY FRAMEWORK

- → 2020 Amendments to the Interim Measures
- → Fujian Provincial Ecology and Environment Bureau – Allocation Plan for 2018 and 2019
- → Fujian Provincial Ecology and Environment Bureau – Allocation Plan for 2020
- → Fujian Provincial Ecology and Environment Bureau – Allocation Plan for 2021
- → Fujian Provincial Ecology and Environment Bureau – Allocation Plan for 2022

GUANGDONG

GUANGDONG PILOT EMISSIONS TRADING SYSTEM

- **Largest Chinese regional market with ongoing scope expansion and highest spot trading volume among pilots**
- **Diverse market participants, including foreign investors**
- **First pilot to introduce auctioning as well as Tan Pu Hui Offset Mechanism for compliance[1]**

ETS DESCRIPTION

The Guangdong ETS was launched in December 2013. It covers around 40% of the province's emissions. With broad sectoral coverage, the Guangdong ETS is the largest of the Chinese ETS pilots in terms of market size and spot trading volume. Covered entities must surrender allowances for all their covered emissions, and allocation is based on auctions or free allocation.

The Guangdong ETS covers emissions from 200 entities in the cement, steel, petrochemicals, paper, and domestic aviation sectors. Since its launch, its scope has expanded to include ceramics, textiles, and data centers. The ETS has an absolute cap that is announced annually. Allowances are primarily allocated for free, although ad hoc auctions have been held since 2017. In recent years, the Guangdong ETS has introduced new measures to enhance market liquidity and is one of the regional pioneers for allowance forward trading in China.[2]

The Guangdong ETS was the fourth largest ETS in the world before the power sector was transferred to the Chinese national ETS in 2020. As the national ETS expands to new sectors, covered entities in these sectors will be integrated into the national ETS from the regional markets.

YEAR IN REVIEW

In August, the Ecology and Environment Bureau (EEB) of Guangdong Province released the "Implementation Plan of Guangdong Emissions Trading to Support Peaking Carbon Emissions and Achieving Carbon Neutrality (2023–2030)". The plan lays out intentions to further expand the province's ETS coverage. By 2025, the Guangdong ETS and China national ETS will together cover 70% of emissions in Guangdong; this will increase to 75% by 2030. Guangdong also aims to improve the overall carbon trading ecosystem through offsetting, linking, and increased investment from outside mainland China.

In September, the Guangdong EEB announced that all 200 covered entities fulfilled their compliance obligations in 2022.

In October, the Guangdong EEB released the draft allocation plan for ceramics, ports, and data centers for public consultation. According to the draft, 222 new entities from these three sectors are covered from 2023. The Guangdong ETS will also cover airports and textile companies above the threshold, though on a voluntary basis. Benchmarking will be the method of allocation for data centers, while historical intensity methods will be applied to ceramics, ports, and airports. Grandparenting will be applied to the textile sector. Covered entities will receive 96–100% of allowances for free, while new entrants will receive 6%. In January 2024, the Guangdong EEB published the final plan after public consultation.

1 A local voluntary offset scheme with credits generated via mitigation projects or low-carbon activities.
2 China is still in the exploratory and research stage of carbon futures trading; according to the "Administrative Regulations on Futures Trading" document, futures can only be traded on approved professional futures exchanges. Regional ETS pilots thus cannot introduce futures trading; however, a few have developed their own unique carbon forward trading products.

In force
Under development
Under consideration

SECTORS

INDUSTRY

DOMESTIC AVIATION

CAP

297 $MtCO_2$ (2023)

GREENHOUSE GASES

CO_2

OFFSET CREDITS

Domestic (national and provincial)

ALLOCATION

Free Allocation: Grandparenting
Free Allocation: Benchmarking
Auctioning

AVERAGE 2023 PRICES

Average secondary market price: CNY 75.01 (USD 10.58)

TOTAL REVENUE

CNY 815.5 million (USD 115.1 million) since the beginning of the program

EMISSIONS & TARGETS OF GUANGDONG

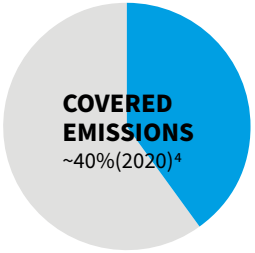
OVERALL GHG EMISSIONS (EXCLUDING LULUCF)

693.5 $MtCO_2$[3] (2020)

GHG REDUCTION TARGETS

By 2025: 20.5% reduction in CO_2 intensity compared to 2020 levels (in line with central government requirement) (Guangdong Province 14th Five-Year-Plan for Tacking Climate Change)
By 2030: Peak carbon emissions (Guangdong Province Implementation Opinions on Implementing the New Development Concept and Promoting Carbon Neutrality)
By 2060: Climate neutrality (Guangdong Province Implementation Opinions on Implementing the New Development Concept and Promoting Carbon Neutrality)

ETS COVERAGE & PHASES



COVERED EMISSIONS

PHASES

PHASE ONE: Three years (2013 to 2015)
PHASE TWO: Five years (2016 to 2020)
PHASE THREE: Ongoing (2021 to present)

CAP OR TOTAL EMISSIONS LIMIT

A cap limits the total emissions allowed in the system. Guangdong is one of few pilots in China that announces its annual emissions cap. Within the annual cap, the government also keeps a certain amount as a reserve for new entrants and market stability (see 'Market Stability Provisions' section).

PHASE ONE:
2013: 388 $MtCO_2$ (including 38 $MtCO_2$ reserves)
2014: 370 $MtCO_2$ (including 38 $MtCO_2$ reserves)
2015: 408 $MtCO_2$ (including 38 $MtCO_2$ reserves)

PHASE TWO:
2016: 386 $MtCO_2$ (including 21 $MtCO_2$ reserves)
2017: 422 $MtCO_2$ (including 23 $MtCO_2$ reserves)
2018: 422 $MtCO_2$ (including 23 $MtCO_2$ reserves)
2019: 465 $MtCO_2$ (including 27 $MtCO_2$ reserves)
2020: 465 $MtCO_2$ (including 27 $MtCO_2$ reserves)

PHASE THREE:
2021: 265 $MtCO_2$ (including 13 $MtCO_2$ reserves)[5]
2022: 266 $MtCO_2$ (including 13 $MtCO_2$ reserves)
2023: 297 $MtCO_2$ (including 14 $MtCO_2$ reserves)

SECTORS AND THRESHOLDS

PHASE ONE:
Power, iron and steel, cement, and petrochemicals

PHASE TWO:
2016: Power, iron and steel, cement, aviation, and petrochemicals
2017 to 2020: As above, plus papermaking

PHASE THREE:
2021: Iron and steel, cement, papermaking, aviation, and petrochemicals
2022: As above, plus ceramics, textiles, and data centers
2023: As above, plus ceramics (building and hygiene) and transportation (ports)

INCLUSION THRESHOLDS:
2013 to 2021: 20,000 tCO_2 per year or energy consumption of 10,000 tce per year
2022 onwards: 10,000 tCO_2 per year or energy consumption of 5,000 tce per year

POINT OF REGULATION

Point source (industry); downstream (indirect emissions from electricity and heat consumption).

TYPE OF ENTITIES

Companies

NUMBER OF ENTITIES

391 existing entities, 26 new entrants (2023)

3 No data is publicly available for recent years. Data here is provided by local experts.
4 No data is publicly available for more recent years. Data here is estimated by local experts. For 2020, when power generation entities were still covered by Guangdong ETS, the coverage was estimated to be 65%.
5 The drop from 2020 is largely due to the transfer of the power sector into the China national ETS.

ALLOWANCE ALLOCATION & REVENUE

ALLOWANCE ALLOCATION

FREE ALLOCATION: Allowances are distributed primarily via free allocation through grandparenting based on historical emissions or emissions intensity, or benchmarking.

Benchmarking: Benchmarking is applied to industrial processes in the aviation, cement, paper, steel sectors, and data centers.

Grandparenting: Grandparenting on the basis of total historical emissions is applied to some processes in the cement and steel industries, the whole petrochemicals industry and textile industry. Grandparenting on the basis of historical emissions intensity is also applied to some products in the cement industry, captive power plants in the steel industry, special paper and paper product manufacturers, enterprises with pulp manufacturing, other aviation enterprises, ceramic industry (building and hygiene) and ports.

Ex-post adjustments based on real production data of the respective compliance year are also applied for those sectors that use benchmarks and emissions intensity methods.

PHASE ONE:
2013 and 2014: 97% free allocation for all sectors
2015: 95% free allocation for the power sector, 97% free allocation for other sectors

PHASE TWO:
2016 to 2019: 95% free allocation for the power sector, 97% for other sectors
2020: 95% free allocation for the power sector, 100% for aviation, 97% free allocation for other sectors

PHASE THREE:
100% free allocation for aviation, 97% Ceramic, port, data center and textile, 96% for other sectors, 6% for new entrants (since 2023);

AUCTIONING:
Guangdong auctions a small share of allowances. In the first compliance year, entities were required to purchase allowances at auction to be eligible to receive their freely allocated allowances. This requirement was terminated in 2014.

Quarterly auctions were held until 2016; since 2017, they have been held on an ad hoc basis. Auctions are also subject to a reserve price (see 'Market Stability Provisions' section). No auctions took place in 2018, 2019, 2021, 2022 or 2023.

The allowance volume available for auction was adjusted from two million allowances (until 2018) to five million for 2019. The last auction took place in April 2020 for the 2019 compliance year, with a floor price of CNY 25.84 (USD 3.65). Only 400,000 allowances were sold at CNY 28.20 (USD 3.98).

USE OF REVENUES

Revenues are attributed to the provincial treasury.

FLEXIBILITY & LINKING

BANKING AND BORROWING

Banking is allowed.

Borrowing is not allowed.

OFFSET CREDITS

The use of offset credits, namely Chinese Certified Emissions Reductions (CCERs) and Tan Pu Hui Certified Emission Reductions (PHCER) stemming from a local offset program introduced in 2017, is allowed.

QUANTITATIVE LIMITS: The use of offset credits is limited to 10% of covered entities' annual emissions. In addition to the quantitative limit applied to individual entities, Guangdong sets an upper limit on the total volume of offset credits allowed. In 2020, entities could use up to 1.5 million offset credits towards compliance obligations, with priority given to CCERs and PHCERs from projects within Guangdong. In 2021 and 2022, entities could use up to one million offset credits for compliance.

QUALITATIVE LIMIT: At least 70% of offset credits used by each covered entity must come from within Guangdong province. Pre-CDM credits are not eligible. Offset credits from hydropower and from most fossil fuel projects are also not eligible. Offset credits generated in other Chinese ETS pilot regions are not eligible. To be eligible, projects must relate primarily (i.e., more than 50%) to the reduction of CO_2 and CH_4 emissions.

OFFSET CREDIT AUCTIONS: Guangdong employs auctioning for PHCERs in addition to the existing secondary market trading, with an auction reserve price set by the local exchange and offset project developers. In 2021, six PHCER auctions were held. No auctions were held in 2022. In 2023, four PHCER auctions were held.

LINKS WITH OTHER SYSTEMS

Guangdong plans to explore the feasibility of the construction of a joint or linked carbon market within the Guangdong-Hong Kong-Macao Greater Bay Area. Details of such a plan are not yet available.

Guangdong and Hubei explored linking their pilot markets in 2012/2013, but this did not materialize.

COMPLIANCE

COMPLIANCE MECHANISM

Covered entities must surrender one allowance per tCO_2e emitted for all their covered emissions.

COMPLIANCE PERIOD

One calendar year. Covered entities have until June or August of the following year to surrender allowances.

MRV

MONITORING: Covered entities are required to set up monitor plans and monitor their emission based on these plans.

REPORTING: Annual

VERIFICATION: Third-party verification is required. In addition, further verification was initially carried out by government-assigned expert groups in the first three compliance years. Onsite cross re-verification was conducted for entities with questionable verification reports, as well as for randomly selected entities.

A "fourth-party independent evaluation system" has been in place since the 2016 compliance period. "Technical evaluation organizations" selected by the government carry out technical review and evaluation of annual emissions and verification reports and undertake further onsite review and random inspection tasks. These organizations do not undertake regular third-party verification tasks. The government also conducts random checks on emissions reports.

FRAMEWORK: The Guangdong EEB revised reporting and verification guidelines for the compliance entities and third-agency verification sectors in 2022.

OTHER: Industrial enterprises with annual emissions of 5,000–10,000 tCO_2 are required to report their emissions. Verification is not required.

ENFORCEMENT

ENTITIES: Penalties for failing to submit emissions or verification reports on time range from CNY 10,000 (USD 1,411) to CNY 50,000 (USD 7,058). Companies failing to surrender sufficient allowances are deducted twice the number of allowances from the following year's allocation and fined CNY 50,000 (USD 7,058). Other non-financial penalties include negative impacts on access to bank loans and subsidy programs.

TRADING INSTITUTIONS: Penalties for failing to publish transaction information or failing to establish and implement a risk management system range from CNY 10,000 (USD 1,411) to CNY 50,000 (USD 7,058).

THIRD-PARTY VERIFIERS: Third-party agencies are fined between CNY 30,000 (USD 4,235) and CNY 50,000 (USD 7,058) for issuing false verification reports, material errors in verification reports, or for unauthorized use or publication of confidential corporate and emissions information.

MARKET REGULATION

MARKET DESIGN

MARKET PARTICIPATION: Compliance entities; domestic and international institutional investors that meet the requirement of the carbon emission trading rules set by China Emissions Exchange (CEEX).

MARKET TYPES:

Primary: As the first Chinese region to introduce auctioning as a method for allowance allocation, Guangdong held quarterly auctions until 2016. Since 2017, auctions have been held on an ad hoc basis. The CEEX organizes auctions for the primary market.

Secondary: The Guangdong Emission Allowance is the main spot trading product in the secondary market. Bidding transfer was introduced in 2020 to organize auctions for covered entities to enhance market efficiency for the secondary market. CCERs and PHCERs are also traded in the secondary market. All products are traded on the CEEX.

Due to the financial market regulations in China, no standardized forward markets or derivatives are allowed. However, with the April 2021 establishment of the Guangzhou Futures Exchange, Guangdong is seeing new momentum to study and explore the launch of carbon futures and other innovative financial products.

LEGAL STATUS OF ALLOWANCES: Allowances are not considered financial instruments.

MARKET STABILITY PROVISIONS

RESERVES: 5% of allowances are set aside as government reserves for new entrants and market stability. The specific rules for market stability are provided by the "Trial Measures for ETS".[6]

AUCTION RESERVE PRICE: Auctions under the Guangdong Pilot ETS are subject to an auction reserve price.

In 2015, a "policy reserve price" was set as an effective reserve price, which links the auction reserve price with the secondary market price. In 2016, the policy reserve price was set at 100% of the weighted average price for allowances over the previous three months. When auctions resumed in April 2020 for the compliance year 2019, the policy reserve price was set at 90% of the weighted average price for allowances over the previous three months, considering the impact of the COVID-19 pandemic. No auctions were held in 2021, 2022 and 2023.

OTHER INFORMATION

INSTITUTIONS INVOLVED

Guangdong EEB Province (EEB): Responsible for ETS affairs, including MRV.
China Emissions Exchange Guangzhou (CEEX): Responsible for operating the trading platform.
Guangdong Research Center for Climate Change: Responsible for administrating the registry.

EVALUATION/ETS REVIEW

No public information about the evaluation or review system is available. However, the Guangdong Research Center for Climate Change has published a biannual/annual report on the Guangdong ETS with an overview of its performance from 2013 to 2023. In addition, research on improving MRV and allowance allocation has been undertaken, funded by the local government.

REGULATORY FRAMEWORK

- → Guangdong Pilot ETS Implementation Plan (2012)
- → Implementation Plan of Guangdong Emissions Trading to Support Peaking Carbon Emissions and Achieving Carbon Neutrality (2023–2030).
- → Trial Measures for Carbon Emissions Trading in Guangdong (2014)
- → Guangdong EEB – Allocation Plan for 2019
- → Guangdong EEB – Allocation Plan for 2020
- → Guangdong EEB – Allocation Plan for 2021
- → Guangdong EEB – Allocation Plan for 2022
- → Guangdong EEB – Regulations of PHCER trading management
- → Guangdong EEB – Allocation Plan for 2023

6 This auctioning ratio may be adjusted in the future, but no concrete plan is yet available.

HUBEI

HUBEI PILOT EMISSIONS TRADING SYSTEM

- One of the largest pilot markets in China, with diversified participants and an established market stability mechanism
- Leads the operation of the national ETS registry
- Sets a threshold which applies to all industrial sectors

ETS DESCRIPTION

The Hubei Pilot ETS was launched in April 2014 and covers around 50% of the province's emissions. Covered entities must surrender allowances for all their covered emissions, and allocation is based on auctions or free allocation.

Hubei's system covers more than 300 entities in a broad range of industrial sub-sectors. Unlike the other Chinese pilots, Hubei does not pre-define which sectors are covered under its ETS; rather, it sets a threshold which applies to all industrial sectors. Allowances have primarily been freely allocated, through both grandparenting and benchmarking, although several ad hoc auctions have been held since 2014.

Hubei has been one of the most active regional markets in China in terms of trading and has the second largest market in terms of spot trading volume, after Guangdong. It is also one of the regional pioneers for allowance forward trading in China. Hubei has also played an important role in the national ETS: in 2017, it was selected to lead the development of the registry for the national ETS, which the China Hubei Emission Exchange has operated since the national ETS began. In 2022, Hubei established the China Carbon Emissions Registration and Clearing Co., Ltd. in Wuhan to manage the registry and clearing system for the national ETS.

The Hubei ETS operates in parallel with the Chinese national carbon market. As the national ETS expands to new sectors, covered entities in these sectors will be integrated into the national ETS from the regional markets.

YEAR IN REVIEW

In March, the Hubei provincial Ecology and Environment Bureau (EEB) released a draft of the "Interim Management Rules for Emissions Management and Trading". This draft would switch the competent authority from the Hubei Provincial Development and Reform Commission to the Hubei EEB. It would also lower the threshold of the covered entities and clarifies the regulation rules on market monitoring.

In November, the Hubei EEB released the 2022 allocation plan, which applies similar allocation methods as the 2021 plan.

In December, the Hubei EEB auctioned 1,104,317 allowances for a total of CNY 46.59 million (USD 6.58 million).

In force
Under development
Under consideration

SECTORS

INDUSTRY

CAP

180 $MtCO_2$ (2022)

GREENHOUSE GASES

CO_2

OFFSET CREDITS

Domestic (national and provincial)

ALLOCATION

Free Allocation: Grandparenting
Free Allocation: Benchmarking
Auctioning

AVERAGE 2023 PRICES

Average auction price: CNY 42.73 (USD 6.03)
Average secondary market price: CNY 38.78 (USD 5.47)

TOTAL REVENUE

CNY 432.75 million (USD 61.09 million) since the beginning of the program
CNY 46.59 million (USD 6.58 million) in 2023

EMISSIONS & TARGETS OF HUBEI

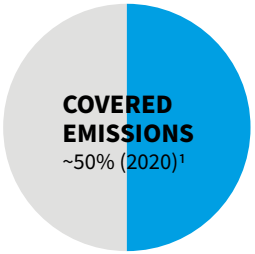
OVERALL GHG EMISSIONS (EXCLUDING LULUCF)

350.5 $MtCO_2$ (2020)

GHG REDUCTION TARGETS

By 2030: Peak carbon emissions (Hubei Province Implementation Opinions on Implementing the New Development Concept and Promoting Carbon Neutrality)
By 2060: Climate neutrality (Hubei Province Implementation Opinions on Implementing the New Development Concept and Promoting Carbon Neutrality)

ETS COVERAGE & PHASES



COVERED EMISSIONS

PHASES

2014 and ongoing

CAP OR TOTAL EMISSIONS LIMIT

A cap limits the total emissions allowed in the system. Inclusive of reserves, the cap for past years were as follows:
2014: 324 $MtCO_2$
2015: 281 $MtCO_2$
2016: 253 $MtCO_2$
2017: 257 $MtCO_2$
2018: 256 $MtCO_2$
2019: 270 $MtCO_2$
2020: 166 $MtCO_2$[2]
2021: 182 $MtCO_2$
2022: 180 $MtCO_2$

SECTORS AND THRESHOLDS

Unlike other Chinese pilots, Hubei does not pre-define which sectors are covered under its ETS; rather, it sets a threshold which applies to all industrial sectors. Sub-sectors with entities above the threshold are then covered.

Those currently covered include heat supply, iron and steel, nonferrous metals, petrochemicals, chemicals, textiles, cement, glass and other building materials, pulp and paper, ceramics, automobile manufacturing, equipment manufacturing, food and beverages, medicine producers, and water supply. Until 2019, power generation was also covered, after which it was integrated into the national ETS.

INCLUSION THRESHOLDS:
Until 2015: Annual energy consumption of more than 60,000 tonnes of coal equivalent (tce) in any year between 2010 and 2011, applying to all energy and industrial sectors.
2016 to 2019: Annual energy consumption of more than 10,000 tce in any of the most recent two years, applying to all energy and industrial sectors.
2020 onwards: Annual energy consumption of more than 10,000 tce in any of the most recent two years, applying to all industrial sectors.

In the draft interim management rules published in 2023, the threshold is lowered to entities that consume more than 5,000 tce per year.

POINT OF REGULATION

Point source (industry); downstream (indirect emissions from electricity and heat consumption).

TYPE OF ENTITIES

Companies

NUMBER OF ENTITIES

343 (2022)

ALLOWANCE ALLOCATION & REVENUE

ALLOWANCE ALLOCATION

Allowances are distributed for free, using benchmarking or grandparenting. A pre-allocation method is adopted for the annual allowance allocation for sectors using benchmarking or historical intensity methods. Allocation is then adjusted ex-post to reflect the actual production in the respective compliance year.

FREE ALLOCATION:
Benchmarking: Benchmarking is used for the cement sector (except for entities using outsourced clinker).

Grandparenting: Historical emissions intensity is used for heat production and supply, pulp and paper, glass and other building materials, water supply, textile, and automobile and equipment manufacturing. Grandparenting is based on the previous three years' historical emissions for all other sectors.
Ex-post allocation adjustments are applied, especially for those sectors that use benchmarks and

1 No data is publicly available for recent years. Data here is provided by local experts.
2 This decrease is mainly due to the transfer of the power sector into the national ETS.

emissions intensity. In this case, entities first receive half of their total allowances based on the previous year's actual emissions or historical emissions baseline; actual production data are then used to update allocation ex-post.

Hubei also uses a "market adjustment factor", which is applied to all covered entities to reduce overall allocation. This is determined based on the previous year's supply-demand balance, while taking the province's overall economic development and the achievement of its climate mitigation targets and strategies into consideration. For the 2022 compliance year, it was set at 0.9836 (as compared to 0.99 for the previous year).

AUCTIONING:
A small share of the annual cap can be auctioned. The main purpose of auctions is to promote price discovery and provide regulated entities with additional supply to meet their compliance demand. To date, auctions have been held on an ad hoc basis and took place in 2014, 2019, 2020, 2021, 2022, and 2023. Recent years have seen two auctions per year, with a first auction for covered entities only and the second open to all participants. The reserve price of the auctions is the weighted average spot market price of the previous two years. Allowances have sold at the reserve price or slightly above.

USE OF REVENUES

General budget, including debt reduction

Revenues are attributed to the central treasury.

FLEXIBILITY & LINKING

BANKING AND BORROWING
Banking is allowed, but only for allowances that have been traded at least once.

Borrowing is not allowed.

OFFSET CREDITS
The use of offset credits (CCERs) and green electricity certificates is allowed. The green electricity certificates are the proofs of the environmental attributes of China's renewable energy power, which can be commercially transferred between power producers and consumers.
The Hubei EEB allows covered entities in Wuhan city to use Wuhan city credits to encourage the development of a city-level low carbon incentive program.

QUANTITATIVE LIMITS: The use of CCERs is limited to 10% of the annual initial allocation for each entity.

Only covered entities with shortfall can use green electricity certificates and city-level credits to offset their emissions. This is limited to 10% of the annual initial allocation for each entity.

The use of Wuhan city credits is limited to 10% of the annual initial allocation for each entity.

QUALITATIVE LIMITS: Generally, CCERs must be generated within the administrative areas of the province, but outside the covered entities of the Hubei ETS. According to the latest rules on offset credit use, published for 2018 compliance, CCERs must come from rural biogas or forestry projects in the key counties under the national or provincial poverty alleviation plan in areas of the middle reaches of the Yangtze River (within Hubei). CCERs must have been generated between 2013 and 2015, with reductions achieved between these dates.

Green electricity certificates must be certified both by the China Hubei Emission Exchange and the Hubei Electricity Exchange.

LINKS WITH OTHER SYSTEMS
Though Hubei explored linking with the Guangdong ETS pilot in 2012/2013, this did not materialize and there are no further plans for linking.

COMPLIANCE

COMPLIANCE MECHANISM
Covered entities must surrender one allowance per tCO_2e emitted for all their covered emissions.

COMPLIANCE PERIOD
One calendar year; covered entities have until the last working day of May of the following year to surrender allowances. In practice, in most compliance years the exact date for the covered entities to surrender allowances is set by the government on an annual basis and varies across years.

MRV
MONITORING: Covered entities are required to set up and implement plans to monitor their emissions.

REPORTING: Annual

VERIFICATION: Third-party verification is required. Third-party verifiers may be involved in mutual evaluation of each other's verification reports. In addition, "fourth-party verification" is carried out by government-assigned experts to further enhance accuracy.

FRAMEWORK: The Hubei government has released general rules on monitoring and reporting guiding for all sectors as well as sector-specific guidance for the following 11 sectors: power, glass, aluminum, calcium carbide, pulp and paper, automobile manufacturing, iron and steel, ferroalloys, ammonia, cement, and petroleum processing. Hubei also refers to national guidelines on MRV, especially for the sectors outside these 11.

ENFORCEMENT

COVERED ENTITIES: Hubei uses a capping mechanism for compliance obligations. If the difference between an entity's annual verified emissions and the allocation exceeds either 20% of the allocation or 200,000 tonnes (above or below the allocation), allowances will be accordingly added to or deducted from the cap to balance out the surplus or deficit.

Penalties for failing to submit an emissions or verification report on time range from CNY 10,000 (USD 1,411) to CNY 30,000 (USD 4,235). Trade participants who manipulate the market face up to CNY 150,000 (USD 21,174) in fines. Furthermore, companies that fail to surrender enough allowances to match their emissions will have double that amount deducted from the following year's allocation and are fined one to three times the average market price for every allowance, up to CNY 150,000 (USD 21,174).

Other non-financial penalties include disqualification from the national or provincial energy-saving program and blacklisting for carbon emission and credit records.

TRADING INSTITUTIONS: Penalties for publishing false information or manipulating the market range from CNY 10,000 (USD 1,411) to CNY 50,000 (USD 7,058). Institutions involved in illegal payments are fined one to three times the amount of the payment, up to CNY 150,000 (USD 21,174).

THIRD-PARTY VERIFIERS: Penalties for submitting false verification reports range from CNY 10,000 (USD 1,411) to CNY 50,000 (USD 7,058). Verifiers involved in illegal payments in addition to submitting false verification reports are fined one to three times the value of the payment, up to CNY 150,000 (USD 21,174).

MARKET REGULATION

MARKET DESIGN

MARKET PARTICIPATION: Compliance entities; non-compliance entities such as domestic and international institutional investors; individual investors meeting the participation requirements of the relevant local trading exchange.

MARKET TYPES:

Primary: The China Hubei Emission Exchange organizes ad hoc auctions for the primary market. Since 2019, Hubei has held two separate rounds of auctions targeting different types of entities.

Secondary: Spot products include Hubei Emission Allowances (HBEAs) and CCERs. The HBEA spot forward product was introduced in 2016 but has not been traded since May 2017. The China Hubei Emission Exchange manages trading of all products.

LEGAL STATUS OF ALLOWANCES: Allowances are not considered financial instruments.

MARKET STABILITY PROVISIONS

RESERVE: 6% of the total cap is kept as a government reserve for market stabilization.

TRIGGERS: In case of market fluctuations, severe supply-demand imbalances, or liquidity issues, the Hubei EEB – in consultation with an advisory committee consisting of government institutions and other stakeholders – can buy or sell allowances in order to stabilize the market. Specifically, the Hubei EEB takes action if the allowance price reaches a low or high point six times during a 20-day period.

EXCHANGE: The exchange limits day-to-day price fluctuations to a 10% move in either direction.

OTHER INFORMATION

INSTITUTIONS INVOLVED

Hubei Ecology and Environment Bureau (EEB): Responsible for establishing and overseeing the Hubei ETS after governmental restructure in 2019.
China Hubei Emission Exchange: Responsible for operating the trading platform and registry.

EVALUATION/ETS REVIEW

No information is publicly available regarding the evaluation or review system. However, research on improving the Hubei ETS has been undertaken every year, funded by the local government.

REGULATORY FRAMEWORK

- Hubei Pilot ETS Implementation Plan (2013)
- Interim Management rules of Emission Management and Trading (2023)
- Interim Measures for Management of Emissions Trading in Hubei Province (2014)
- Allocation Plan for 2019 (including list of covered entities)
- Allocation Plan for 2020 (including list of covered entities)
- Allocation Plan for 2021 (including list of covered entities)
- Allocation Plan for 2022 (including list of covered entities)
- Hubei Province Implementation Opinions on Implementing the New Development Concept and Promoting Carbon Neutrality (2022)

INDIA

CARBON CREDIT TRADING SCHEME

- **Government is advancing work to establish a domestic carbon market**
- **Current plans foresee a compliance scheme covering energy-intensive industrial sectors and a voluntary offset mechanism**
- **Planned compliance scheme will be intensity-based**

In force

Under development

Under consideration

ETS DESCRIPTION

The government of India introduced an amendment to the "Energy Conservation Act, 2001", providing a legal basis for the establishment of a Carbon Credit Trading Scheme (CCTS) and issuance of carbon credit certificates. The amendment bill, incorporating these provisions, was passed in the Lower House (*Lok Sabha*) in August 2022, adopted, and subsequently passed in the Upper House (*Rajya Sabha*) in December 2022. The amendment bill provides the legal basis to establish a domestic carbon market (ICM) and grants the power to issue carbon credit certificates (CCCs) for the reduction of emissions.

Following passage of the amendment, the government began work on the institutional and regulatory framework for the CCTS. The draft notification was published for stakeholder consultation in March 2023. Based on received comments, the notification was revised and officially issued in June 2023. This notification established an institutional framework, including the National Steering Committee for the Indian Carbon Market, tasked with overseeing the ICM framework. Additionally, roles and responsibilities of the administrator, technical committee, and other stakeholders were defined. CCCs (denominated in one tonne of CO_2) will be issued or surrendered based on performance against emission intensity targets for obligated entities.

Under the compliance mechanism, the obligated entities will receive an annual emissions intensity target covering a three-year trajectory period, notified by the Ministry of Environment, Forest and Climate Change (MoEFCC) and denominated in tCO_2e per unit of product. New emissions intensity targets will be announced every three years to enable longer-term planning for covered entities. If an obligated entity overachieves its emissions intensity target, it can earn CCCs based on the difference between the achieved and the targeted emissions intensity. Entities that fail to achieve their targets will have to surrender/purchase a corresponding number of CCCs to ensure compliance and this will be achieved by facilitating trading among the obligated entities on a registry/trading platform.

Applying a "gate-to-gate" approach to cover the emissions along the entire value chain, the CCTS scope will include both direct emissions from fuel combustion and industrial processes, as well as indirect emissions from electricity and heat consumption. It will cover CO_2, and perfluorocarbons (PFCs).

The CCTS will be based on the existing Perform, Achieve and Trade (PAT) scheme – a mandatory energy efficiency scheme covering more than 1,000 entities from 13 energy-intensive sectors – that should be gradually transitioned into a compliance carbon market. The carbon market will utilize existing MRV guidelines and administrative infrastructure.

It is expected that a phased transition from the current PAT scheme to the compliance mechanism under CCTS will begin in 2024. The compliance mechanism will be jointly managed by the Ministry of Power, the Ministry of Environment, Forests and Climate Change, and the Bureau of Energy Efficiency (BEE).

In December 2023, the government amended the CCTS notification, introducing provisions for the offset mechanism to support non-obligated entities and promote mitigation efforts, encompassing a comprehensive approach for GHG reduction. The government is actively working to operationalize both the compliance and offset mechanisms.

At the subnational level, in May 2022 the government of Gujarat declared its intention to implement a cap-and-trade scheme. The proposed subnational carbon market is set to cover emissions from large industrial and power sector sources in the state. Details are currently being developed by authorities, with assistance from researchers from the University of Chicago, Yale University, and Abdul Latif Jameel Poverty Action Lab.

EMISSIONS & TARGETS OF INDIA

GHG EMISSIONS (INCLUDING INDIRECT CO_2, EXCLUDING LULUCF), **2019:**
3,132.03 $MtCO_2e$
(in $MtCO_2e$, share of total in %)

Energy	2,374.33	(76%)
Industrial processes	263.54	(8%)
Agriculture	420.98	(14%)
Waste	73.18	(2%)
Total	**2,839.4**	

Energy industries	1,331.9	(43%)
Manufacturing industries and construction	404.6	(13%)
Transport	314.8	(10%)
Commercial, institutional, and residential	266.94	(9%)
Other energy	56.09	(2%)

GHG REDUCTION TARGETS

By 2030: Reduce emissions intensity by 45% below 2005 levels (updated NDC)
By 2070: Net Zero (updated NDC)

OTHER INFORMATION

INSTITUTIONS INVOLVED

Ministry of Environment, Forest and Climate Change (MoEFCC): Responsible for national climate strategy.
Ministry of Power: Responsible for national energy policy and the national carbon market.
Bureau of Energy Efficiency (BEE): Responsible for the administration and implementation of the planned carbon market and the existing PAT scheme

REGULATORY FRAMEWORK

- → Carbon Credit Trading Scheme, 2023
- → Energy Conservation (Amendment) Bill (2022)
- → Energy Conservation Act (2001)
- → The Environment Protection Act (1986)

INDONESIA

ECONOMIC VALUE OF CARBON (NILAI EKONOMI KARBON) TRADING SCHEME

- **Intensity-based ETS covering the power subsector introduced in 2023**
- **Built on the successful pilot of a similar scheme in 2021**
- **Hybrid "cap-tax-and-trade" system planned to start by 2025**

ETS DESCRIPTION

Indonesia's Economic Value of Carbon, or *Nilai Ekonomi Karbon* (NEK), Trading Scheme is a mandatory, intensity-based ETS for the power sector launched in early 2023. In its first phase spanning from 2023 to 2024, it exclusively targets coal-fired power plants connected to the *Perusahaan Listrik Negara* (PLN) grid with a capacity of 25 MW or more. For 2023, the ETS covered 99 coal-fired power plants, estimated to represent around 81.4 % of the country's power generation capacity. The Indonesian government establishes intensity targets, known as "Technical Emissions Ceiling Approvals", or *Persetujuan Teknis Batas Atas Emisi* (PTBAE). These targets determine the number of allowances that installations receive for each MWh of electricity generated. Covered entities are required to surrender allowances corresponding to all their covered emissions, with allocation based on PTBAE, emission intensity, and emission average. Additionally, entities have the option to purchase allowances via auctions.

The majority of the plants covered by the ETS are owned by the state-owned electricity company PLN. The government anticipates a reduction of approximately 500,000 tonnes of CO_2 in the sector through the ETS in its first year.

Eventually, the ETS is expected to function as a hybrid "cap-tax-and-trade" system, operating concurrently with a carbon tax projected to be introduced around 2025. Facilities failing to meet their obligations under the ETS will be subject to this tax, whose rate will be aligned with the domestic carbon market's price.

YEAR IN REVIEW

The Ministry of Energy and Mineral Resources (MEMR) launched the Indonesian ETS for the power sector in February 2023.

This launch was the culmination of several years of preparation. In October 2022, the Ministry of Environment and Forestry (MoEF) issued Regulation 21/2022 titled "Guidelines for Carbon Economic Value Implementation". This regulation provided the legal basis for the implementation of a cross-sectoral ETS in Indonesia, encompassing details on offset credits, sector-specific carbon trade roadmaps, MRV procedures, and institutional arrangements. Following this, in December 2022, MEMR's Regulation 16/2022 "Guidelines for Carbon Economic Value Implementation for the Power Generation Sub-sector" was released, laying the legal foundation for implementing the ETS in the power subsector.

The Indonesian Carbon Exchange (IDXCarbon) was officially launched in September2023, under the supervision of the Financial Services Authority of Indonesia (*Otoritas Jasa Keuangan*, OJK).

In force
Under development
Under consideration

SECTORS

POWER

CAP

Approx. 238.2 $MtCO_2$

GREENHOUSE GASES

CO_2, CH_4 and N_2O

OFFSET CREDITS

Domestic

ALLOCATION

Auctioning (in the future)
Free Allocation: Benchmarking

AVERAGE 2023 PRICES

Average price: IDR 10,000 (USD 0.64), representing the carbon price from emission trading, specifically purchasing PTBAE-PU carbon units through over-the-counter transactions.
Average secondary market price: IDR 69,600 (USD 4.45), indicative of the carbon price from transactions involving Sertifikat Pengurangan Emisi (SPE, Indonesia Certificate of Emission Reduction) in IDXCarbon for offsets.

EMISSIONS & TARGETS OF INDONESIA

GHG EMISSIONS (INCLUDING INDIRECT CO_2, EXCLUDING LULUCF), **2021**
(in $MtCO_2e$, share of total in %)

Energy	595.86	(67%)
Industrial processes	59.38	(7%)
Agriculture	105.88	(12%)
Waste	129.90	(15%)
Total	**891.02**	

Energy industries	310.76	(35%)
Manufacturing industries and construction	89.15	(10%)
Transport	143.91	(16%)
Commercial, institutional, and residential	29.05	(3%)
Other energy	23.01	(3%)

GHG REDUCTION TARGETS

By 2030: 31.9% below BAU including LULUCF (unconditional, updated NDC); up to 43.2% below BAU including LULUCF (conditional on international support, updated NDC)
By 2060: Climate neutrality (Long-Term Strategy for Low Carbon and Climate Resilience, July 2021)

ETS COVERAGE & PHASES

COVERED EMISSIONS

As of now, there is no available data on verified emissions for the first period of the ETS, as the verification process has only recently commenced.

PHASES

PHASE ONE: Two years (2023 and 2024)
PHASE TWO: Three years (2025 to 2027)
PHASE THREE: Three years (2028 to 2030)

Note: These phases apply exclusively to the power sector

CAP OR TOTAL EMISSIONS LIMIT

The total emissions limit under the Indonesian ETS is the sum of the bottom-up output-based level for all individual covered entities.

The Ministry of Energy and Mineral Resources (MEMR) establishes the PTBAE, or the cap, for the power sector. This is based on: (i) actual emissions, which must be below the emissions reduction target set for the sector, and (ii) the carbon trading roadmap for the power sector.

PHASE ONE:
The ETS is applicable only to coal-fired power plants connected to PLN's grid. The absolute emission cap is approximately 238.2 $MtCO_2e$.

The cap for the power subsector has been established for Phase 1 as follows:
- Coal-fired power plants with a capacity of 25 MW) to ≤ 100 MW: 1.3 tCO_2e/MWh
- Mine Mouth Coal-fired power plants with a capacity of ≥ 100 MW: 1.1 tCO_2e/MWh
- Non-Mine Mouth Coal-fired power plants with a capacity of 100 MW to ≤ 400 MW: 1.0 tCO_2e/MWh
- Non-Mine Mouth Coal-fired power plants with a capacity of > 400 MW: 0.9 tCO_2e/MWh

PHASE TWO and **PHASE THREE:**
The cap for phase two and three has not yet been determined, but it is expected to be more stringent than phase one.

SECTORS AND THRESHOLDS

PHASE ONE:
Coverage is limited to coal-fired power generators connected to PLN's grid only. Details on thresholds are provided below.
PHASE TWO:
The government plans to expand the scheme to include coal-fired power plants with capacity below 25 MW, gas-fired power plants, combined cycled power plants and other coal-fired power plants not connected to PLN's grid.
PHASE THREE:
The expansion will encompass all fossil fuel power plants, including diesel power plants with capacity of 2 MW or greater, regardless of their connection to PLN's grid.

INCLUSION THRESHOLDS:
Initially, coal-fired power generation facilities with a production capacity exceeding 100 MW are included. However, smaller coal and fossil fuel plants may be incorporated at a later point.

The Ministry of Environment and Forestry (MoEF) has indicated that the government plans to implement emission caps for four additional sectors in the future: forestry, industrial processes and product use, agriculture, and waste management.

POINT OF REGULATION
Point source

TYPE OF ENTITIES
Installations

NUMBER OF ENTITIES
In 2023: 42 entities covering 99 installations
In 2024: 63 entities covering 146 installation

Note: The number of entities and installations is expected to continue increasing as new installations commence operations and additional categories are included, in line with the roadmap's expansions.

ALLOWANCE ALLOCATION & REVENUE

ALLOWANCE ALLOCATION
In Indonesia, allowances are referred to as *Persetujuan Teknis Batas Atas Emisi Pelaku Usaha* (PTBAE-PU).

Share of allowances auctioned in 2023: 0%

PHASE ONE:
Auctioning: In the Indonesian ETS, auctioning is conducted through a system managed by IDXCarbon, where bid and offer instructions are matched based on a time and price priority scheme (refer to the 'Market Design' section).
- Auction share: 0% (2023)
- Auction volume: None

Note: To date, no auction has taken place. Details regarding auction shares and related requirements or provisions are yet to be determined.

Benchmarking: The Ministry of Energy and Mineral Resources (MEMR) sets intensity targets based on installations' average emissions of the previous year. These targets dictate the number of PTBAE-PU allowances allocated for every MWh of electricity generated. If the necessary data are unavailable, allocation is based on comparison with similar plants of equivalent installed capacity. It is anticipated that installations will receive either 75% or up to 85% of their allowances for free in 2024. The deduction percentage depends on the installations' compliance with the ETS.

Covered entities that receive allowances must participate in trading. If they do not, they receive a written warning and free allocation for the next compliance period is reduced to 75%.

USE OF REVENUES
Not defined.

FLEXIBILITY & LINKING

BANKING AND BORROWING
Banking is allowed within phases, though PTBAE-PUs are valid for a maximum of two years from the end of the previous compliance period. Banking is not allowed across phases.

Borrowing is not allowed.

OFFSET CREDITS
The use of offset credits – known as carbon reduction units, or *Sertifikat Pengurangan Emisi Gas Rumah Kaca* (SPE-GRK) – is allowed. Credits equivalent to SPE-GRKs may also be used.

QUALITATIVE LIMITS: Offset credits must stem from mitigation activities from:
1. New and renewable energy power plants;
2. Transportation, construction, and industry including energy efficiency activities; or
3. Other activities in the energy sector.

They must also be issued on the national registry.

QUANTATIVE LIMITS: None.

In 2023, 8,715 tCO_2 in offset credits were surrendered, exclusively sourced from renewable energy projects. The distribution of these credits is detailed as follows: PT Pertamina Geothermal Energy contributed 87.4%, PT UPC Sidrap Bayu Energi accounted for 11.5%, and the remaining 1.1% came from PT PJB UP Muara Karang.

LINKS WITH OTHER SYSTEMS
The Economic Value of Carbon NEK Trading Scheme is not linked with any other system.

COMPLIANCE

COMPLIANCE MECHANISM

Covered entities must surrender one allowance per tCO_2e emitted for all their covered emissions.

COMPLIANCE PERIOD

The compliance period for the Indonesian ETS is one year, with trading occurring from 1 January to 20 April of the following year. Surplus allowances at the end of the year may be traded in the following year, provided it is within the same phase.

MRV

MONITORING: An MRV system is currently in operation in the industrial sector and the power generation sub-sector. Pilot MRV programs are being conducted also in the cement and fertilizer sectors.

REPORTING: Reports are submitted to the MEMR through the Directorate General of Electricity via an online platform, the APPLE-GATRIK. These reports must be submitted by the end of January for the preceding year. Installations must report emissions of CO_2, CH_4, and N2O expressed in units of CO_2e.

VERIFICATION: Emissions must be verified by a third-party verifier that is accredited by the *Komite Akreditasi Nasional* (KAN), Indonesia's national accreditation body. This verification should be completed by the end of March, following the January reporting deadline. Verifiers are required to adhere to the guidelines for GHG emission verification in the power subsector.

ENFORCEMENT

The plan was to concurrently implement carbon trading and a carbon tax, with the latter serving as a penalty mechanism. However, as discussions on carbon tax regulations continue and its implementation is postponed, an alternative enforcement approach for carbon trading in 2024 will be introduced:

1. Should verified emissions exceed the allocated PTBAE-PU by the end of the period, the PTBAE-PU will be reduced by up to 15%, based on the transaction details.

2. Entities failing to report their Greenhouse Gas (GHG) emissions or participate in carbon trading by the end of the period will see a 25% reduction in their PTBAE-PU.

MARKET REGULATION

MARKET DESIGN

MARKET PARTICIPATION:

Compliance entities, specifically those holding an "Electricity Supply Business License for Public Purpose" or "Electricity Supply Business License for Own-Use," are eligible to engage in carbon trading.

MARKET TYPES:

Primary: In the primary market, allowances and offset credits are transacted through a mechanism that may be activated upon request by the relevant ministry. This platform facilitates offset selling, with a potential reserve price set as low as IDR 1 (less than USD 0.01), and bids commencing from this figure or higher. This auction mechanism is exclusively accessible to government ministries and project developers, expressly excluding resellers. As of now, there have been no auctions conducted under this system, and specific details about auction shares, along with associated requirements and provisions, remain to be defined.

Secondary: Operated by IDXCarbon, launched at the Indonesia Stock Exchange (IDX) in September 2023 and licensed by the Financial Services Authority (OJK), the secondary market encompasses:

- Regular Market or 'Continuous Auction': Matching of bids and offers based on time and price priority, with minimum prices set at IDR 200 (USD 0.013) and governed by fraction price rules and an 'auto rejection' rule.
- Negotiated Market: Facilitates the settlement of pre-agreed trades through the exchange, requiring details of counterpart, carbon units, price, and volume.
- Marketplace: Enables project developers to list their projects and set prices.

IDXCarbon is integrated with the national registry, Sistem Registri Nasional Pengendalian Perubahan Iklim (SRN PPI), managed by MoEF, ensuring the seamless transfer of carbon credits and preventing double counting.

LEGAL STATUS OF ALLOWANCES: PTBAE-PUs and SPE-GRKs are classified as securities, allowing their transfer and trade in the capital market.

MARKET STABILITY PROVISIONS

TRIGGERS: The MEMR evaluates on a regular basis the implementation of the ETS. If the evaluation reveals a shortage of allowances, the Minister and Director General may conduct additional auctions of PTBAE-PUs.

OTHER INFORMATION

INSTITUTIONS INVOLVED

Coordinating Ministry for Maritime and Investment Affairs (CMMAI) and Coordinating Ministry for Economic Affairs (CMEA): Chair and Vice Chair of the National Steering Committee for Carbon Pricing Implementation; coordinates ministries/agencies in developing the national carbon pricing framework.

Ministry of Environment and Forestry (MoEF): National focal point for UNFCCC; leads NDC development and implementation, including national mitigation and adaptation and implementation of carbon pricing (including providing authorization for national and international emission trading, and overseeing offsetting; oversees MRV; operates the national registry, SRN PPI.

Ministry of Energy and Mineral Resources (MEMR): Coordinates ETS implementation in the power sector, including oversight of an integrated MRV system with the SRN; responsible for preparing and implementing the 2021 voluntary pilot carbon market.

Ministry of Industry: Coordinates implementation of CPIs on the Industrial Processes and Product Use (IPPU) sector, including an emissions reporting system to be integrated with the SRN.

Ministry of Finance: Leads the development and implementation of the carbon tax.

Indonesian Environment Fund: Handles climate funding; manages ETS revenues, including any international carbon credit trading.

Financial Services Authority (OJK): Oversees IDXCarbon, which is hosted on the Indonesia Stock Exchange.

EVALUATION/ETS REVIEW

The Minister through the Director General of the MEMR evaluates the Indonesian ETS every six months. Results of this evaluation may lead to adjustments in the policy.

REGULATORY FRAMEWORK

- → Regulation 46/2017 on Environmental Economic Instruments
- → Law 7/2021 Concerning Harmonization of Tax Regulations
- → Presidential Regulation 98/2021 on the Instrument for the Economic Value of Carbon for Achievement of the NDC and Control of Carbon Emissions in Development
- → MoEF Regulation 21/2022 on Guidelines for Carbon Economic Value Implementation
- → MEMR Regulation 16/2022 on Guidelines for Carbon Economic Value Implementation for the Power Generation Sub-sector
- → OJK Regulation 14/2023 concerning Carbon Trading Through the Carbon Exchange

JAPAN

- **Voluntary ETS "GX-ETS" launched in April 2023, operational since October 2023**
- **Ten-year decarbonization roadmap includes GX-ETS transitioning to mandatory ETS from 2026**
- **Auctioning introduced to system from 2033**

In force

Under development

Under consideration

ETS DESCRIPTION

Japan combines several carbon pricing instruments to help meet net zero by 2050: an existing carbon tax, a voluntary emission trading system named "GX-ETS", and a carbon levy to be introduced from 2028. Plans for this are outlined in the Basic Plan for the "Green Transformation (GX) Policy", Japan's ten-year decarbonization strategy.

The GX-ETS started as a voluntary baseline-and-credit system in 2023. Almost 570 companies, making up more than 50% of national emissions, participate. Under the GX-ETS, J-Credits (see below) are traded on the Tokyo Stock Exchange.

The GX-ETS is expected to transition to a mandatory ETS from 2026 after its first compliance deadline. Upper and lower price limits are planned to be introduced. From 2033, auctioning will be introduced for high-emitting entities in the power sector. Separately, a carbon levy will be introduced from 2028 on fossil fuel importers.

Japan is actively participating in international carbon markets. Its Joint Crediting Mechanism (JCM) is a bilateral scheme to incentivize decarbonizing technologies and mitigation actions in 28 partner countries.[1] JCM credits will also be eligible for use in the GX-ETS. Separately, over 100 countries and organizations have joined Japan's global capacity-building initiative, the Article 6 Implementation Partnership.

1 Mongolia, Bangladesh, Kenya, Ethiopia, Indonesia, Vietnam, Lao PDR, Cambodia, Maldives, Palau, Costa Rica, Mexico, Chile, Saudi Arabia, Myanmar, Thailand, the Philippines, Senegal, Tunisia, Azerbaijan, Moldova, Georgia, Sri Lanka, Uzbekistan, Papua New Guinea, United Arab Emirates, and Kyrgyz Republic.

EMISSIONS & TARGETS OF JAPAN

GHG EMISSIONS (INCLUDING INDIRECT CO_2 AND EXCLUDING LULUCF), **2021**

1,170.0 (in $MtCO_2e$, share of total in %)

Energy	1,015.0	(87%)
Industrial processes	103.3	(9%)
Agriculture	32.2	(3%)
Waste	17.7	(2%)
Total	**1,168.1**	

Energy industries	446.6	(38%)
Manufacturing industries and construction	251.6	(22%)
Transport	179.4	(15%)
Commercial, institutional, and residential	120.5	(10%)
Other energy	15.8	(1%)

GHG REDUCTION TARGETS

By FY2030: 46% reduction from FY2013 GHG levels including LULUCF credits; and continue efforts to cut emissions by 50% (NDC)

By 2050: Net zero GHG emissions (updated NDC)

OTHER INFORMATION

INSTITUTIONS INVOLVED

Ministry of the Environment: Supports the implementation of JCM projects; manages the Subcommittee on the Utilization of Carbon Pricing and the Global Environmental Subcommittee; oversees the SHIFT program; tasked with developing carbon pricing in Japan.

Ministry of Trade, Economy, and Industry: Responsible for the GX League; tasked with developing carbon pricing in Japan jointly with the Ministry of Environment.

Central Environment Council: Advisory body to the Japanese Cabinet.

REGULATORY FRAMEWORK

→ GX Basic Plan

→ GX Promotion Act

MALAYSIA

- **Government published a policy document in 2021 including plans for a domestic ETS**
- **Voluntary carbon market trading platform launched in December 2022, creating infrastructure for domestic ETS**

ETS DESCRIPTION

The Malaysian Ministry of Environment and Water (KASA) published the "National Guidance on International Voluntary Market Mechanisms" in September 2021, which indicates its intent to implement a domestic ETS. It also provides guidance to entities that intend to participate in international voluntary carbon markets (VCM). The Malaysian Cabinet endorsed KASA's policy document, proposing to introduce a carbon trading platform by starting with a VCM exchange and potentially complementing this with a domestic ETS at a later stage.

Bursa Carbon Exchange (BCX), the world's first Shariah-compliant VCM platform, was launched in December 2022. It features continuous spot trading, off-market transactions, auctions, and pre-trade conditions, which allow cash and carbon credits to be held in trusts. Both nature-based and technology-based activities accredited by Verra are traded, with vintages from 2016 onwards. Voluntary market trading on the BCX officially commenced in March 2023.

Malaysia's ETS plans are also fueled by the country's NDC commitments and net zero aspirations. They will also help prepare industry players for international trade related instruments, such as the EU's carbon border adjustment mechanism (CBAM), and support Malaysia's low-carbon transition in the industrial sector.

Since 2021, the Malaysian government has been engaging with state governments and the corporate sector to align relevant policies and regulation. As part of this process, the Malaysian government, in close cooperation with the World Bank, is conducting the Malaysia Partnership for Market Implementation (MY PMI). It is looking into the implementation of carbon pricing instruments such as a carbon tax and an ETS in Malaysia and is covering several key aspects such as policy and market design frameworks, national registry development, and alignment with international standards. It is expected to conclude in 2024.

At the subnational level, in November 2023 the state of Sarawak passed a climate bill that includes provisions to introduce mandatory emissions thresholds for certain industrial emitters. According to Sarawak officials, covered entities will be required to report their annual emissions to the state regulator and to set themselves binding emissions thresholds. Entities that fail to do so will be subject to a carbon tax, the rate of which is still to be determined by the state Cabinet.

EMISSIONS & TARGETS OF MALAYSIA

GHG EMISSIONS (INCLUDING INDIRECT CO_2, EXCLUDING LULUCF), **2019**
(in $MtCO_2e$, share of total in %)

Energy	259.4	(79%)
Industrial processes	32.9	(10%)
Agriculture	9.9	(3%)
Waste	28.3	(9%)
Total	**330.4**	

Energy industries	131.7	(40%)
Manufacturing industries and construction	33.6	(10%)
Transport	65.0	(20%)
Commercial, institutional, and residential	3.4	(1%)
Other energy	25.7	(8%)

GHG REDUCTION TARGETS

By 2030: 45% reduction of economy-wide carbon intensity compared to 2005 levels (unconditional, updated NDC)
By 2050: Net-zero (The 12th Malaysian Plan 2021–2025)

OTHER INFORMATION

INSTITUTIONS INVOLVED

Ministry of Natural Resources and Environmental Sustainability (NRES): Responsible for overseeing the implementation of national climate policy, including the national carbon market mechanisms.
Ministry of Finance: Jointly responsible with NRES and Bursa Malaysia for the voluntary carbon credit exchange.
Bursa Malaysia: National stock exchange, operates Bursa Carbon Exchange (BCX).

REGULATORY FRAMEWORK

→ National Guidance on Voluntary Carbon Market Mechanisms (2021)

NEW ZEALAND

NEW ZEALAND EMISSIONS TRADING SCHEME

- **Broad ETS sectoral coverage, including forestry**
- **Cap trajectory aligned with national net-zero targets**
- **Pricing mechanism for the agricultural sector by no later than 2030**

ETS DESCRIPTION

The New Zealand Emissions Trading Scheme (NZ ETS) was launched in 2008 and is a central climate change mitigation policy for the country. It covers roughly half of New Zealand's GHG emissions. The "Climate Change Response Act 2002" sets the legislative framework for the NZ ETS and incorporates all of New Zealand's key climate legislation under one Act.

The cap is set in a top-down process to align with New Zealand's 2050 net zero targets and associated emissions budgets. Covered entities must surrender allowances for all their reported emissions.

The NZ ETS has broad sectoral coverage, including forestry, stationary energy, industrial processing, liquid fossil fuels, waste, and synthetic GHGs. Allocation is based primarily on auctioning, which began in March 2021. Free allocation is granted only for emissions-intensive and trade-exposed (EITE) activities and is based on output- and intensity-based benchmarks. Uniquely to the NZ ETS, the forestry sector has both surrender obligations and the opportunity to earn units for emissions removals.

Currently, biological emissions from agriculture have reporting obligations without surrender obligations. Under the current legislation, emissions from agriculture will face a carbon price by 2026, either through the NZ ETS or a separate pricing mechanism. However, the new government has committed to repealing this legislation to prevent agriculture becoming part of the NZ ETS, and alternatively developing a separate system solely for the sector.

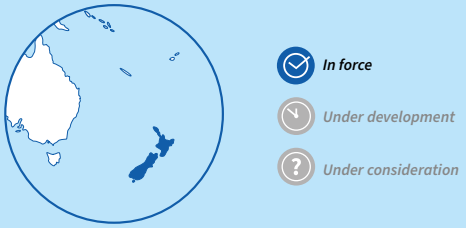
Extensive legislative reforms of the NZ ETS were implemented in 2020 to improve its design and operation and enable it to better support New Zealand's international and domestic emissions reduction obligations.

YEAR IN REVIEW

2023 saw the continued development of the NZ ETS. The supply of units to the NZ ETS was tightened, bringing the cap trajectory in line with New Zealand's net-zero targets. Unit supply settings, as well as auction reserve price settings for 2024 to 2028, were updated in September in accordance with a court order made following a successful legal challenge against the original settings. The new settings tighten unit supply, while also doubling the 2024 auction reserve price floor to NZD 64 (USD 39) and the Cost Containment Reserve (CCR) trigger price to at least NZD 184 (USD 112).

Four auctions were undertaken throughout the year, with a total of 15 million units for sale, as well as another 8 million units available from the CCR. However, none of the auctions cleared, meaning no allowances were sold at auction in 2023. In line with the NZ ETS auctioning regulations, any units that were unsold after the last auction of 2023 are not available for sale at any subsequent auction.

1 International offsets were allowed until June 2015.



SECTORS

POWER
AVIATION
INDUSTRY
MARITIME
BUILDINGS
WASTE
TRANSPORT
FORESTRY

CAP

27.9 $MtCO_2e$ (2023)

GREENHOUSE GASES

CO_2, CH_4, N_2O, SF_6, HFCs, PFCs

OFFSET CREDITS

None[1]

ALLOCATION

Free Allocation: Benchmarking
Auctioning
Allowances granted for forestry and other removal activities

AVERAGE 2023 PRICES

Average auction price: NZD 0 (USD 0)
Average secondary market price: NZD 62.79 (USD 38.30)

TOTAL REVENUE

NZD 5.1 billion (USD 3.1 billion) since beginning of program
NZD 34.7 million (USD 21.3 million) in 2023

A government-led review opened consultations on the design of the NZ ETS. The review followed recommendations from the independent Climate Change Commission to improve incentives for gross emissions reductions while managing exotic forests planted under the scheme. National elections in October 2023 brought about a change of government, which closed the review of the NZ ETS.

A system of farm-level emissions reporting was being developed in preparation for pricing biological GHG emissions from agriculture. In August, the former government announced plans to implement a levy from 2025. However, the new government has stated it will progress pricing agricultural emissions by no later than 2030, and will also repeal the provisions in the Act which would bring the sector into the NZ ETS from 2026 to allow time to develop this new system.

Amendments to update industrial allocation settings became law through the "Climate Change Response (Late Penalties and Industrial Allocation) Amendment Act" in August 2023. The Act also tightens the eligibility criteria for new activities seeking to receive free emission units. The government is now collecting data to inform updates to allocative baselines. Changes to regulations are expected to follow in late 2024.

EMISSIONS & TARGETS OF NEW ZEALAND

GHG EMISSIONS (INCLUDING INDIRECT CO_2, EXCLUDING LULUCF), **2021**
(in $MtCO_2e$, share of total in %)

Energy	31.2	(39.2%)
Industrial processes	4.5	(5.7%)
Agriculture	40.5	(50.7%)
Waste	3.6	(4.5%)
Total	**79.8**	

Energy industries	5.4	(6.8%)
Manufacturing industries and construction	6.3	(7.9%)
Transport	13.8	(17.4%)
Commercial, institutional, and residential	3.0	(3.8%)
Other energy	2.7	(3.3%)

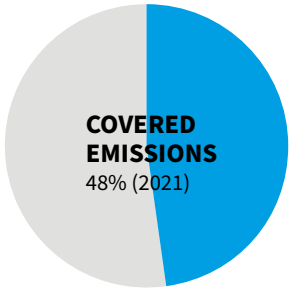
GHG REDUCTION TARGETS

By 2030: 50% reduction of net emissions below gross 2005 levels (NDC); 10% reduction of biogenic methane emissions below 2017 levels (Climate Change Response Act 2002, through an amendment in 2019)
By 2050: Reduce net emissions of all GHGs (except biogenic methane) to zero; reduce biogenic methane emissions to 24–47% below 2017 levels (Climate Change Response Act 2002, through an amendment in 2019)

ETS COVERAGE & PHASES

COVERED EMISSIONS

Verified ETS emissions 36.9 $MtCO_2e$ (2021/2022)



PHASES

The NZ ETS has no fixed trading periods or phases

CAP OR TOTAL EMISSIONS LIMIT

In 2024, the cap is 27.9 $MtCO_2e$.

The Climate Change Response Act 2002 requires the government to set a cap on emissions covered by the NZ ETS, based on the five-yearly emissions budgets and announced over a rolling five-year period with annual updates.

The government updated regulations for unit supply settings in September 2023, setting the annual cap for the years 2024–2028. The cap limits the number of New Zealand Units (NZUs) that may be released to the market from auctioning, industrial allocation, and the CCR, as well as from any international units (not currently allowed). In setting supply limits, the government also considers the stockpile of banked allowances already in circulation and projected unit supply from removal activities.

There is no limit on NZUs generated from removal activities. These are forecast to be 15 million units in 2024, mainly generated in the forestry sector.

The NZ ETS was originally designed to operate without a specific domestic cap, as this accommodated carbon sequestration from forestry activities and a full link to the international Kyoto Protocol carbon markets. Allowance supply was restricted to NZUs in 2015. No decisions have been made on potential future access to and use of international units.

SECTORS AND THRESHOLDS

INCLUSION THRESHOLDS:
Sectors were gradually phased in between 2008 and 2013. Thresholds for participation are typically low.

- Forestry (mandatory: deforesting pre-1990 forest land; voluntary: post-1989 forest land)
- Stationary energy (various thresholds)
- Industrial processing (various thresholds)
- Liquid fossil fuels (various thresholds)
- Waste (except for small and remote landfills)
- Synthetic GHGs (various thresholds); synthetic GHGs not covered by the NZ ETS are subject to an equivalent levy

Biological emissions from agriculture must be reported at the processor level but face no surrender obligations at present. The current legislation includes an 'ETS backstop' measure, to set a price on agricultural emissions by 2026 through the NZ ETS.

A partnership between the government and the agricultural sector, called "*He Waka Eke Noa*", was established to prepare for an alternative pricing mechanism for the sector, including the development of on-farm accounting and reporting systems for GHG sources and sinks.

In August 2023, the former Labour government announced plans to introduce an agricultural carbon levy from 2025. However, the newly-elected coalition government has changed the start date to no later than 2030. A final decision on the future of the mechanism is expected in early 2024.

POINT OF REGULATION

Upstream (power, aviation, buildings, forestry, transport); point source (industry, waste).

For all fossil fuels, the point of obligation is generally upstream. Some large businesses that purchase fossil fuels directly from mandatory NZ ETS participants can choose to opt into the NZ ETS rather than have the costs passed down from their suppliers.

TYPE OF ENTITIES

Companies

NUMBER OF ENTITIES

4,114 entities are registered as participants in the NZ ETS as of October 2023, of which:

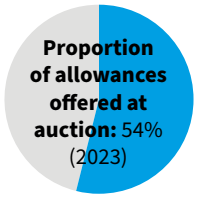
- 246 have mandatory reporting and surrender obligations
- 3,911 have voluntary (opt-in) reporting and surrender obligations, most of which are for post-1989 forestry removal activities

Note that some organizations have both mandatory and voluntary reporting and surrender obligations.

There are 79 entities with mandatory emissions reporting who do not have surrender obligations, all of which are for agricultural processing activities.

ALLOWANCE ALLOCATION & REVENUE

ALLOWANCE ALLOCATION



15 million units were made available at auction in 2023, but none were sold.

FREE ALLOCATION:
Leakage protection/Industrial free allocation: Free allocation is provided, based on output and intensity-based benchmarks, for 26 eligible industrial activities. Activities are deemed eligible if both EITE criteria are met. Highly emissions-intensive activities (over 1,600 tCO_2e per NZD 1 million [USD 610,000] of revenue) receive 90% free allocation. Moderately emissions-intensive activities (over 800 tCO_2e per NZD 1 million [USD 610,000] of revenue) receive 60% free allocation. An activity is deemed to be trade-exposed if there is transoceanic trade in the good produced.

6.1 million NZUs were allocated for industrial EITE activities 2022.

Industrial allocation settings are being reformed to address over-allocation. The government is collecting data to inform updates to allocative baselines. Changes to regulations are expected in late 2024.

Industrial free allocation is being phased down. A minimum annual phase-down rate of 0.01 across all industrial activities applies from 2021 to 2030. That rate will increase to 0.02 for the years 2031 to 2040, and to 0.03 for 2041 to 2050. The minimum phase-down rate could be adjusted for activities that are considered at lower risk of carbon leakage alongside other criteria as set in legislation.

AUCTIONING:
Auctioning was introduced in 2021. The volume of NZUs made available for auctioning is set on an annual basis, five years in advance (see 'Cap' section). The annual quantity is split between the quarterly auctions. In 2023, 15 million allowances were made available for auctioning, plus an additional 8 million allowances in the CCR, however, no allowances were sold in 2023.

Auctions follow a sealed-bid, single-round format. The clearing price is set at the lowest successful bid and NZUs are sold to all successful bidders at this price, providing it is not below the confidential reserve price (see 'Market Stability Provisions' section). Otherwise, the auction fails and all allowances on offer are rolled forward to the next auction within the same calendar year or cancelled if it is the last auction of that year.

ALLOWANCES GRANTED FOR REMOVALS:

Post-1989 forestry sector and other removal activities: NZUs are granted to participants that voluntarily register in the scheme for removal activities.

Forestry removal activities: Participants are entitled to receive one NZU per tCO_2 removed for registered post-1989 forest land. If the forest is harvested[2] or deforested, units must be surrendered to account for the emissions. If the participant chooses to deregister from the scheme, NZUs equivalent to the number received must be returned. 12.0 million NZUs were issued for forest removal activities for the 2022/2023 reporting year.

Other removal activities: 2.1 million allowances were granted for other removal activities, such as producing a product with embedded GHGs, for the 2021/2022 reporting year.

USE OF REVENUES

General budget, including debt reduction

NZ ETS cash revenues from the sale of emission units in auctions will be used to fund general tax relief as a 'climate dividend'.

FLEXIBILITY & LINKING

BANKING AND BORROWING

Banking is allowed

Borrowing is not allowed

OFFSET CREDITS

The use of offset credits is not allowed.

Units from Kyoto Protocol flexible mechanisms were eligible for use in the system with no restrictions until June 2015, but have since been ineligible. Access to high-integrity international carbon markets is likely to be part of New Zealand's strategy to meet its 2030 target. The government can decide to allow international units as part of the annual unit supply-setting process. However, only units from government-approved sources and those meeting environmental integrity standards would be eligible and subject to quantitative limits.

LINKS WITH OTHER SYSTEMS

The NZ ETS is not linked with any other system.

Until June 2015, the NZ ETS was indirectly linked to other systems (e.g., the EU ETS) via the international Kyoto Protocol flexibility mechanisms. Since then, the NZ ETS has been an exclusively domestic system.

COMPLIANCE

COMPLIANCE MECHANISM

Covered entities must surrender one allowance per tCO_2e emitted for all their covered emissions.

COMPLIANCE PERIOD

For most sectors, the NZ ETS has annual surrender obligations. For post-1989 forestry participants, annual reporting of emissions and removals is optional, with five-year mandatory reporting periods. As a result, unit allocations and surrenders for these participants occur in the year they choose to report their emissions.

MRV

REPORTING FREQUENCY: Most sectors are required to report annually; the deadline is the end of March to submit an Annual Emissions Return (emissions report).

VERIFICATION: MRV follows a system of self-reporting supplemented by a program of official government audits. Each year a sample of NZ ETS participants are selected for compliance review. Third-party verification is not typically required for emissions reports. However, participants must seek third-party verification if they apply for the use of a unique emissions factor, as opposed to using the default factors supplied by the government.

ENFORCEMENT

An entity that fails to submit an emissions report by the due date must pay a fine equal to the number of units involved, multiplied by the current unit price and a "culpability factor".

An entity that fails to surrender or repay emissions units when required must surrender the units and pay a cash penalty of three times the current market price for each unit that was not surrendered by the due date. Entities can be fined up to NZD 24,000 (USD 14,640) on conviction for failure to collect emissions data or other required information, calculate emissions and/or removals, keep records, register as a participant, submit an Annual Emissions Return when required, or notify the administering agency or provide information when required to do so.

2 Under the new "averaging" method for post-1989 forests, allowances are granted only up to the long-term average carbon stock, but therefore do not need to be surrendered at harvest.

Entities can also be fined up to NZD 50,000 (USD 30,500) on conviction for knowingly altering, falsifying, or providing incomplete or misleading information about any obligations under the scheme, including in the Annual Emissions Return report. This penalty and/or imprisonment of up to five years also applies to entities that deliberately lie about obligations under the NZ ETS to gain financial benefit or avoid financial loss.

MARKET REGULATION

MARKET DESIGN

MARKET PARTICIPATION: Any individual or organization can own and trade NZUs, if they hold an account with the NZ ETS Registry.

MARKET TYPES:

Primary: Auctions are operated jointly by NZX (New Zealand Exchange) and the European Energy Exchange (EEX) and are held four times a year. Any NZ ETS Register Account Holder can participate in the auctions.

Secondary: Most NZUs are traded on the secondary market. Trades can take place directly between companies (OTC) or via a trading platform. Trades can be on a spot basis or through forward contract.

LEGAL STATUS OF ALLOWANCES: Allowances are not financial products in New Zealand law and, as a result, there is currently no single integrated market governance framework that would manage risks of misconduct in the NZ ETS. The government has work underway on options to improve market governance.

MARKET STABILITY PROVISIONS

COST CONTAINMENT RESERVE: If a predetermined trigger price is reached at auction, a specified number of allowances from the CCR is additionally released for sale. Based on advice from the Climate Change Commission, each year the government updates the CCR trigger price, together with other auction supply settings (see 'Cap' section).

TRIGGERS: At the start of 2023, the CCR trigger was NZD 80.64 (USD 52.41). The latest update in September 2023 set the CCR trigger price for the years 2024 to 2028 (also applying to the final auction of 2023). The trigger price was increased and adjusted to a two-tier system, with the lower trigger at NZD 184 (USD 112) and the upper trigger at NZD 230 (USD 140) in 2024. These triggers will then rise to NZD 226 (USD 140) and NZD 283 (USD 175) by 2028.

In 2023, the volume of the CCR was set at 8 million allowances. The trigger price was not reached during 2023, so none of these were released to market. Currently, the volume of the reserve is set at 7.7 million in 2024, dropping annually to 5.4 million in 2028.

PRICE FLOOR: With the start of auctioning, the government introduced a price floor operating through a reserve price or minimum accepted bid at auction.

In addition to the hard auction reserve price floor, the government introduced a confidential reserve price. This is set by referencing prices from the secondary market and uses a confidential methodology to determine a reserve price below which units cannot be sold. If it is set higher than the hard auction reserve price, then it becomes the new reserve price floor for that auction.

TRIGGERS: At the start of 2023, the hard auction reserve price floor was NZD 33.06 (USD 21.49). At the latest update of September 2023, the price floor was increased to NZD 64 (USD 39) in 2024, rising to NZD 79 (USD 48) by 2028.

OTHER INFORMATION

INSTITUTIONS INVOLVED

Ministry for the Environment: Responsible for establishing the regulatory framework of the NZ ETS.
Environmental Protection Authority: Responsible for the NZ ETS registry and compliance.
Ministry for Primary Industries: Responsible for the forestry sector under the NZ ETS.
Climate Change Commission: Independent body providing official annual advice on NZ ETS settings.

EVALUATION/ETS REVIEW

The Climate Change Response Act 2002 includes provisions for reviews of the operation and effectiveness of the NZ ETS. These reviews were originally required every five years, but the timing is now discretionary. The first review took place in 2011–2012, and the second review took place from 2015 to 2017.
A third review of the NZ ETS was opened in early 2023. Following the 2023 General Election, this was closed by the new government.

REGULATORY FRAMEWORK

→ **Climate Change Response Act 2002 – Part 4 New Zealand greenhouse gas emissions trading scheme**[3]

3 To keep New Zealand's key climate change legislation under one act, the Climate Change Response Act incorporates both the "Climate Change Response (Emissions Trading Reform) Amendment Act 2020", and the "Climate Change Response (Zero Carbon) Amendment Act 2019". The "Zero Carbon Act" details domestic targets to 2050, establishes the Climate Change Commission, and mandates a process of setting and meeting five-year national emission budgets.

PAKISTAN

- Role and scope of a domestic ETS assessed by a national committee in 2019
- Registry and MRV system are under development
- Ongoing readiness activities for international and domestic carbon pricing

ETS DESCRIPTION

Pakistan is considering market-based climate policy instruments, including an ETS, to tap into low-cost abatement opportunities and leverage low-carbon investments. The Ministry of Climate Change and Environmental Coordination (MoCC&EC) has received support from the UNFCCC and the World Bank in developing a MRV roadmap, establishing a domestic ETS framework, and in building a communication strategy for carbon pricing. The ongoing work on establishing a registry and MRV system has progressed to the implementation phase. The MoCC&EC has received support from World Bank and Climate Action Data Trust to develop a national carbon registry. After a series of technical discussions, the registry has been customized for Pakistan and is expected to be launched soon.

The 2017 “Pakistan Climate Change Act” provides the legal and institutional framework for climate policy in Pakistan. It establishes the cross-ministerial Pakistan Climate Change Council, responsible for the country’s overall climate strategy, as well as the Pakistan Climate Change Authority, which is tasked with coordinating climate policy development and implementation, in addition to designing and establishing a national registry and database on GHG emissions. In 2019, the MoCC&EC, in cooperation with the UNFCCC secretariat and the Institute for Global Environmental Strategies, published a study on carbon pricing which underlined the potential for emissions trading in Pakistan in the power and industrial sectors.

Following the outcomes of the study, Pakistan launched the National Committee on Establishment of Carbon Markets (NCEC) in December 2019, which coordinated ministerial activities on carbon pricing. Among other responsibilities, the one-year committee was tasked with assessing the role and scope of carbon markets in delivering Pakistan’s NDC and identifying opportunities for and challenges to improving emissions data. The NCEC reviewed existing carbon market designs, deliberated with national stakeholders, and coordinated information-sharing and capacity-building activities. The MoCC&EC is currently advancing the work in these areas under the World Bank’s PMI program where the initial mapping exercise has led to the implementation of activities contributing to four broad outcomes. The country will initiate work on: 1) domestic carbon pricing policy; 2) international carbon market to operationalize Article 6; 3) MRV framework; and 4) knowledge management/capacity building under the current support in next five years.

Besides a domestic ETS, Pakistan aims to launch credit-based trading mechanisms linked to international carbon markets, which would enable it to supply offset credits to partner countries. Policy guidelines are being drafted to provide a roadmap for carbon trading in international markets. This includes the guidelines for developing emission reduction projects and protocols for corresponding adjustment. The draft policy is under review and will be presented to the cabinet for approval.

EMISSIONS & TARGETS OF PAKISTAN

GHG EMISSIONS (INCLUDING INDIRECT CO_2, EXCLUDING LULUCF), 2018

(in $MtCO_2e$, share of total in %)

Energy	218.9	(45%)
Industrial processes	25.8	(5%)
Agriculture	223.5	(46%)
Waste	21.7	(4%)
Total	**489.9**	

Energy industries	43.4	(9%)
Manufacturing industries and construction	66.2	(14%)
Transport	51.3	(10%)
Commercial, institutional, and residential	44.1	(9%)
Other energy	13.9	(3%)

GHG REDUCTION TARGETS

By 2030: 50% below BAU including LULUCF; the first 15% below BAU is unconditional and the remaining 35% conditional on international support (NDC, 2021)

OTHER INFORMATION

INSTITUTIONS INVOLVED

Ministry of Climate Change and Environmental Coordination (MoCC&EC): Responsible for national climate mitigation and adaptation policy.
Pakistan Climate Change Council: Responsible for overall climate strategy.
Pakistan Climate Change Authority: Tasked with coordinating climate policy development and implementation.

REGULATORY FRAMEWORK

→ Pakistan Climate Change Act 2017

PHILIPPINES

- **Bill introduced for an ETS in high-emitting sectors, working group to provide recommendations**
- **Technical working group assessing the readiness of the Philippines for carbon pricing, led by the Department of Finance**

In force

Under development

Under consideration

ETS DESCRIPTION

In May 2023, the Committee on Climate Change of the Philippine House of Representatives conditionally approved the "Low Carbon Economy Act of 2022" House Bill No. 7705, which includes provisions for an emission trading system to achieve national targets. A technical working group has since been established to review the bill and provide recommendations in consultation with stakeholders.

In its current form, the bill proposes a cap on GHG emissions for high emitting sectors and a carbon trading system. The Philippine Department of Environment and Natural Resources (DENR), upon recommendation of the NDC Steering Committee, will be responsible for the design and operation of the system and will determine the key parameters, such as covered sectors, annual targets, cap setting, allocation, monitoring, and enforcement. The DENR, the Department of Trade and Industry (DTI) and the Securities and Exchange Commission (SEC) will serve as oversight agencies to ensure compliance.

In parallel, the Department of Finance (DoF) has led a technical working group to assess the feasibility of implementing carbon pricing instruments in the country

EMISSIONS & TARGETS OF THE PHILIPPINES

OVERALL GHG EMISSIONS (EXCLUDING LULUCF), **2020**
(in $MtCO_2e$, share of total in %)

Energy	131.2	(59%)
Industrial processes	18.7	(8%)
Agriculture	61.3	(27%)
Waste	13.7	(6%)
Total	**224.97**	

Energy industries	73.3	(56%)
Manufacturing industries and construction	11.7	(9%)
Transport	29.2	(22%)
Commercial, institutional, and residential	12.8	(10%)
Other energy	4	(3%)

GHG REDUCTION TARGETS

By 2030: Conditional pledge to keep 2030 emissions 75% below BAU levels (excluding LULUCF sectors) (NDC)

OTHER INFORMATION

INSTITUTIONS INVOLVED

Department of Environment and Natural Resources (DENR): Manages environmental and climate policies and is responsible for the ETS design and administration.
Department of Finance (DOF): Responsible for the government's fiscal policy
NDC Steering Committee- Formed by sectoral agencies, it is responsible for the development, implementation, monitoring, and evaluation of the NDC

REGULATORY FRAMEWORK

→ **House Bill No. 2184 (18th Congress, 2020)**
→ **House Bill No. 7705, (19th Congress, 2023)**

REPUBLIC OF KOREA

KOREA EMISSIONS TRADING SCHEME

- East Asia's first national ETS
- Currently undergoing a major reform process

ETS DESCRIPTION

The Korea Emissions Trading Scheme (K-ETS) launched in 2015 as East Asia's first nationwide, mandatory ETS. It covers around 89% of South Korea's national GHG emissions and will help the country in its objective to become carbon neutral by 2050, a target embedded in the "Carbon Neutral Framework Act" of 2021.

The K-ETS covers 804 of the country's largest emitters in the power, industrial, buildings, waste, transport, domestic aviation, and domestic maritime transportation sectors. Covered entities must surrender allowances for all their covered emissions, and allocation is done via auctions or free distribution. At least 10% of allowances must be auctioned. Free allocation is provided for EITE sectors based on production cost and trade intensity benchmarks. Since 2021, domestic financial intermediaries and other third parties have been able to participate in exchange.

The K-ETS was established by the "Framework Act on Low Carbon, Green Growth" (2010). It was preceded by a mandatory Target Management System (TMS), launched in 2012, following a two-year pilot phase. The TMS facilitated the collection of verified emissions data and training in the MRV process, and still applies to smaller entities not covered by the K-ETS.

YEAR IN REVIEW

In September 2023, as part of a larger reform process, the government released new rules to increase liquidity in the K-ETS, focusing on facilitating market participation and banking. These include:

1. Increasing incentives to reduce emissions, facilitate low-carbon investment.
2. Mitigating price volatility.
3. Revising guidelines for verifying offset credits to reduce the burden on businesses and strengthen MRV.
4. Raising holding limits of Korean Allowance Units (KAUs) for third parties (three million to six million tonnes for market makers ('see Market Design' section) and 500,000 to one million tonnes for securities companies).
5. Aligning the compliance cycle so both compliance deadline and banking/borrowing applications fall in August.

From 2024:

6. Restrictions on the carryover of unused allowances will be relaxed, to three times the net sales (total allowances sold minus total allowances bought) and the conversion period of offset credits prolonged from two to five years.
7. The government will encourage the launch of carbon price-linked financial products and introduce futures markets by 2025.
8. Consignment trading will be introduced to the market. The ETS will be opened up to more financial institutions and, from 2025, to individuals.
9. Auction volume will be adjusted annually if necessary. In 2024, the monthly auctioned volume will depend on the previous month's auction results:

a) if bid ratio is less than 100%, the next month's auction volume will be determined by the current month's winning quantity.
b) if the bid ratio is 100% or more, the next month's auction volume will be determined by the current month's auctioned volume or higher, whichever the government decides.

In force
Under development
Under consideration

SECTORS

TRANSPORT
POWER
AVIATION
INDUSTRY
MARITIME
BUILDINGS
WASTE

CAP

547.9 $MtCO_2e$ (2024)

GREENHOUSE GASES

CO_2, CH_4, N_2O, HFCs, PFCs, SF_6

OFFSET CREDITS

Domestic
International

ALLOCATION

Free Allocation: Grandparenting
Free Allocation: Benchmarking
Auctioning

AVERAGE 2023 PRICES

Average auction price: KRW 10,672 (USD 8.17)
Average secondary market price: KRW 9,999 (USD 7.66)

TOTAL REVENUE

KRW 1,176.75 billion (USD 901.14 million)
since the beginning of the program
KRW 84.18 billion (USD 64.4 million) in 2023

Longer term changes will be implemented along with the next "ETS Basic Plan" – which will be finalized by December 2024, a year earlier than planned – for Phase 4, which will begin in 2026. These changes include developing a roadmap to better align the cap with the country's Carbon Neutral Framework Act and updated NDC as well as plans to increase the share of auctioning and introduce the Korean Market Stabilization Reserve.

EMISSIONS & TARGETS OF THE REPUBLIC OF KOREA

GHG EMISSIONS (INCLUDING INDIRECT CO_2, EXCLUDING LULUCF), 2021

(in $MtCO_2e$, share of total in %)

Energy	587.7	(86.9%)
Industrial processes	51.4	(7.6%)
Agriculture	21.4	(3.2%)
Waste	16.1	(2.4%)
Total	**676.6**	

Energy industries	241.1	(35.6%)
Manufacturing industries and construction	194.4	(28.7%)
Transport	97.0	(14.3%)
Commercial, institutional, and residential	44.0	(6.5%)
Other energy	6.9	(1.0%)
Fugitive emissions	4.5	(0.7%)

GHG REDUCTION TARGETS

By 2030: At least a 35% reduction below 2018 emissions (Carbon Neutral Framework Act); 40% reduction below 2018 levels (updated NDC)

By 2050: Carbon neutrality (Carbon Neutral Framework Act)

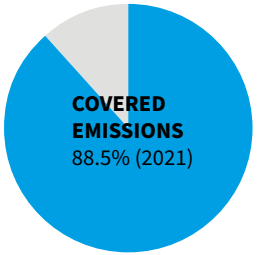
ETS COVERAGE & PHASES

COVERED EMISSIONS

Verified ETS emissions 599 $MtCO_2e$ (2021)

Overall GHG emissions without LULUCF

676.6 $MtCO_2e$ (2021)



PHASES

PHASE ONE: Three years (2015 to 2017)

PHASE TWO: Three years (2018 to 2020)

PHASE THREE: Five years (2021 to 2025)

CAP OR TOTAL EMISSIONS LIMIT

A cap limits the total emissions allowed in the system.

PHASE ONE: 1,689.2 $MtCO_2e$, including a reserve of 89.4 $MtCO_2e$ for early action and new entrants. 84.5% of the reserve was used within the phase. 14.3 million allowances were set aside in a reserve for market stabilization (see 'Market Stability Provisions' section), bringing the total number of allowances in Phase 1 to 1,704.2 million.

Annual Caps in Phase One:

2015: 540.1 $MtCO_2e$

2016: 560.7 $MtCO_2e$

2017: 585.5 $MtCO_2e$

PHASE TWO: 1,777 $MtCO_2e$, including 134 million for new entrants and other purposes. 14 million allowances were set aside for market stabilization and 5 million for the market makers (see 'Market Design' section) bringing the total amount of allowances to 1,796.1 million in Phase 2.

Annual Caps in Phase Two:

2018: 593.5 $MtCO_2e$

2019: 563.2 $MtCO_2e$

2020: 562.5 $MtCO_2e$

The higher caps in Phase 2 reflected the expansion of the sectoral scope of the K-ETS (see 'Sectors and Thresholds' section).

PHASE THREE: 3,048.3 $MtCO_2e$. This corresponds to an average annual cap of 610 $MtCO_2e$, including reserves. Annual caps appear higher in Phase 3 due to the expansion in scope, but reflect a 4.7% decrease in emissions compared to the 2017 to 2019 baseline. In addition, 14 million allowances are set aside for market stability purposes and 20 million for market makers, bringing the total amount of allowances in Phase 3 to 3,082.3 million.

Annual Caps in Phase Three (excluding reserves):

2021: 589.3 $MtCO_2e$

2022: 589.3 $MtCO_2e$

2023: 589.3 $MtCO_2e$

2024: 567.1 $MtCO_2e$

2025: 567.1 $MtCO_2e$

Plans are currently underway to develop a roadmap to better align the cap with the Republic of Korea's updated NDC.

SECTORS AND THRESHOLDS

PHASE ONE: 23 sub-sectors from the following five sectors: heat and power, industry, buildings, waste, and transportation (domestic aviation).

PHASE TWO: According to the Phase 2 Allocation Plan, the public and waste sectors were disaggregated such that the K-ETS covered the following six sectors: heat and power, industry, buildings, transportation, waste, and the public sector. These were divided into 62 sub-sectors.

PHASE THREE: Coverage within the transport sector was widened to include freight, rail, passenger, and maritime shipping. Construction industries have also been brought into the system's scope. This increased the number of sub-sectors to 69.

INCLUSION THRESHOLDS: Companies emitting more than 125,000 tCO_2 per year, and facilities with emissions in excess of 25,000 tCO_2 per year.

The scheme covers both direct emissions and indirect emissions from electricity consumption. The same inclusion thresholds apply.

POINT OF REGULATION

Point source (power, industry, buildings, transport, domestic aviation, domestic maritime, waste, public/other); downstream (buildings).

TYPE OF ENTITIES

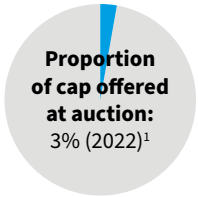
Installations, companies, financial institutions (market makers, see 'Market Design' below), third-party institutions, e.g., financial firms and brokers.

NUMBER OF ENTITIES

804 (2023)

ALLOWANCE ALLOCATION & REVENUE

ALLOWANCE ALLOCATION



PHASE ONE:

Free Allocation: 100% of total allowance supply. Most sectors received free allowances based on the average GHG emissions of the base years (2011 to 2013). Three sub-sectors (grey clinker, oil refining, and aviation) were allocated free allowances following benchmarks based on previous activity data from the base years.

PHASE TWO:

Free Allocation: 97% of free allocation to entities in sub-sectors subject to auctioning; 100% for EITE sectors. Toward the end of Phase 2, the share of sector-specific benchmarking reached 50% of total primary allocation and was expanded to a total of seven sub-sectors: grey clinker, oil refining, domestic aviation, with the addition of waste, industrial parks, electricity generation, and district heating/cooling.

EITE sectors received 100% of their allowances for free if they met one of the following three criteria:[1]

- Additional Production Cost of >5% and Trade Intensity of >10%; or
- Additional Production Cost of >30%; or
- Trade Intensity of >30%.[2]

Auctioning: Regular auctions began in 2019. Participation in auctions is subject to some limitations. Only companies that do not receive all their allowances for free are eligible to bid, with a list of eligible bidders published by the Ministry of Environment. Bidders can purchase 15-30% of the allowances on offer. The auctions are subject to a minimum price.

- Auction share: 3% of allocation to entities in 26 eligible sub-sectors, including entities from the electricity, domestic aviation, wooden products, and metal foundry sectors.
- Auction volume: 7.95 million allowances (2019) and 9.3 million (2020).

PHASE THREE:

Free Allocation: Less than 90% of free allocation to entities in sub-sectors that are subject to

1 Based on the overall annual allocation. The requirement that at least 10% of allowances must be auctioned only applies to the aggregation of the sub-sectors that are subject to auctioning.
1 Additional Production Cost: (annual average GHG emissions during base year x average market price of allowances during base year)/annual average value-added production during base year
2 Trade Intensity is calculated relative to the base year: (annual average exports + annual average imports)/(annual average sales + annual average imports)

auctioning; 100% for EITE sectors. The share of sector-specific benchmarking is to reach 60% and has been expanded to a total of 12 sub-sectors: grey clinker, oil refining, domestic aviation, waste, industrial parks, electricity generation, and district heating/cooling, with the addition of steel, petrochemicals, buildings, paper, and wood processing. EITE sectors receive 100% free allocation if they meet the following criteria:
Production cost x Trade Intensity ≥ 0.2%

Allocation is calculated using the following formulas:
- Benchmark allocation: Benchmark value (tCO_2e/t) x historical activity level (t) x correction factor x carbon leakage factor
- Grandparenting allocation: Average GHG emissions of base year x correction factor x carbon leakage factor

The carbon leakage factor is 1.0 for sectors exposed to significant risk; for non-EITE sectors, it is 0.9. A tightening of benchmarks to align the K-ETS with long-term climate targets is under discussion.

Auctioning: Bidders can purchase a maximum of 15% of the allowances on offer. The government is expected to increase the share of auctioned allowances in the coming years.
- Auction share: At least 10% of allocation to entities in sub-sectors subject to auctioning. Entities from 41 sub-sectors, excluding EITE sectors, can participate in auctions.
- Auction volume: 20.46 million allowances (2021), 23.24 million allowances (2022), and ~19 million allowances (2023) which represents ~3% of the 589.3 $MtCO_2e$ 2023 cap (excluding reserves).

USE OF REVENUES

Climate mitigation

Low-carbon innovation

Revenues from auctioning go into the Climate Response Fund, which supports emissions mitigation infrastructure, low-carbon innovation, and technology development for small- and mid-sized companies covered by the K-ETS.

FLEXIBILITY & LINKING

BANKING AND BORROWING

Banking is allowed with restrictions across and within phases.
Borrowing is allowed within a single trading phase.

PHASE ONE: Borrowing was limited to 20% of an entity's obligation.

PHASE TWO: From Phase 2 to Phase 3, banking was initially limited to the higher of two limits: the net annual number of allowances sold by the entity in Phase 2; or company- and facility-specific limits of 250,000 KAUs and 5,000 KAUs, respectively. Borrowing was limited to 15% of an entity's obligation in 2018.

Rules on banking and borrowing were adjusted in 2019. The borrowing limit was set by each entity's past borrowing activity, according to the following formula: Compliance obligation of the entity x [Borrowing limit of previous year – ("borrowing ratio" in previous year x 50%)]/entity's emission volume.

The banking limit for the transition between Phase 2 and Phase 3 has been calculated as follows:
- For allowances from the 2018 vintage (KAU18), entities can bank either three times the net sales (total allowances sold minus total allowances bought) or 75,000 allowances for companies emitting >125,000 tCO_2e (or 15,000 allowances for companies emitting >25,000 tCO_2e) — whichever is higher;
- For KAU19s, the amounts above are reduced by 1/3, i.e., two times the net selling amount or 50,000 for large entities (10,000 for smaller entities) allowances, whichever is higher;
- For KAU20s, the amount represents a 2/3 reduction compared to the KAU18 rule.

PHASE THREE: In the first trading year, entities could borrow up to 15% of their compliance obligation. From the second to fourth trading years, the same borrowing formula as for 2019 applies.

Banking in Phase 3:
- In the first and second compliance years (2021 and 2022), entities could bank up to double their net number of KAUs and offset credits (KCUs) sold on the secondary market (excluding swaps and auctions).
- In the third and fourth compliance years (2023 and 2024), entities' banking limits are equal to their net number of allowances (total allowances sold minus total allowances bought) and offset credits sold.

Phase 3 allowances and offset credits can only be carried over to the first compliance year of Phase 4 (2026 to 2030). The banking limit in the fifth compliance year (2025) also follows the "three times of net sales" rule.

OFFSET CREDITS

Domestic offset credits, i.e., Korean Offset Credits (KOCs) were allowed in Phase 1. KOCs and international credits (subject to qualitative criteria) have been allowed since Phase 2. Both domestic and international credits must be converted to KCUs to be used for compliance.

PHASE ONE:
Qualitative Limit: The use only of domestic offset credits from external reduction activities implemented by non-ETS entities — and that met international standards — was allowed.

Domestic CDM credits (CERs) and KOCs were allowed. Eligible activities included those eligible under the CDM plus carbon capture and storage, and had to have been implemented after mid-April 2010.

Quantitative Limit: Up to 10% of each entity's compliance obligation.

PHASE TWO:

Qualitative Limit: In Phase 2, the use of CERs generated from June 2016 from international CDM projects developed by Korean companies was allowed if:

- At least 20% of the ownership rights, operating rights, or the voting stocks were owned by a Korean company; or
- A Korean company supplied the low-carbon technology worth at least 20% of the total project cost.

Quantitative Limit: Up to 10% of each entity's compliance obligation (of which up to 5% can be international offset credits).

PHASE THREE:

Qualitative limit: The use of offset credits is allowed according to the same qualitative criteria outlined for Phase 2. However, limitations apply to the issuance and conversion of credits:

- GHG reduction projects (according to reduction period coverage) to KOC conversion: 1) April 2010 to December 2020: within two years (2021 to 2022); 2) January 2021 onwards: with-in two years (2022 to 2023).
- KOC to KCU conversion: within five years of KOC issuance.

Quantitative limit: Up to 5% of each entity's compliance obligation, regardless of type.

As of December 2023, there were 292 registered methodologies (211 for CDM and 81 for domestic offset credits). The government aims to use 37.5 Mt of international credits to reach the 2030 NDC.

LINKS WITH OTHER SYSTEMS

The K-ETS is not linked with any other system.

COMPLIANCE

COMPLIANCE MECHANISM

Covered entities must surrender one allowance per tCO_2e emitted for all their covered emissions.

COMPLIANCE PERIOD

One year. Entities must surrender allowances for the previous emissions year by the end of August.

MRV

REPORTING: Annual reporting of emissions from the previous year must be submitted by the end of March.

VERIFICATION: Emissions must be verified by a third-party verifier.

FRAMEWORK: Emission reports are reviewed and certified by the Certification Committee of the Ministry of Environment by the end of May.

Liable entities are required to revise and resubmit emission reports which are found to be incorrect.

ENFORCEMENT

The penalty shall not exceed either three times the average market price of allowances of the given compliance year or KRW 100,000 (USD 76.58) per tonne.

MARKET REGULATION

MARKET DESIGN

MARKET PARTICIPATION: Compliance entities. Limited participation for non-compliance entities. Initially limited to compliance entities, the "market maker" system was introduced in Phase 2 to improve market liquidity. Market makers are third-party participants in the K-ETS who can draw on a separate government-held reserve of allowances (at the time five million), set aside at the time of original allocation, to increase liquidity in the market through daily allowance trade. Three new financial firms were appointed in 2021, in addition to the two market makers that had been appointed in 2019. In December 2022, the government announced a further two market makers to begin operating from 2023. Eight market makers were appointed later in 2023.

From Phase 3, as per the 2012 "Emissions Trading Act" and the Presidential Decree, non-compliance entities in the form of other non-market maker domestic financial intermediaries can participate in the secondary market and trade allowances on the Korea Exchange (KRX). In line with this, 20 financial intermediaries were approved for participation in the carbon market from 2021 (the total as of December 2023 is 21 financial intermediaries). Though, they initially could only hold up to 200,000 allowances each, to avoid excessive market share, this number was increased to 500,000 in December 2022, and again to one million in 2023.

MARKET TYPES:

Primary: Monthly auctions have been held since 2019. Sectors that receive 100% free allocation are not allowed to participate in auctions. Auctions take place via the KRX.

Secondary: The K-ETS has traditionally had a high share of over-the-counter transactions. Additionally, the KRX manages the platform where the spot secondary market transactions take place. Allowances, KCUs and KOCs are traded on the exchange for different vintage years. Consignment trading is set to be introduced in 2024.

LEGAL STATUS OF ALLOWANCES: The legal status of KAUs is not explicitly referenced in the 2012 Emissions Trading Act or the Presidential Decree. However, KAUs are not regulated under financial market law. For the purpose of preventing market price manipulation, unfair trade and to regulate exchange of information, Article 22, paragraph 3 of the Act specifies that certain provisions of "Capital Market and Financial Investment Business Act" apply.

MARKET STABILITY PROVISIONS

TRIGGERS: An Allocation Committee is in place to implement market stabilization measures if:

- the market allowance price of six consecutive months is at least three times higher than the average price of the two previous years;
- the market allowance price of the last month is at least double the average price of the two previous years and the average trading volume of the last month is at least twice the volume of the same month of the two previous years;
- the average market allowance price of a given month is lower than 60% of the average price of the two previous years; or
- it is difficult to trade allowances due to an imbalance of supply or demand.

INSTRUMENTS: Stabilization measures include:

- additional auctioning of up to 25% of allowances from the market stabilization reserve, which contains 14.3 mil-lion allowances;
- the establishment of a limit to the number of allowances entities can hold: minimum (70%) or maximum (150%) of the allowances of the compliance year;
- an increase or decrease of the borrowing limit;
- an increase or decrease of the offset limit; and
- temporary establishment of a price ceiling or price floor.

In 2018, the Allocation Committee put up for auction an additional 5.5 million allowances from the stability reserve to ease the market in the lead-up to the 2017 compliance deadline; 4.7 million of these were sold. No more such cases have occurred since.

In 2021, the Allocation Committee set a price floor of KRW 12,900 (USD 9.98) per tonne in April and KRW 9,450 (USD 7.31) per tonne in June.

In 2023, the government set two temporary price floors. The measure's trigger price remained at an average of KRW 12,088 (USD 9.26), calculated as 60% of the average price from the preceding two years. The first price floor of KRW 7,020 (USD 5.38) was established in July and the last price floor of KRW 7,750 (USD 5.94) was set in November and lifted in early December (when prices were maintained at KRW 8,520 (UDS 6.53) for five consecutive days).

As of the start of 2024, there are eight K-ETS market makers. These institutions can draw on a government-held reserve of 20 million allowances in a bid to increase liquidity in the market.[3]

OTHER INFORMATION

INSTITUTIONS INVOLVED

Ministry of Environment: Holds overall responsibility for the K-ETS.
Ministry of Economy and Finance: Chairs the Allocation Committee; briefly held overall responsibility for the K-ETS between June 2016 and January 2018.
Korea Exchange (KRX): Trading and auctioning platform.
Greenhouse Gas Inventory and Research Center (GIR): Responsible for the registry and technical implementation.
International Carbon Reduction Council: Ministry-level body that promotes GHG reduction projects.

EVALUATION/ETS REVIEW

The GIR regularly releases summary (evaluation) reports that include key emissions statistics, market performance indicators, and survey results from covered entities.

REGULATORY FRAMEWORK

- → Carbon Neutral Framework Act
- → Enforcement Decree of the Act on the Allocation and Trading of Greenhouse Gas Emissions Allowances
- → Act on the Allocation and Trading of Greenhouse Gas Emissions Allowances
- → First Basic Plan for 2015-2024
- → Second Basic Plan for 2017-2026
- → Third Basic Plan of the ETS
- → First Allocation Plan
- → Second Allocation Plan
- → Greenhouse Gas Emissions Allocation and Trade Act (amended in June 2020)
- → Third Allocation Plan

3 The government lends allowances to the market makers that provide services for market making.

SAITAMA PREFECTURE

TARGET SETTING EMISSIONS TRADING SYSTEM IN SAITAMA

- **Covers large buildings and factories**
- **Linked to Tokyo Cap-and-Trade Program since 2011 launch**

ETS DESCRIPTION

Saitama Prefecture's ETS was launched in April 2011. It covers around 18% of the prefecture's 2020 emissions.

Saitama's system covers about 600 entities in the industrial and commercial buildings sectors. The cap is aggregated bottom-up from annual facility-level emissions limits ('baselines'). Covered entities must surrender allowances for emissions that exceed the facility-specific baseline, which is based on absolute historical emissions. The baselines are calculated using base-year emissions and a compliance factor, which is set for each period based on regulations established by the Governor of Saitama and expert consultation. The baseline also depends on factors such as expected energy efficiency gains and the extent to which they consume energy supplied by other facilities.

The ETS was instituted as part of the "Saitama Prefecture Global Warming Strategy Promotion Ordinance", with the aim of eventually establishing a common system with other prefectures in the metropolitan area. Saitama's ETS is linked to Tokyo's cap-and-trade program, with credits mutually exchangeable between the two jurisdictions.

YEAR IN REVIEW

In July, the Prefectural Government announced that in fiscal year 2021, the Saitama ETS achieved a 35% reduction in emissions below base-year levels (see 'Allowance Allocation' section for base-year calculation).
Saitama's system is now in the final year of its third compliance period (FY2020 to 2024), which requires facilities to reduce emissions to 20% or 22% below base-year emissions, depending on their assigned category.

In FY2021, it was announced that 437 of the 581 covered facilities (75%) achieved their targets in the second compliance period.

In September, it was also announced that the Saitama Prefecture Global Warming Countermeasures Action Plan had been revised to raise the prefecture's GHG reduction target to 46% below FY2013 levels, up from 26%.

In force
Under development
Under consideration

SECTORS

INDUSTRY

BUILDINGS

COVERAGE

6.9 $MtCO_2$ (2021)

GREENHOUSE GASES

CO_2

OFFSET CREDITS

Domestic (national and prefectural)

ALLOCATION

Free Allocation: Grandparenting
Free Allocation: Benchmarking

AVERAGE 2023 PRICES

Average price (second compliance period, 2015 to 2019):
JPY 144 (USD 1.02)

EMISSIONS & TARGETS OF SAITAMA PREFECTURE

GHG EMISSIONS (EXCL. LULUCF), FY 2020

(in $MtCO_2e$, share of total in %)

Energy	32.2	(83%)
Industrial processes	2.3	(6%)
Waste	1.1	(3%)
Other[1]	3.4	(8%)
Total	**39.0**	

Manufacturing industries and construction	7.9	(20%)
Transport	8.2	(21%)
Commercial and residential	16.1	(41%)

GHG REDUCTION TARGETS

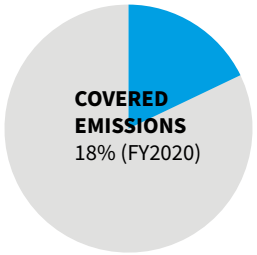
By 2030: 46% reduction from FY2013 levels (Saitama Prefecture Global Warming Countermeasures Action Plan Second Phase)

ETS COVERAGE & PHASES

COVERED EMISSIONS

Verified ETS emissions

6.9 $MtCO_2$ (FY2020)



PHASES

PHASE ONE: 1 April 2011 to 30 September 2016
PHASE TWO: 1 April 2015 to 31 January 2022
PHASE THREE: 1 April 2020 to 30 September 2026

The Saitama ETS has both phases and compliance periods (see 'Compliance' section). A phase is defined as the compliance period plus an additional 18-month adjustment period, during which facilities may continue to trade credits in order to reach their targets for the corresponding compliance period.

By exception, an additional four months to the usual 18-month adjustment period applied for the second period due to impacts of the COVID-19 pandemic.

CAP OR TOTAL EMISSIONS LIMIT

The total emissions limit under the scheme is the sum of the bottom-up facility-level baselines for all individual covered entities. These baselines are calculated using base-year emissions and a compliance factor (see 'Allowance Allocation' section).

The bottom-up emissions limit for the first compliance period (FY2011 to FY2014) was 33.3 $MtCO_2$. For the second compliance period, it was 52.4 $MtCO_2$.

SECTORS AND THRESHOLDS

SECTORS: Consumption of fuels, heat, and electricity in commercial and industrial buildings.

INCLUSION THRESHOLDS: Facilities that consume the energy equivalent of at least 1,500kL of crude oil for three consecutive years.

POINT OF REGULATION

Downstream (industry, buildings)

TYPE OF ENTITIES

Installations, companies

NUMBER OF ENTITIES

581 facilities (FY2021):

- Offices/commercial buildings: 169
- Factories: 412

ALLOWANCE ALLOCATION & REVENUE

ALLOWANCE ALLOCATION

All allowances in the scheme are allocated for free.

Under the Saitama ETS, each facility has its own cap, which serves as the "baseline" from which it must achieve its reduction target. Baselines for facilities are set according to the following formula: Base-year emissions x (1-compliance factor) x compliance period (five years). The compliance factor for each period is based on regulations established by the Governor of Saitama Prefecture.

Base-year emissions are the average emissions of any three consecutive years between FY2002 and FY2007, as chosen by each entity.

1 "Other" here includes GHGs not just limited to CO_2, e.g., CH_4.

Baselines for new entrants are based on past emissions (average annual emissions for three consecutive fiscal years of the four fiscal years immediately preceding the compliance period) or on emissions intensity standards provided by the government.

At the beginning of each new compliance period, with the exception of those reserved for new entrants, all allowances (in Saitama also known as "credits") are allocated for free to covered entities for the full period. Facilities with emissions below their baseline at the end of the compliance period may keep or trade their excess allowances; those that exceed their baseline must purchase and surrender credits from elsewhere to meet their compliance obligation.

COMPLIANCE FACTOR:
First compliance period: 8% or 6% reduction below base-year emissions.
Second compliance period: 15% or 13% reduction below base-year emissions.
Third compliance period: 22% or 20% reduction below base-year emissions.

The higher compliance factor applies to commercial buildings, as well as to district heating and cooling (DHC) plants. The lower compliance factor applies to other facilities, such as commercial buildings, that use DHC for more than 20% of the entire energy consumption, and factories.

In the third compliance period, for large facilities owned by small and medium-sized enterprises, the compliance factor is reduced to three-quarters of the 22% or 20%, depending on the categories described in the previous paragraph. Similarly, in medical facilities where electricity is vital to preserve life and health, the compliance factor is two percentage points lower.

EMISSIONS REDUCTION METHODS:
- Renewable energy: When covered facilities generate electricity from renewable sources for their own use, they can deduct this amount of electricity from the total energy usage to be reported.
- Low-carbon electricity: In order to evaluate energy efficiency efforts of the covered facilities, CO_2 emissions factors of electricity suppliers are fixed during each compliance period. When covered facilities procure electricity from suppliers with lower emissions factors, from the third compliance period, they can deduct the difference between these emission factors from their reported emissions accordingly, to reflect this lower emissions factor of energy purchased.

Facilities demonstrating outstanding performance in reducing emissions, as well as in the introduction, use, and management of energy efficient equipment, are certified as top-level facilities that receive lower compliance factors according to their rate of progress, for a period of five years. The certification standards represent the best available energy efficiency measures, covering more than 200 different energy-saving measures.

FLEXIBILITY & LINKING

BANKING AND BORROWING

Banking is allowed, but only between two consecutive compliance periods.

Borrowing is not allowed.

OFFSET CREDITS

The use of offset credits is allowed.

QUALITATIVE LIMITS: Five types of offset credits are allowed to complement the emissions reduction credits issued to facilities covered by the Saitama ETS when their emissions fall below their baseline:
- Small and mid-size facility credits: Emissions reductions from non-covered small and medium-sized facilities in Saitama Prefecture.
- Outside Saitama credits: Emission reductions achieved from large facilities outside of Saitama Prefecture. Large facilities are those with an energy consumption of 1,500kL of crude oil equivalent or more in a base year, and with base-year emissions of 150,000 tonnes or less.
- Renewable energy credits: Renewable energy credits generated under the Saitama ETS encompass the following types: Environmental Value Equivalent, Renewable Energy Certificates, and New Energy Electricity, generated under the "Renewable Portfolio Standard Law". Credits from solar (heat, electricity), wind, geothermal, or hydro (under 1,000 kW) electricity production for use under the Saitama ETS were converted to 1.5 times the value of regular credits until the end of the second compliance period. From the third compliance period, they are converted on a one-to-one basis. Credits from biomass (biomass rate of 95% or more, black liquor is excluded) are also converted with a factor of one.
- Tokyo credits (via link): These encompass (1) Excess credits: Emissions reductions from facilities with base-year emissions of 150,000 tonnes or less; and (2) Small and mid-size facility credits issued by Tokyo Metropolitan Government.
- Forest absorption credits: Credits from forests inside Saitama Prefecture are counted at 1.5 times the value of regular credits. Others are converted with a factor of one.

QUANTITATIVE LIMITS: Quantitative limits apply only for Outside Saitama credits: these are issued only for the reduction amount that exceeds the compliance factor. These credits can be used for compliance for up to one-third of offices' reduction obligations. Factories can use up to 50%.

All offset credits must be verified by a verification agency.

1,009 tCO_2e of offset credits were issued over FY2020 to June FY2023.

LINKS WITH OTHER SYSTEMS

Since its launch in 2011, the Saitama ETS has been linked with the Tokyo Cap-and-Trade Program. Tokyo and Saitama credits are fungible in the two jurisdictions. About 60 credit transfers have taken place so far between them.

COMPLIANCE

COMPLIANCE MECHANISM

Covered entities must surrender allowances for emissions that exceed the facility-specific baseline. Facilities' baselines are based on absolute historical emissions.

COMPLIANCE PERIOD

Four or five years.

FIRST COMPLIANCE PERIOD: FY2011 to FY2014
SECOND COMPLIANCE PERIOD: FY2015 to FY2019
THIRD COMPLIANCE PERIOD: FY2020 to FY2024

Covered facilities must submit a global warming countermeasures plan report and implementation status report by the end of July of the first fiscal year of the compliance period. Every year thereafter, operators must submit a new global warming countermeasure plan and emissions report by the end of July.

Compliance instruments must be submitted by the end of the 18-month adjustment period, i.e., by the end of September of the second fiscal year after the end of the compliance period.

The deadline for meeting the targets under the second compliance period was postponed to the end of January 2022, due to the impacts of the COVID-19 pandemic.

MRV

REPORTING FREQUENCY: Annual emissions reporting, including emission reduction plans. All seven GHGs must be monitored and reported: CO_2, CH_4, N_2O, PFCs, HFCs, SF_6, and NF_3.

VERIFICATION: These reports require third-party verification by the end of the adjustment period.

FRAMEWORK: These are based on "Saitama Monitoring/Reporting Guidelines" and "Saitama Verification Guidelines".

ENFORCEMENT

Every year, global warming countermeasures plans and implementation status reports for all covered facilities are published on Saitama Prefecture's website. If a facility does not achieve its reduction target, its name is made public, and the insufficient reduction amount is added to its target for the following compliance period.

MARKET REGULATION

MARKET DESIGN

MARKET PARTICIPATION: Compliance entities, i.e., those above the inclusion threshold (see 'Sectors and Thresholds' section). One can earn credits only after achieving emission reductions, and only emitting facilities can participate in trading.

MARKET TYPES:

Primary: All allowances are allocated for free.
Secondary: Covered facilities trade over the counter. Businesses wishing to buy or sell credits can go through a private intermediary to find a buyer and negotiate the price.

MARKET STABILITY PROVISIONS

Saitama Prefecture does not use market stability provisions.

OTHER INFORMATION

INSTITUTIONS INVOLVED

Saitama Prefectural Government: Oversees the Target Setting Emissions Trading System in Saitama.

EVALUATION/ETS REVIEW

Official status and evaluation reports are published on an annual basis.

REGULATORY FRAMEWORK

→ Saitama Prefecture Global Warming Strategy Promotion Ordinance
→ Regulation on Saitama Prefecture Global Warming Strategy Promotion Ordinance

SHANGHAI

SHANGHAI PILOT EMISSIONS TRADING SYSTEM

- **Broad sectoral coverage and ongoing scope expansion including through lowered inclusion thresholds**
- **Active offset credit trading market, pioneered allowance spot forward trading**
- **Leading in the operation of the national ETS exchange**

ETS DESCRIPTION

The Shanghai Pilot ETS was launched in November 2013 and was the second Chinese region to start its pilot system. It covers around 36% of the city's emissions.

The ETS covers more than 300 entities in the industrial, buildings, and aviation sectors. In 2016, Shanghai expanded its ETS coverage by adding maritime shipping and more industrial sectors and lowering the participation threshold to 10,000 tCO_2 per year. Covered entities must surrender allowances for all their covered emissions, and allocation is based on auctions or free allocation. Ad hoc auctions were held between 2014 and 2019, after which there have been two auctions held per year.

The Shanghai ETS is the only pilot that has achieved a 100% compliance rate since its launch. It is also one of the most active in terms of offset credit trading. Shanghai has been a center for carbon finance innovations in China, including repurchases, carbon funds, carbon trusts, CCER pledge loans, green bonds, and carbon margin trading. Since July 2021, the Shanghai Environmental and Energy Exchange (SEEE) has operated a trading platform for the national ETS.

The Shanghai ETS operates in parallel with the China national ETS. As the national ETS expands to new sectors, covered entities in these sectors will be integrated into the national ETS from the regional markets.

YEAR IN REVIEW

In May, the Shanghai Ecology and Environment Bureau (EEB) released the 2022 allocation plan. According to the plan, Shanghai has added data centers as a new sector with compliance obligations. In the road transport sector, 20 logistics companies have been added to the list but with only MRV obligations. Shanghai has introduced a new local crediting system, the Shanghai Carbon Emission Reductions (SHCER) aimed at incentivizing individual-low-carbon activities.

In November, the Shanghai EEB released an additional working notice on compliance for 2022, which allows covered entities with more than 500,000 tonnes shortfall to borrow allowances up to 20% of the shortfall from 2023. This is a temporary supporting policy for companies that suffered disproportionately due to the COVID-19 pandemic.
In October and November, the Shanghai EEB auctioned 2,668,835 allowances for a total of CNY 191.49 million (USD 27.03 million).

In force
Under development
Under consideration

SECTORS

- POWER*
- DOMESTIC AVIATION
- INDUSTRY
- MARITIME
- BUILDINGS

CAP

100 $MtCO_2$ (2022)

GREENHOUSE GASES

CO_2

OFFSET CREDITS

Domestic (national and provincial)

ALLOCATION

Free Allocation: Grandparenting
Free Allocation: Benchmarking
Auctioning

AVERAGE 2023 PRICES

Average auction price: CNY 70.90 (USD 10.00)
Average secondary market price: CNY 66.96 (USD 9.45)

TOTAL REVENUE

CNY 456.4 million (USD 64.41 million) since the beginning of the program
CNY 191.5 million (USD 27.03 million) in 2023

* The power sector integrated into the China national ETS in 2021, covering emissions from 2019-2020. However, the national ETS only covers coal- and gas-fired generators. Oil-fired generators remain covered by the Shanghai ETS.

EMISSIONS & TARGETS OF SHANGHAI

OVERALL GHG EMISSIONS (EXCLUDING LULUCF), 2020

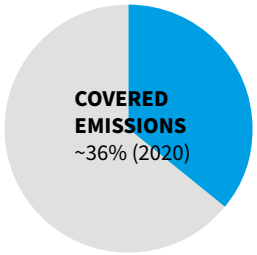
244.0 $MtCO_2e$[1]

GHG REDUCTION TARGETS

By 2025: Peak total and per capita CO_2 emissions (Shanghai Urban Master Plan 2017 to 2035 and 14th Five-Year Plan);
By 2035: Reduce CO_2 emissions by ~5% as compared to peak levels (Shanghai Urban Master Plan 2017 to 2035)
By 2060: Climate neutrality (Shanghai Carbon Peaking Implementation Plan)

ETS SIZE & PHASES

COVERED EMISSIONS[2]



PHASES

PHASE ONE: 2013-2015, also known as the "trial phase"
PHASE TWO: 2016-present

CAP OR TOTAL EMISSIONS LIMIT

A cap limits the total emissions allowed in the system.
Inclusive of reserves, the cap for past years were as follows:
PHASE ONE (2013-2015):
~150 $MtCO_2$/year

PHASE TWO (2016-present):
2016: 155 $MtCO_2$
2017: 156 $MtCO_2$
2018: 158 $MtCO_2$
2019: 158 $MtCO_2$
2020: 105 $MtCO_2$[3]
2021: 109 $MtCO_2$
2022: 100 $MtCO_2$

SECTORS AND THRESHOLDS

PHASE ONE: Airports, domestic aviation, chemical fibers, chemicals, commercial, power and heat, water suppliers, hotels, financial, iron and steel, petrochemicals, ports, non-ferrous metals, building materials, paper, railways, rubber, and textiles.

Inclusion thresholds:
- Power and industry: 20,000 tCO_2 per year
- Other sectors: 10,000 tCO_2 per year

PHASE TWO: Previous sectors plus shipping, electronic materials, pharmaceuticals, auto-motive manufacturing, food manufacturing, and minting. Power plants were transferred to the China national ETS from 2019, but some special captive power plants and heat generation entities remain covered by the Shanghai carbon market. Data centers have been covered since 2022.

Inclusion thresholds:
- Power and industry: either 20,000 tCO_2 per year or 10,000 tonnes of coal equivalent (tce) per year; 10,000 tCO_2 per year or 5,000 tce per year for those that participated Phase 1.
- Transport: either 10,000 tCO_2 per year or 5,000 tce per year (aviation and ports); 100,000 tCO_2 per year or 50,000 tce per year (shipping).
- Buildings: either 10,000t CO_2 per year or 5,000 tce per year.

POINT OF REGULATION

Point source (industry); downstream (indirect emissions from electricity and heat consumption).

TYPE OF ENTITIES

Companies

NUMBER OF ENTITIES

357 (2022)

ALLOWANCE ALLOCATION & REVENUE

ALLOWANCE ALLOCATION

In Phase One, covered entities received allowances for the whole period at once. In Phase Two, allowances are allocated on an annual basis. In addition, allocation methods have been progressively improved, including increased the use of benchmarks.

FREE ALLOCATION:
Benchmarking: Free allocation based on sector-specific benchmarks is used for electricity and heat producers, the electricity grid, and data centers.

1 Due to the lack of publicly available data, the data reported here is estimated by local expert based on public sources.
2 No data is publicly available for recent years. Data here is provided by local experts.
3 This drop from 2019 is primarily due to the transfer of large parts of the power sector into the China national ETS.

Grandparenting: Grandparenting based on historical emissions intensity is used for some industrial sectors, aviation, ports, shipping, and water suppliers, generally based on the previous three years' data. Grandparenting based on historical emissions is used for airports, buildings, the commercial, and some industrial sectors with complex products or a considerable change in emissions boundaries, generally based on the previous three years' data.

Ex-post allocation adjustments, e.g., based on production data, are applied for those with historical intensity or benchmarking allocations.

AUCTIONING: A small share of the annual cap may be auctioned. The main purpose of auctions is to provide entities with additional supply to meet their compliance demand. One auction was held in each of the following years: 2014, 2016, 2018, and 2019. Since then, two auctions have been held each year.

In 2023, auctions were held in October and November. In the October sale, the floor price was set at the weighted average price of all trading days between June and September of 2022, CNY 60.82 (USD 8.59). The auction offered 1,000,000 allowances, all of which were sold at CNY 67.51 (USD 9.53) apiece. In November, the floor price was set at the weighted average price of all trading days between January and October 2023. The auction offered 3,000,000 allowances, 55% of which were sold at the floor price of CNY 74.29 (USD 10.49) per tonne.

USE OF REVENUES

General budget, including debt reduction

Revenues are attributed to the provincial treasury.

FLEXIBILITY & LINKING

BANKING AND BORROWING

Banking is allowed, with some restrictions for banking across trading periods. For banked allowances from the first trading period, only one-third per year could be used by compliance entities between 2016 and 2018. Allowances are bankable for institutional investors without such an annual maximum limit.

Borrowing is not allowed. However, in 2022, covered entities with a shortfall in excess of 500,000 tonnes were allowed to borrow allowances from their 2023 allocation to cover up to 20% of the gap. This was a temporary supporting policy for companies that suffered disproportionately due to the COVID-19 pandemic.

OFFSET CREDITS

The use of offset credits – CCERs and provincial offset SHCERs – is allowed.

QUANTITATIVE LIMITS:

Phase One: The use of CCER credits was limited to 5% of verified emissions.

Phase Two: From 2016 to 2018, the use of CCERs was limited to 1% of the annual allocation. For the compliance years 2019 and 2020, the use of CCERs was limited to 3% of verified emissions. In 2019, only 2% was allowed for offset credits generated outside the Yangtze River Delta region,[4] and 1% must have stemmed from within the region. This limitation was raised to 5% in 2022 for both CCERs and SHCERs.

QUALITATIVE LIMITS:

Phase One: Offset credits for reductions realized before January 2013 could not be used for compliance.

Phase Two: Same restriction as in Phase 1. Additionally, offset credits from hydro projects are not allowed.

LINKS WITH OTHER SYSTEMS

Although the SEEE operates the trading systems for both the national ETS and the Shanghai regional pilot, the two markets are separate. The Shanghai ETS is not linked with any other system.

COMPLIANCE

COMPLIANCE MECHANISM

Covered entities must surrender one allowance per tCO_2e emitted for all their covered emissions.

COMPLIANCE PERIOD

One calendar year. Covered entities must surrender allowances by June of the following year.

MRV

MONITORING: Covered entities are required to set up monitor plans and monitor their emission based on these plans.

REPORTING: Annual, to the Shanghai EEB before the end of March.

4 The region covers Shanghai, Jiangsu, Zhejiang, and Anhui.

VERIFICATION: Third-party verification is required. The Shanghai EEB commissions an independent third party to carry out verification. In addition, "fourth-party verification" is carried out by government-assigned experts. The government also assesses verifiers' performance through a performance evaluation mechanism.

FRAMEWORK: The Shanghai government has released general rules for monitoring and reporting, as well as sector-specific guidelines for the following sectors: iron and steel, power and heat, chemicals, nonferrous metals, non-metallic mineral products, textiles and paper, aviation, shipping, large buildings (hotels, commercial, and financial), and transport (e.g., ports).

Third-party verification rules have been strengthened in recent years. In December 2020, the Shanghai EEB amended the interim measures for managing third-party verifiers. In October 2021, it released a new policy on the supervision and assessment of verifiers.

ENFORCEMENT

COVERED ENTITIES: Penalties for failing to submit an emission or verification report on time or for providing fraudulent information range from CNY 10,000 (USD 1,411) to CNY 50,000 (USD 7,058).

Between CNY 50,000 (USD 7,058) and CNY 100,000 (USD 14,116) can be imposed for non-compliance, in addition to the obligation to surrender the missing number of allowances. Further sanctions may also be imposed, such as entry into the credit record of the company, being added to a publicly available online list, loss of access to funds for energy conservation and emissions reduction measures.

THIRD-PARTY VERIFIERS: Third-party verifiers are penalized with a fine of between CNY 10,000 (USD 1,411) to CNY 50,000 (USD 7,058) for issuing false verification reports, material errors in verification reports, and for unauthorized use or publication of confidential corporate or emissions information.

MARKET REGULATION

MARKET DESIGN

MARKET PARTICIPATION: Compliance entities; non-compliance entities (domestic institutional investors that meet the requirement of the carbon emission trading rules set up by the SEEE).

MARKET TYPES:

Primary: No set percentage of allowances are allocated via auctioning, though the Shanghai ETS regulations state that auctioning is to be introduced gradually. Ad hoc auctions have been held since 2014 to provide compliance entities with additional supply. In addition, further auctions have also been held since 2020 where institutional investors have also been allowed to participate.

Secondary: Products include Shanghai Emission Allowances (SHEA), Shanghai Emission Allowance Forwards, and CCERs. SHEAs and CCERs are spot products. Shanghai Emission Allowance Forward (SHEAF) is the standardized spot forward product.

LEGAL STATUS OF ALLOWANCES: Allowances are not considered financial instruments.

MARKET STABILITY PROVISIONS

EXCHANGE: Depending on transaction type, if prices vary by 10-30% in one day, the SEEE can institute price stabilization measures such as temporarily suspending trading or imposing holding limits.

RESERVE: A small share of the annual cap can be kept in a reserve for auctioning before the end of the annual compliance cycle as a market stability measure (see 'Allowance Allocation' section).

OTHER INFORMATION

INSTITUTIONS INVOLVED

Shanghai Ecology and Environment Bureau (EEB): Acts as the competent authority setting the rules and overseeing the system.
Shanghai Environment and Energy Exchange: Responsible for operating the trading platform.
Shanghai Information Center: Responsible for overseeing and operating the registry.

EVALUATION/ETS REVIEW

No information is publicly available about the evaluation or review system. However, the local carbon exchange has published annual reports on the Shanghai ETS with an overview of its performance from 2013 to 2020. Research on improving the ETS is undertaken every year, funded by the local government.

REGULATORY FRAMEWORK

- Shanghai Pilot ETS Implementation Plan
- Measures for Management of Emissions Trading in Shanghai
- Shanghai EEB- Allocation Plan for 2019 (including list of covered entities)
- Shanghai EEB- Allocation Plan for 2020 (including list of covered entities)
- Shanghai EEB- Allocation Plan for 2021 (including list of covered entities)
- Shanghai EEB- Allocation Plan for 2022 (including list of covered entities)

SHENZHEN

SHENZHEN PILOT EMISSIONS TRADING SYSTEM

- One of three Chinese pilots with ETS bill passed by regional congress
- Active trading market with diverse participants including foreign investors
- Pioneered sectoral expansion and cross-regional trading

ETS DESCRIPTION

The Shenzhen Pilot ETS began in June 2013 and was the first of the Chinese pilots to start operation. As a city within Guangdong province with its own separate ETS, Shenzhen is the only Chinese pilot operating at the sub-provincial level. The ETS covers around 50% of the city's emissions. Covered entities must surrender allowances for all their covered emissions, and allocation is based predominantly on free allocation.

The Shenzhen ETS covers emissions from over 650 entities in the industry, buildings, and transport sectors. Except for two auctions held in 2014 and 2022, allowances have been allocated freely using both benchmarking and grandparenting. In addition to the national offset program (CCER), the Shenzhen ETS also implements local offset programs, including the Tan Pu Hui system. Shenzhen's market has the highest liquidity in China, despite its relatively small size. In contrast to most pilot systems in China, which are regulated by subnational government orders from the executive body of the government, Shenzhen's is regulated by a dedicated ETS bill passed by its municipal legislator, the Shenzhen People's Congress.

As of the end of 2022, the average emissions intensity of covered entities in the manufacturing sectors had dropped by 42%, while industrial value-added has increased by 63% on average.

The Shenzhen ETS currently operates in parallel with the Chinese national ETS. As the national ETS expands to new sectors, covered entities in these sectors will be integrated into the national carbon market from the regional markets.

YEAR IN REVIEW

In March, the Shenzhen Environment and Ecology Bureau (EEB) updated its coverage list, removing 63 companies from the list of covered entities for 2022. While one company moved out of Shenzhen, the other 62 companies were removed as their emissions were below the inclusion threshold for three consecutive years. The Shenzhen ETS now covers 684 entities.

In July, the Shenzhen EEB published the allocation plan for 2022 and 2023. Shenzhen introduced a mechanism to control the surplus and shortfall. For covered entities with verified emissions of over 100,000 tCO_2, the surplus and shortfall are limited to 20% of verified emissions. For covered entities with verified emissions less than 100,000 tCO_2, the surplus and shortfall are limited to 20,000 tCO_2. Since 2023, the Shenzhen ETS has also covered hotels and supermarkets with compliance obligation.

In October, the Shenzhen EEB published the list of 302 entities with MRV obligations for 2022. These companies may be covered by the Shenzhen ETS if they meet the inclusion threshold once emissions have been verified in 2023. The Shenzhen EEB also released the draft of revised MRV guidelines for public consultation.

In force
Under development
Under consideration

SECTORS

INDUSTRY
BUILDINGS
TRANSPORT

CAP

28 $MtCO_2$ (2023)

GREENHOUSE GASES

CO_2

OFFSET CREDITS

Domestic (national and provincial)

ALLOCATION

Free Allocation: Grandparenting
Free Allocation: Benchmarking
Auctioning

AVERAGE 2023 PRICES

Average secondary market price: CNY 46.37 (USD 6.55)

TOTAL REVENUE

~CNY 27.9 million (USD 3.9 million) since the beginning of the program

In November, the Shenzhen EEB released the "Implementation Plan of Shenzhen Emissions Trading to Support Peaking Carbon Emissions and Achieving Carbon Neutrality". According to this plan, the Shenzhen ETS will apply an absolute cap from 2027. The plan also lays out intentions to further expand the province's ETS coverage. It also aims to cover different reduction activities in offset crediting, link to the Guangdong-Hong Kong-Macao Greater Bay Area, and connect to the international credit mark

EMISSIONS & TARGETS OF SHENZHEN

OVERALL GHG EMISSIONS (INCLUDING INDIRECT CO_2, EXCLUDING LULUCF), **2020**
45.42 $MtCO_2e$[1]

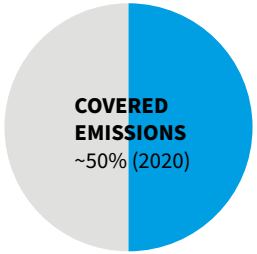
GHG REDUCTION TARGETS

By 2030: Peak carbon emissions (Outline of the 14th Five-Year Plan and 2035 Vision)
By 2035: Decouple GHG emissions from economic and social development (Shenzhen's 14th Five-Year Plan for Climate Change)

ETS COVERAGE & PHASES

COVERED EMISSIONS

~50% (2020)



PHASES

Ongoing (2013-present)

CAP OR TOTAL EMISSIONS LIMIT

A cap limits the total emissions allowed in the system.

2015 to 2019: ~31$MtCO_2$ (excluding buildings)
2020: 22 $MtCO_2$
2021: 25 $MtCO_2$
2022: 26 $MtCO_2$
2023: 28 $MtCO_2$

In addition, the government sets aside reserves for new entrants (2%) and market stability measures (2%).

SECTORS AND THRESHOLDS

Water, gas, heat, manufacturing, electronic equipment, waste management, ports, subways, public buses, and other non-transport sectors. Electricity production was covered until 2019, after which it transitioned to the China national ETS. According to the latest publicly available information, 33 sectors were covered in 2022.

INCLUSION THRESHOLDS: Annual emissions over 3,000 tCO_2 per year for enterprises; entities confirmed by local EEB.

POINT OF REGULATION

Point source (industry); downstream (indirect emissions from electricity and heat consumption).

TYPE OF ENTITIES

Companies

NUMBER OF ENTITIES

680 (2022)

ALLOWANCE ALLOCATION & REVENUE

ALLOWANCE ALLOCATION

Allowances are largely distributed for free, and allocation is adjusted ex-post based on output data.

FREE ALLOCATION:
Benchmarking: Applied to the water, power grid, and gas sectors based on sectoral historical emissions intensity.

Grandparenting: Applied to waste management sectors, ports, subways, public buses, and other non-transport sectors based on a product-based historical emissions intensity method. A GDP-based historical emissions intensity method is applied to manufacturers. For public buildings such as hotels, supermarkets and universities, grandparenting based on historical emissions is applied.

AUCTIONING: The 2022 "Provisional Regulation of the Shenzhen Emission Trading Pilot Scheme" states that allowances can be sold at auction or at a fixed price. At least 3% of allowances should be auctioned. So far, two auctions have been held, in June 2014 and August 2022.

1 No data is publicly available for recent years; the data here is estimated by local experts.

For the 2022 auction, the floor price was set at CNY 29.64 (USD 4.18) per tonne. More than 0.5 $MtCO_2$ of allowances were successfully auctioned, at an average price of CNY 43.49 (USD 6.14) per tonne and a total revenue of CNY 25.26 million (USD 3.75 million).

For the 2014 auction, the floor price was set at CNY 35.43 (USD 5.00) per tonne. 0.8 $MtCO_2$ of allowances were successfully auctioned, with a total revenue of CNY 2.65 million (USD 0.37 million). The purpose of this auction was to increase market supply and price stability.

USE OF REVENUES

Climate mitigation

General budget, including debt reduction

According to the 2014 Shenzhen ETS regulation, auctioning revenues are attributed to the city treasury.[2] However, the 2022 revision states that the city will enhance the transparency of revenue use and establish a new Carbon Emissions Trading Fund to support the ETS and other GHG reduction programs.

FLEXIBILITY & LINKING

BANKING AND BORROWING

Banking is allowed.

Borrowing is not allowed.

OFFSET CREDITS

The use of offset credits is allowed.

QUANTITATIVE LIMIT: The use of offset credits is limited to 20% of the annual compliance obligation.

QUALITATIVE LIMIT: Domestic project-based carbon offset credits (CCERs), Tan Pu Hui local offset credits, and other offset credits authorized by the local government are allowed. Credits from hydropower projects are not eligible, and additional geographical restrictions apply to the use of certain CCERs and local offset programs.

LINKS WITH OTHER SYSTEMS

The Shenzhen Pilot ETS is not linked with any other system. The Guangdong-Hong Kong-Macao Greater Bay Area (to which Shenzhen belongs) plans to explore the feasibility of a joint or linked carbon market. According to Shenzhen's local green finance legislation, financial institutions will in the future be encouraged to participate in cross-border trading in this market.

Shenzhen also has pioneered cross-regional cooperation. In 2014, Shenzhen and Baotou signed the "Memorandum of Strategic Cooperation on the Construction of Carbon Trading Systems". Six Baotou companies of the Inner Mongolia Autonomous Region were voluntarily covered by Shenzhen's Pilot ETS for one compliance year, from June 2016.

COMPLIANCE

COMPLIANCE MECHANISM

Covered entities must surrender one allowance per tCO_2e emitted for all their covered emissions.

COMPLIANCE PERIOD

One calendar year. Covered entities have until the end of August of the following year to surrender allowances.

MRV

MONITORING: Covered entities are required to set up monitor plans and monitor their emission based on these plans.

REPORTING FREQUENCY: Annual reporting of CO_2 emissions to the ETS competent authority by the end of March of the following year, using tiered emissions factors depending on different emission sources. Covered industrial entities must also annually submit a statistical indicator report covering their production data to the municipality's statistics department by the end of March of the following year. Entities should surrender allowances or offset credits by the end of August.

VERIFICATION: Third-party verification of the annual emissions report is required (deadline for submission is the end of March of the following year). The competent authority may assign this to a specialized agency.

FRAMEWORK: Shenzhen has released two documents:

- a general guiding document in the form of regional standards on monitoring and reporting; and
- a guiding document on monitoring and reporting for the buildings sector.

2 The 2014 Shenzhen ETS regulation stipulated that the city government would set up a market stability fund, dedicated to market stabilization measures, supporting companies' mitigation activities, the promotion of market service institutions, capacity building, and ETS management, funded by auction revenues, donations and other channels.

ENFORCEMENT

REGULATED ENTITIES: Penalties for failing to submit an emission or verification report on time or for providing fraudulent information range from CNY 10,000 (USD 1,411) to CNY 50,000 (USD 7,058).

Covered entities providing false information can be fined CNY 50,000-100,000 (USD 7,0586-14,116).

Penalties for disturbing the market order can rise to CNY 100,000 (USD 14,116). Covered entities failing to surrender sufficient allowances to match their emissions are fined three times the average market price of the preceding six months. The missing allowances can be withdrawn from the company's account or deducted from the next year's allocation.

CNY 50,000-100,000 (USD 7,058-14,116) may be imposed if a third-party agency falsifies reports.

Other non-financial penalties include public reporting, reporting to relevant credit information of public banks, disqualification from financial subsidies (for five years), and a record entered in the State-Owned Enterprise performance assessment system.

THIRD-PARTY VERIFIERS: Third-party verifiers shall be penalized with a fine of between CNY 10,000 (USD 1,411) to CNY 50,000 (USD 7,058) for issuing false verification reports, material errors in verification reports, and for unauthorized use or publication of confidential corporate or emissions information.

MARKET REGULATION

MARKET DESIGN

MARKET PARTICIPATION: Compliance entities; non-compliance entities (institutional investors); individuals (both domestic and international), subject to meeting the requirements of the carbon emission trading rules set by the China Emissions Exchange (Shenzhen).

MARKET TYPES:

Primary: Shenzhen so far has very limited experience with auctioning: two auctions have been held, in 2014 and 2022. Only compliance entities and member institutions authorized by the China Emissions Exchange (Shenzhen) may participate.

Secondary: CCERs, Shenzhen Allowances (SZAs) and local Tan Pu Hui offset credits are the main spot trading products in the secondary market. The China Emissions Exchange (Shenzhen) is the trading platform for all products.

Due to financial market regulations in China, no forward markets or derivatives are allowed. However, with the regional green finance legislation that entered into force in March 2021, Shenzhen sees new momentum to explore the development of innovative carbon financial products.

LEGAL STATUS OF ALLOWANCES: Allowances are not considered financial instruments.

MARKET STABILITY PROVISIONS

EXCHANGE: Depending on transaction type, if prices vary by 10% or 30% in one day, the China Emissions Exchange (Shenzhen) can institute price stabilization measures such as temporarily suspending trading or imposing holding limits.

RESERVE: 2% of the total cap is kept as a government reserve for market stabilization.

INTERVENTION: In case of market fluctuations, the Shenzhen EEB can sell extra allowances from the reserve at a fixed price. Such allowances can be used only for compliance and cannot be traded. The government can also buy back up to 10% of the total cap. Once they are bought back, allowances can also be used in the market stability auctions.

OTHER INFORMATION

INSTITUTIONS INVOLVED

Ecology Environment Bureau of Shenzhen Municipality (EEB): Responsible for ETS affairs, including the registry and MRV.
China Emissions Exchange (Shenzhen): Responsible for operating the trading platform.

EVALUATION/ETS REVIEW

No formal evaluation has been conducted. Research on improving the Shenzhen ETS is undertaken every year, funded by the Shenzhen government.

REGULATORY FRAMEWORK

- → Carbon Emissions Management Regulations of Shenzhen Special Economic Zone (the local ETS bill) (2012)
- → Measures for Management of Emissions Trading in Shenzhen (2022)
- → Implementation Plan of Shenzhen Emissions Trading to Support Peaking Carbon Emissions and Achieving Carbon Neutrality.
- → Shenzhen EEB—Notice on Carrying out ETS Work for Compliance Year 2019 (with list of covered entities)
- → Shenzhen EEB—Regulations on Tan Pu Hui Management
- → Shenzhen EEB—Allocation Plan for Vintage 2021
- → Shenzhen EEB—Allocation Plan for Vintage 2022 and 2023

TAIWAN, CHINA

- 2023 Climate Change Response Act calls for a carbon fee to be implemented before the planned ETS
- Mandatory GHG reporting program and domestic offset program in place

ETS DESCRIPTION

Taiwan, China, enacted the "GHG Reduction and Management Act" (the Act) in 2015, which legislates a 50% reduction in emissions by 2050 compared to 2005 levels. It also mandates regulatory mitigation goals to be set in stages. The Act further stipulates that the Taiwanese Environmental Protection Administration (TEPA) will implement a domestic cap-and-trade scheme. This is further referred to in the "Climate Change Action Guideline 2017".

The Act also mandated TEPA to develop a "GHG Reduction Action Plan", which was published in 2018. This plan outlines implement strategies for mitigation policies; it includes five-year regulatory goals for national and sectoral GHG emissions and eight policy implementation packages. The plan also proposes to implement a cap-and-trade system, calculate baseline emissions, and establish regulations – though without a precise timeline. On this basis, the central industry competent authorities of the energy, manufacturing, transport, residential and commercial buildings, agricultural, and environment sectors approved the "GHG Emissions Control Action Programs" the same year.

Subsidiary regulations are also in place. Mandatory emissions reporting for entities with annual emissions above 25,000 tCO_2e from certain sectors has been in place since 2014. The "2018 Regulations Governing GHG Offset Program Management" allows enterprises to acquire carbon offset credits.

TEPA has been revising the Act since early 2021. In July 2021, it established a new internal climate change office to accelerate the relevant legal amendments. In October 2021, the draft amendment of the Act was published for public consultation and renamed the "Climate Change Response Act". It proposed a new carbon fee for domestic emissions, covering both direct and indirect emissions, with revenues to be used to support domestic climate mitigation and adaptation. The carbon fee would allow the use of domestic offset credits. In response to international developments on carbon border adjustment mechanisms to avoid carbon leakage, it would also propose levying carbon fees on imported products with high carbon content.

The "Climate Change Response Act" was submitted to the Legislative Yuan in April 2022 for further review and finalization. Details of the carbon fee and ETS will be set out in regulations. Regulatory discussions are pending on design and implementation of both instruments, and on how the carbon fee could be transitioned to the ETS in the future or work together as a complementary mechanism.

YEAR IN REVIEW

The "Climate Change Response Act" passed the third reading in the Legislative Yuan in January 2023 and went into force in February.

In August, Taiwan upgraded the TEPA to a full-scale Ministry of Environment (MOE), which in turn established a new Climate Change Administration (CCA) to lead – in consultation with other relevant central competent authorities – on climate policy design and implementation, including the carbon fee and ETS. The MOE also announced that 512 companies that emit more than 25,000 tCO_2e a year will be subject to the carbon fee from 2025, based on verification of their total emissions for 2024. The carbon fee rates will

be determined by the Rate Review Committee based on factors such as the current state of GHG reduction in Taiwan, types of emission sources, categories of GHG emissions, emission scale, voluntary reduction efforts and reduction effectiveness. International carbon pricing implementation and Taiwan's industrial competitiveness will also be considered. The rates will be discussed and decided by the committee in the first quarter of 2024.

In August, the Taiwan Carbon Solution Exchange (TCX) was set up with a focus first on consultation and capacity building. High quality international offsets are expected to be available by early 2024 for voluntary purposes, and trading of domestic offsets to meet mandatory requirements will start after regulations are set by the CCA.

In September, the MOE published a set of management rules, which came into force in January 2024, for GHG inventories to expand its third-party emissions accreditation and verification capacity.

In October, the CCA announced two new regulations. The first sets out that entities emitting less than 25,000 tCO_2e (and therefore not subject to the carbon fee) will be eligible to develop voluntary carbon emission reduction projects that follow internationally-accepted MRV guidance. The second establishes that entities setting up new facilities emitting more than 25,000 tCO_2e a year, plus development or high-rise construction projects, will be required to offset 10% of the annual increase in GHGs for ten consecutive years. These entities can either buy carbon credits from voluntary projects or implement other carbon reduction activities, e.g., replacing fuel-run motorcycles or agricultural machines with electric ones or using high-efficiency air conditioning.

In December, the CCA published two draft regulations on the establishment of the carbon fee review committee and establishing the carbon fee. The draft regulations are currently undergoing public consultation. The cap for the use of international offset is set at 5%, using Singapore's carbon tax as a reference.

EMISSIONS & TARGETS OF TAIWAN, CHINA

GHG EMISSIONS (EXCL. LULUCF), 2021

(in $MtCO_2e$, share of total in %)

Energy	268.9	(92%)
Industrial processes	18.1	(6%)
Agriculture	3.2	(1%)
Waste	2.7	(1%)
Total	**293.0**	

Energy industries	189.5	(71%)
Manufacturing industries and construction	34.3	(13%)
Transport	33.9	(13%)
Other energy	9.3	(3%)

GHG REDUCTION TARGETS

By 2025: 10% below 2005 GHG levels (Executive Yuan)
By 2030: Around 24% reduction in GHGs from 2005 levels (MOE)
By 2050: Net-zero emissions (Climate Change Response Act)

FLEXIBILITY & LINKING

OFFSET CREDITS

The Climate Change Response Act stipulates that domestic early action and offset credits will be allowed to meet carbon fee and ETS obligations. The MOE, in consultation with relevant central competent authorities, will also recognize international offset credits with the standards and cap to be decided later.

LINKS WITH OTHER SYSTEMS

The Climate Change Response Act includes a stipulation that the ETS can be implemented in conjunction with foreign governments and international agreements.

OTHER INFORMATION

INSTITUTIONS INVOLVED

Ministry of Environment (MOE): Responsible for establishing regulations for the carbon fee and ETS.

Ministry of Economic Affairs: Central authority to be consulted by TEPA for regulations on ETS, in particular for allocation, leakage and international credits.

Financial Supervisory Commission: Responsible for setting up a carbon exchange, and to be consulted by TEPA for regulations on trading of credits.

REGULATORY FRAMEWORK

→ Climate Change Response Act (2023)
→ Regulations Governing GHG Certification and Verification Institutions (2023)
→ Measures on GHG voluntary emission reduction project management (2023)
→ Measures on GHG emission increase offset management (2023)

THAILAND

- **The "Climate Change Act" is expected to be submitted for legislative approval in 2024, providing the basis for market instruments**
- **Voluntary carbon market operating across Thailand**
- **Capacity building for voluntary ETS reaching key industries**

DESCRIPTION

Thailand has been considering economic instruments to incentivize GHG emissions reductions for several years. The 2018 "National Reform Plan" mandated the Thai government to begin developing such instruments. The Emission Trading Scheme, Carbon Tax on Products, and Crediting Mechanism are some of the potential economic instruments to be implemented; further details on these will be provided in the policy and legislative processes that follow the development of the framework for the "Climate Change Act". The Department of Climate Change and Environment (DCCE) is currently drafting the act for the public hearing process as well as working on implementing the Regulatory Impact Assessment (RIA). The final draft is expected to be submitted for cabinet and parliamentary approval in 2024 to 2025.

In 2013, the Thailand Greenhouse Gas Management Organization (TGO) began developing an MRV system and basic trading infrastructures for the Thailand Voluntary Emissions Trading Scheme (Thailand V-ETS). This voluntary pilot project aims to develop and test MRV systems, cap-setting and allocation procedures, and trading infrastructure for 12 GHG-intensive sectors. Targets are set for each sector based on their average emissions intensity in the base years of 2012 to 2013. Both direct and indirect emissions are covered. As a voluntary system, allowances are provided for free based on MRV reporting. Based on TGO's feasibility study and pilot implementation test cases, covered entities may be allowed to use offset credits from Thailand's domestic crediting mechanism, Thailand Voluntary Emission Reduction (T-VER) credits, to meet up to 15% of their compliance obligations. Supporting these initiatives, TGO regularly conducts capacity building activities to engage key stakeholders across Thailand.

Since 2021, TGO has collaborated with the Eastern Economic Corridor Office of Thailand to develop a pilot ETS in its Eastern Economic Corridor (EEC) region. The project aimed to conduct engagement, build up capacity on ETS implementation for pilot organizations, and provide technical assistance on T-VER project development. Several pilot organizations fulfilled their ETS Capacity building program, 12 in 2022 and 11 in 2023.

EMISSIONS & TARGETS OF THAILAND

GHG EMISSIONS (EXCL. LULUCF), **2018**

(in $MtCO_2e$, share of total in %)

Energy	257.3	(69%)
Industrial processes	40.1	(10.7%)
Agriculture	58.5	(15.7%)
Waste	16.7	(4.9%)
Total	**372.6**	

Energy industries	103	(40%)
Manufacturing industries and construction	52.1	(20.2%)
Transport	75	(29%)
Other energy	26.9	(10.6%)

GHG REDUCTION TARGETS

By 2030: Unconditional 30% reduction compared to BAU; 40% reduction compared to BAU conditional on adequate and enhanced support (updated NDC)

By 2050: Aspirational target of climate neutrality by 2050 and net-zero emissions by 2065 (updated NDC)

OTHER INFORMATION

INSTITUTIONS INVOLVED

Thailand Greenhouse Gas Management Organization (Public Organization): Autonomous public agency responsible for developing, implementing, and managing Thailand's climate change mitigation programs and projects.

Department of Climate Change and Environment (DCCE): Central government agency in charge of supervising Thailand's missions and operations related to climate change, while also coordinating with public and private agencies on climate change issues

REGULATORY FRAMEWORK

- → **Thailand's Long-Term Low Greenhouse Gas Emission Development Strategy**
- → **Carbon credit management guideline and mechanism** (2022)
- → **Regulation of the Board of Directors of Thailand Greenhouse Gas Management Organization re: rules, procedures, and conditions for considering Thailand Voluntary Emission Reduction (T-VER) projects** (2023)

TIANJIN

TIANJIN PILOT EMISSIONS TRADING SYSTEM

- **Operates in parallel with the China national ETS**
- **Sectoral expansion to building materials, pulp and paper, aviation, and other manufacturers**
- **Tightened cap-setting and allowance allocation rules**

ETS DESCRIPTION

Tianjin launched its pilot ETS in December 2013. It covers around 50% of the city's emissions.

The Tianjin Pilot ETS covers emissions from 145 entities in the iron and steel, petrochemicals, chemicals, oil and gas exploration, papermaking, aviation, building materials, food and beverages, non-ferrous metals, machinery and equipment manufacturing, mining, agricultural and food processing, pharmaceutical manufacturing, and electronic equipment manufacturing sectors. Covered entities must surrender allowances for all their covered emissions.

Allowances are primarily allocated through grandparenting based on either base year total emissions or on emissions intensity. Auctions are also held, with the main purpose of providing compliance entities with additional supply to meet their compliance demand. Two auctions have taken place thus far, in 2020 and 2021.

With the ETS extended until the end of June 2025, several measures were introduced in 2020 to strengthen compliance: companies that fail to surrender enough allowances will have double the amount of the shortfall deducted from the next year's allocation, and third-party verifiers found to not comply with regulations will be banned for three years.

The Tianjin ETS operates in parallel with the China national ETS. As the national ETS expands to new sectors, covered entities in these sectors will be integrated into the national ETS from the regional markets.

YEAR IN REVIEW

In June, the Tianjin Pilot ETS completed the compliance process for 2022, with a reported 100% compliance rate.

In December, the Tianjin Ecology and Environment Bureau (EEB) published the 2023 allocation plan. The allocation method is the same as the 2021 allocation plan, with 2021 as the updated base year for historical intensity and grandparenting. According to the plan, 154 entities were covered in 2023, nine more than in 2022. However, the total number of allowances decreased by 1 $MtCO_2$ to 74 $MtCO_2$.

In force
Under development
Under consideration

SECTORS

INDUSTRY

CAP

74 $MtCO_2$ (2023)

GREENHOUSE GASES

CO_2

OFFSET CREDITS

Domestic (national and provincial)

ALLOCATION

Free Allocation: Grandparenting
Free Allocation: Benchmarking
Auctioning

AVERAGE 2023 PRICES

Average secondary market price: CNY 32.20 (USD 4.54)

TOTAL REVENUE

CNY 148.18 million (USD 20.92 million) since the beginning of the program in 2013

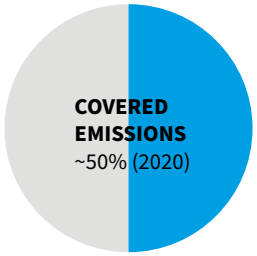
EMISSIONS & TARGETS OF TIANJIN

OVERALL GHG EMISSIONS (EXCLUDING LULUCF)
183.14 $MtCO_2$ (2021)

GHG REDUCTION TARGETS
By 2030: Reduction of carbon intensity by 65% compared to 2005; peak carbon emissions (Tianjin Carbon Peak Implementation Plan)

ETS COVERAGE & PHASES

COVERED EMISSIONS



PHASES
Ongoing (2014 to present)

CAP OR TOTAL EMISSIONS LIMIT
A cap limits the total emissions allowed in the system.
For recent years, the cap was as follows:
2021: 75 $MtCO_2$
2022: 75 $MtCO_2$
2023: 74 $MtCO_2$

SECTORS AND THRESHOLDS
Iron and steel, petrochemicals, chemicals, oil and gas exploration, papermaking, aviation, and building materials. Electricity production was covered until 2020, after which it transitioned to the China national ETS.

In 2021, Tianjin expanded its ETS to entities above the inclusion threshold from all industrial sectors (without pre-selection of specific sectors).

INCLUSION THRESHOLDS: 20,000 tCO_2/year, considering both direct and indirect emissions.

POINT OF REGULATION
Point source (industry); downstream (indirect emissions from electricity and heat consumption).

TYPE OF ENTITIES
Companies

NUMBER OF ENTITIES
154 (2023)

ALLOWANCE ALLOCATION & REVENUE

ALLOWANCE ALLOCATION
FREE ALLOCATION:
Grandparenting: Allowances are allocated through grandparenting for all sectors other than the building materials sector. For 2022, allocation was determined using emissions from 2021 as a base year. For the building materials sectors, an emissions intensity method is used.

From the 2021 compliance year, an emission reduction factor for all sectors was set at 0.98.

Benchmarking: Benchmarking applies for new entrants and for entities expanding their capacity.

Pre-allocation is equal to 50% of the previous year's emissions. Ex-post allocation adjustments based on actual production levels are applied to determine the final allocation for those sectors that use emissions intensity benchmarks.

AUCTIONING: A small share of the annual cap can be auctioned. Participation is voluntary and the purpose of auctions is mainly to provide compliance entities with additional supply to meet their compliance demand. To date, auctions have been held on an ad hoc basis.

USE OF REVENUES

Climate mitigation

General budget, including debt reduction

Revenues are attributed to the city treasury. Revenues are mostly used to support work related to the control of GHG emissions.

FLEXIBILITY & LINKING

BANKING AND BORROWING
Banking is allowed.
Borrowing is not allowed.

OFFSET CREDITS
The use domestic project-based China Certified Emission Reductions (CCERs) and Tianjin regional forestry offset credits is allowed.

QUANTITATIVE LIMIT: The use of CCER credits is limited to 10% of the annual compliance obligation. For the 2020 compliance year, at least 50% of the CCER credits must have originated from projects in Beijing, Tianjin, or Hebei.

QUALITATIVE LIMIT: Credits must stem from CO_2 reduction projects, excluding hydroelectric power plants. The emissions reductions must have occurred after 2013.

LINKS WITH OTHER SYSTEMS

The Tianjin Pilot ETS is not linked with any other system.

COMPLIANCE

COMPLIANCE MECHANISM

Covered entities must surrender one allowance per tCO_2e emitted for all their covered emissions.

COMPLIANCE PERIOD

One calendar year. Covered entities have until the end of June of the following year to surrender allowances.

MRV

MONITORING: Covered entities are required to set up monitor plans and monitor their emission based on these plans.

REPORTING FREQUENCY: Annual

VERIFICATION: Third-party verification is required. Covered entities cannot use the same verifiers for three consecutive years.

FRAMEWORK: The Tianjin Development and Reform Commission has released a guiding document on monitoring and reporting. The document includes sector-specific guidance for the covered sectors, which EEB – as the competent authority since 2019 – is continuing to improve.

ENFORCEMENT

REGULATED ENTITIES: The "Tianjin Carbon Peaking and Neutrality Promotion Regulations", which took effect in November 2021, introduce financial penalties for failing to submit emission reports as required, ranging from CNY 20,000 (USD 2823) to CNY 200,000 (USD 28233). Companies that fail to comply are subject to fines of between five and ten times the average market transaction price for the volume of allowances not surrendered.

In addition, according to the "Interim Measure for Management of Emissions Trading in Tianjin" published in July 2020, companies failing to surrender enough allowances to match their emissions face a deduction of double the amount of the gap in the next year's allocation. This rule is valid until June 2025.

THIRD PARTY VERIFIERS: Third-party verifiers found not to comply with regulations (e.g., in the case of false verification reports) are banned from providing verification services for three years.

MARKET REGULATION

MARKET DESIGN

MARKET PARTICIPATION: Covered entities, institutional investors (domestic and international) and individuals (domestic and international) that meet the requirements of the carbon emission trading rules set up by Tianjin Climate Exchange.

MARKET TYPES:

Primary: Most allowances are freely allocated. The Tianjin Climate Exchange organizes ad hoc auctions for the primary market. Between 2019 and 2021, it held five auctions. No auctions have been held since.

Secondary: Products include spot Tianjin carbon emission allowances and spot CCERs. The Tianjin Climate Exchange manages the trading of all products.

LEGAL STATUS OF ALLOWANCES: Allowances are not considered as financial instruments. Invoices are issued as intangible assets.

MARKET STABILITY PROVISIONS

In case of market fluctuations, the Tianjin EEB can buy or sell allowances (for a fixed price or through auctioning) to stabilize the market.

OTHER INFORMATION

INSTITUTIONS INVOLVED

Tianjin Ecology and Environment Bureau: Responsible for establishing the Tianjin ETS after a governmental restructure in 2019.
Tianjin Climate Exchange: Responsible for operating the trading platform and registry system.

EVALUATION/ETS REVIEW

Research on improving the Tianjin ETS has been undertaken by supporting institutes such as the Tianjin Climate Exchange.

REGULATORY FRAMEWORK

- → Tianjin Pilot ETS Implementation Plan (2013)
- → Interim Measure for Management of Emissions Trading in Tianjin (2020)
- → Allocation Plan for 2020
- → Tianjin Carbon Peaking and Neutrality Promotion Regulations (2021)
- → Allocation Plan for 2021 (2021)
- → Allocation Plan for 2022 (2022)
- → Allocation Plan for 2023 (2023)

TOKYO

TOKYO CAP-AND-TRADE PROGRAM

- First city-wide ETS in the world
- Covers commercial and industrial buildings
- In its third compliance period, where facilities must reduce emissions by 27% or 25% below base-year emissions

ETS DESCRIPTION

The Cap-and-Trade Program of the Tokyo Metropolitan Government (TMG) was launched in April 2010 and is Japan's first mandatory ETS. It covers around 20% of the metropolitan area's emissions.

The Tokyo ETS covers CO_2 emissions from large buildings, factories, heat suppliers, and other facilities that consume large quantities of fossil fuels. Each covered facility has its own cap, which serves as the "baseline" from which it must achieve its reduction target. Facilities' baselines are calculated using base-year emissions and a compliance factor. Compliance factors are determined based on the type of facility and factors such as expected energy efficiency gains and the extent to which they consume energy supplied by other facilities.

Tokyo's ETS is linked to the Saitama Prefecture ETS, with credits mutually exchangeable between the two jurisdictions.

YEAR IN REVIEW

The Tokyo Cap-and-Trade Program is currently in its third compliance period (FY2020 to FY2024), which requires facilities to reduce emissions to 25-27% below base-year emissions, depending on their assigned category. The third compliance period aims to expand the use and production of low-carbon and renewable energy and for covered facilities to reduce their compliance obligations by switching to cleaner electricity or heat.

In March, TMG published the results for the second fiscal year of the third compliance period (FY2021), showing that emissions from covered entities totaled 11.1 $MtCO_2$. This is a 33% reduction below base-year emissions.

In June, TMG launched a public consultation on design elements for the fourth compliance period, beginning FY2025, after a series of meetings of an expert committee. TMG proposed a high compliance factor to be consistent with its goal of a 50% reduction in 2030 emissions.

In October, TMG released the final design elements of the fourth compliance period based on the public consultation result. The main points are as follows;

- Setting compliance factors in anticipation of a "2030 Carbon Half" (emission reduction target to 50% of the 2000 level by 2030). The facilities will have to reduce emissions by a compliance factor of 48-50% below base-year emissions. Those with an electrification rate of 20% or less will receive a lower compliance factor, similar to the rate applied to medical facilities.
- Expand the use of renewable energy. In addition to energy efficiency measures, evaluate various renewable energy sources including self-consignment and PPA as an environmental value that can be excluded from annual emissions. The covered facilities evaluate their emission reductions by using the actual emission factors.

1 Estimated standard transaction price provided by TMG.

In force
Under development
Under consideration

SECTORS

INDUSTRY

BUILDINGS

COVERAGE

11.1 $MtCO_2$ (2021)

GREENHOUSE GASES

CO_2

OFFSET CREDITS

Domestic (national and prefectural)

ALLOCATION

Free Allocation: Grandparenting
Free Allocation: Benchmarking

AVERAGE 2023 PRICES

Average price: ~JPY 650 (USD 4.63)[1]

- Excess emission reductions will be issued according to the level of energy efficiency measures and the use of renewable energy with high additionality.
- The relaxation of compliance factors for top-level facilities (see Allowance Allocation') will be abolished in order to evaluate facilities that promote zero-emissions, including the use of renewable energy as top-level facilities.

EMISSIONS & TARGETS OF TOKYO

GHG EMISSIONS (EXCL. LULUCF), 2021: 60.8 $MtCO_2e$[2]

(in $MtCO_2e$, share of total in %)

Transport	8.8	(17%)
Manufacturing	3.8	(7%)
Business	21.8	(41%)
Residential	17.3	(32%)
Waste	1.8	(3%)
Total	**53.5**	

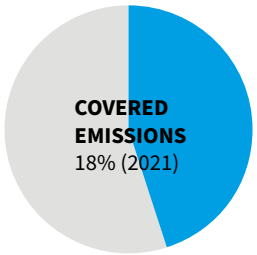
GHG REDUCTION TARGETS

By 2030: 50% reduction from 2000 GHG levels (Tokyo Environmental Master Plan)
By 2050: Climate neutrality (Tokyo Environmental Master Plan)

ETS COVERAGE & PHASES

COVERED EMISSIONS

Verified ETS emissions
11.1 $MtCO_2$ (2020)



PHASES

PHASE ONE: 1 April 2011 to 30 September 2016
PHASE TWO: 1 April 2015 to 31 January 2022
PHASE THREE: 1 April 2020 to 30 September 2026
PHASE FOUR: 1 April 2025 to 30 September 2031

The Tokyo ETS has phases as well as compliance periods (see 'Compliance' section). A phase is defined as the compliance period plus an additional 18-month adjustment period, during which time facilities may continue to trade credits in order to reach their targets for the corresponding compliance period.

CAP OR TOTAL EMISSIONS LIMIT

The total emissions limit for the third compliance period under the Tokyo ETS is a 27% reduction on average over five years compared to the base-year emissions which are the average emissions of any three consecutive years between FY2002 and FY2007 (see 'Allowance Allocation' section).

SECTORS AND THRESHOLDS

Consumption of fuels, heat, and electricity in commercial and industrial buildings.
Building owners are subject to surrender obligations, and all tenants are required to cooperate in owners' reduction measures. Large tenants (floor space above 5,000 m^2 or over six million kWh electricity usage per year) are also required to prepare and submit their own emission reduction report.

INCLUSION THRESHOLDS: Facilities that consume the energy equivalent to at least 1,500 kL of crude oil per year.

POINT OF REGULATION

Downstream (industry, buildings)

TYPE OF ENTITIES

Installations, companies

NUMBER OF ENTITIES

~1,200 facilities:
- Office/commercial buildings: ~1000
- Factories: ~200

ALLOWANCE ALLOCATION & REVENUE

ALLOWANCE ALLOCATION

All allowances in the Tokyo Cap-and-Trade Program are allocated for free.

Under the Tokyo ETS, each facility has its own cap, which serves as the "baseline" from which it must achieve its reduction target. Baselines for facilities are set according to the following formula: Base-year emissions x (1 - compliance factor) x compliance period (5 years). The compliance factor for each period is determined based on regulations established by the Governor of Tokyo. Prior to the start of each new compliance period, TMG holds committee of experts meetings to garner those experts' opinions to aid in determining the compliance factors.

For facilities that have been designated as compliance facilities since the launch of the ETS, base-year emissions are based on average emissions of any three consecutive years between FY2002 and FY2007.

2 The overall emissions figure for Tokyo is higher than the total of the emissions by sector because the former includes all GHGs, whereas the emissions by sector only measures CO_2 emissions.

Base-year emissions for new entrants are calculated using either historical emissions (average annual emissions for three consecutive fiscal years of the four fiscal years immediately preceding the compliance period) or an emission intensity standard provided by the government.
At the beginning of each new compliance period, all allowances are allocated for free to covered facilities for the full five years. Facilities with emissions below their baseline can receive 'excess credits' for the reductions beyond the obligation amount. For those that exceed their baseline must purchase and surrender credits from elsewhere to meet their compliance obligation. Credits may also be issued through the use of renewable energy (see 'Offset Credits' section).

COMPLIANCE FACTOR:
First period (FY2010 to FY2014): 8% or 6% reduction below base-year emissions.
Second period (FY2015 to FY2019): 17% or 15% reduction below base-year emissions.
Third period (FY2020 to FY2024): 27% or 25% reduction below base-year emissions.
Fourth period (FY2025 to FY2029): 50% or 48% reduction below base-year emissions.

The lower compliance factor applies to factories and office buildings that use district heating and cooling for more than 20% of their energy consumption.

In the third compliance period, in medical facilities where electricity is vital to preserve life and health, the compliance factor is two percentage points lower than whichever category would otherwise apply.

Facilities demonstrating outstanding performance in emissions reductions, as well as in the introduction, use, and management of energy efficient equipment, are certified as top-level facilities that receive either 25% or 50% lower compliance factors, according to their rate of progress. The certification standards represent the best available energy efficiency measures, covering more than 200 different energy-saving measures.

QUALIFYING FOR ADDITIONAL EMISSIONS REDUCTIONS THROUGH USE OF RENEWABLE ELECTRICITY: In order to evaluate the energy efficiency efforts of the covered facilities, CO_2 emission factors of the supply side (electricity and others) are fixed during each compliance period. If covered facilities procure electricity from TMG-certified suppliers with lower emission factors (0.37 t-CO_2/1,000 kWh or less), they can deduct the difference between these emission factors from their reported emissions accordingly, to reflect this lower emission factor of purchased electricity. If covered facilities generate electricity from renewable sources for their own use, they can deduct this amount of electricity from the total energy usage of the facility to be reported.

FLEXIBILITY & LINKING

BANKING AND BORROWING

Banking is allowed only between consecutive compliance periods.

Borrowing is not allowed.

OFFSET CREDITS

The use of offset credits is allowed.

QUALITATIVE LIMITS: Four types of offset credits are permitted, based on certification criteria, to complement emissions reduction credits issued to facilities covered by the Tokyo ETS whose emissions fall below their baseline:

- Small and mid-size facility credits: Emissions reductions from non-covered small and medium-sized facilities in Tokyo.
- Outside Tokyo credits: Emissions reductions achieved from large facilities outside of the Tokyo area. Large facilities are those with an energy consumption equivalent to at least 1,500 kL of crude oil in a base year and with base-year emissions of 150,000 tonnes or less.
- Renewable energy credits: Renewable energy credits generated under the Tokyo ETS encompass the following types: Environmental Value Equivalent, Renewable Energy Certificates, and New Energy Electricity, generated under the Renewable Portfolio Standard Law. Credits from solar (heat, electricity), wind, geothermal, or hydro (under 1,000 kW) electricity production for use under the Tokyo ETS are converted on a one-to-one basis, as are credits from biomass (biomass rate of 95% or more, black liquor excluded).
- Saitama credits (via link): These encompass (1) Excess credits: Emissions reductions from facilities in Saitama with base-year emissions of 150,000 tonnes or less and (2) Saitama's small and mid-size facility credits: Emissions reductions from non-covered small and medium-sized facilities issued by Saitama Prefecture.

QUANTITATIVE LIMITS: Quantitative limits apply only for Outside Tokyo credits: these are issued only for the reduction amount that exceeds the compliance factor. These credits can be used for compliance for up to one-third of facilities' reduction obligations.

All offset credits must be verified by a verification agency.

220, 874 tCO_2e of offset credits were issued in FY2023.

LINKS WITH OTHER SYSTEMS

Tokyo linked its program with the Saitama Prefecture ETS in April 2011. Tokyo and Saitama credits are officially eligible for trade between the two jurisdictions. About 60 credit transfers have taken place so far between Saitama and Tokyo.

COMPLIANCE

COMPLIANCE MECHANISM

Covered facilities that exceed their baseline must procure and surrender credits from elsewhere to meet their compliance obligations.

COMPLIANCE PERIOD

Five years.

Facilities must submit a "GHG Emissions Reduction Plan" and an implementation status report by the end of November every year.

Compliance instruments to meet each facility's targets must be submitted by the end of the 18-month adjustment period, after the end of the compliance period.

FIRST COMPLIANCE PERIOD: FY2010 to FY2014
SECOND COMPLIANCE PERIOD: FY2015 to FY2019
THIRD COMPLIANCE PERIOD: FY2020 to FY2024
FOURTH COMPLIANCE PERIOD: FY2025 to FY2029

MRV

REPORTING FREQUENCY: Annual emissions reporting, including emission reduction plans. All seven GHGs must be monitored and reported: CO_2, CH_4, N_2O, PFCs, HFCs, SF_6, and NF_3. Large tenants, i.e., those with a floor space above 5,000 m² or over six million kWh of electricity use per year, are required to submit their own emissions reduction plans to TMG in collaboration with building owners.

VERIFICATION: Annual emissions reports require third-party verification.

FRAMEWORK: These are based on "TMG Monitoring/Reporting Guidelines" and "TMG Verification Guidelines."

ENFORCEMENT

In the case of non-compliance, the following measures may be taken:
FIRST STAGE: The governor orders the facility to reduce emissions by the amount of the reduction shortfall multiplied by 1.3.

SECOND STAGE: Any facility that fails to carry out the order will be publicly named and subject to penalties (up to JPY 500,000 [USD 3,559]) and surcharges (1.3 times the shortfall).

MARKET REGULATION

MARKET PARTICIPATION: Compliance facilities, i.e., those above the inclusion threshold (see 'Sectors and Thresholds' section); non-compliance entities (trading account holders). TMG allows only "reduction credits" and not "emission credits," i.e., one can earn credits only after achieving emission reductions. Basically, only compliance facilities and legal entities with an office in Japan may open trading accounts.

MARKET TYPES:
Primary: All allowances are allocated for free.
Secondary: Covered facilities and other entities who hold trading accounts trade credits over the counter. Businesses wishing to buy or sell credits can also go through a private intermediary to find a buyer and negotiate the price.

MARKET STABILITY PROVISIONS

In general, covered facilities and other market participants (trading account holders) trade over the counter, and TMG does not control carbon prices.

OTHER INFORMATION

INSTITUTIONS INVOLVED

Tokyo Metropolitan Government: Oversees the Tokyo Cap-and-Trade Program, via the Bureau of Environment

EVALUATION/ETS REVIEW

For every new compliance period, TMG establishes a committee of experts to discuss and determine compliance factors and other important issues for the next compliance period.
TMG held seven committee meetings from September 2022 to August 2023 and ran the public consultation in June 2023.

REGULATORY FRAMEWORK

- → Tokyo Metropolitan Security Ordinance and Regulation for the Enforcement of the Tokyo Metropolitan Environmental Security Ordinance
- → Outline documents and detailed documents for large facilities
- → Tokyo Environmental Master Plan

VIETNAM

- **Legal mandate to design a domestic ETS and national crediting mechanism**
- **Pilot ETS is expected by 2027; expected to be fully operational by 2030**
- **Work underway to assess the necessary legal basis, institutional structures, and infrastructure to introduce a carbon exchange**

In force

Under development

Under consideration

ETS DESCRIPTION

In November 2021, Vietnam's government issued its revised "Law on Environmental Protection". This law establishes a mandate for the Ministry of Natural Resources and Environment (MONRE) and the Ministry of Finance to design a national crediting mechanism (NCM) and a domestic ETS. The framework legislation also empowers MONRE to set the ETS cap and determine the method of allowance allocation. It also allows for the inclusion of domestic and international offset credits in the ETS.

In July 2022, Vietnam issued an official decision to approve a National Strategy for Addressing Climate Change through 2050, "Decision 896/QD-TTg", in 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 follows "Decree 06/2022/ND-CP", which provides regulations under the Law on Environmental Protection and outlines a roadmap for the implementation of the NCM and the ETS. The decree requires facilities with annual GHG emissions above 3,000 tCO_2e to submit a biennial inventory report of their emissions from 2025 onwards (i.e., in 2025 facilities must submit an inventory report covering emissions from 2024). The accompanying "Decision 01/2022/QD-TTg" lists the sectors and facilities with emissions inventory obligations.

Decree 06 also includes provisions for developing a national ETS, focusing initially on the steel, cement, and thermal power sectors, with a declining cap that corresponds to Vietnam's NDC. The roadmap for the ETS states that regulations and a trading platform should be in place by 2025. A pilot ETS is planned for 2027. The ETS should be implemented from 2030, and provisions will allow for participation under Article 6 of the Paris Agreement.

EMISSIONS & TARGETS OF VIETNAM

GHG EMISSIONS (INCLUDING INDIRECT CO_2, EXCLUDING LULUCF), 2016

(in $MtCO_2e$, share of total in %)

Energy	205.8	(58%)
Industrial processes	46.1	(13%)
Agriculture, forestry and other land use[1]	83.6	(23%)
Waste	20.7	(6%)
Total	**356.2**	

Energy industries	91.0	(26%)
Manufacturing industries and construction	38.2	(11%)
Transport	35.8	(10%)
Other energy	40.7	(11%)

GHG REDUCTION TARGETS

By 2030: Reduce emissions by 43.5% compared to BAU levels (National Strategy for Addressing Climate Change through 2050 [Decision No. 896/QD-TTg])

By 2050: Net-zero domestic GHG emissions (National Strategy for Addressing Climate Change through 2050 [Decision No. 896/QD-TTg])

OTHER INFORMATION

INSTITUTIONS INVOLVED

Ministry of Natural Resources and Environment: Responsible for rulemaking for the carbon credit and ETS markets; organizing the pilot and official operation of the carbon trading floor; allowance allocation, exchange, and surrender; monitoring and supervision of the carbon market; and the national GHG inventory.

Ministry of Finance: Responsible for developing and establishing a carbon trading exchange floor and promulgating a financial management mechanism for the operation of the carbon market.

REGULATORY FRAMEWORK

- → Law No. 72/2020/QH14 on Environmental Protection, 133-139'20/OG
- → Decision No. 896/QD-TTg dated July 26, 2022
- → Decision 01/2022/QD-TTg
- → Decree 06/2022/ND-CP

1 Vietnam uses the sectors defined in the latest IPCC guidelines (2006 IPCC Guidelines for National Greenhouse Gas Inventories) for its inventory, in which the agricultural and the LULUCF sectors are integrated into "Agriculture, Forestry and Other Land Use." In an effort to make the display of overall GHG emissions comparable with other jurisdictions, the figure shown here excludes the category "3B Land," but includes the categories "3A Livestock" and "3C Aggregate sources and non-CO_2 emissions sources on land."

04 ABOUT ICAP

ABOUT

THE INTERNATIONAL CARBON ACTION PARTNERSHIP

Founded in 2007, the International Carbon Action Partnership (ICAP) brings together policymakers 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 and the latest knowledge on ETS. The ICAP membership currently counts 34 members and 8 observers.

ICAP'S OBJECTIVES

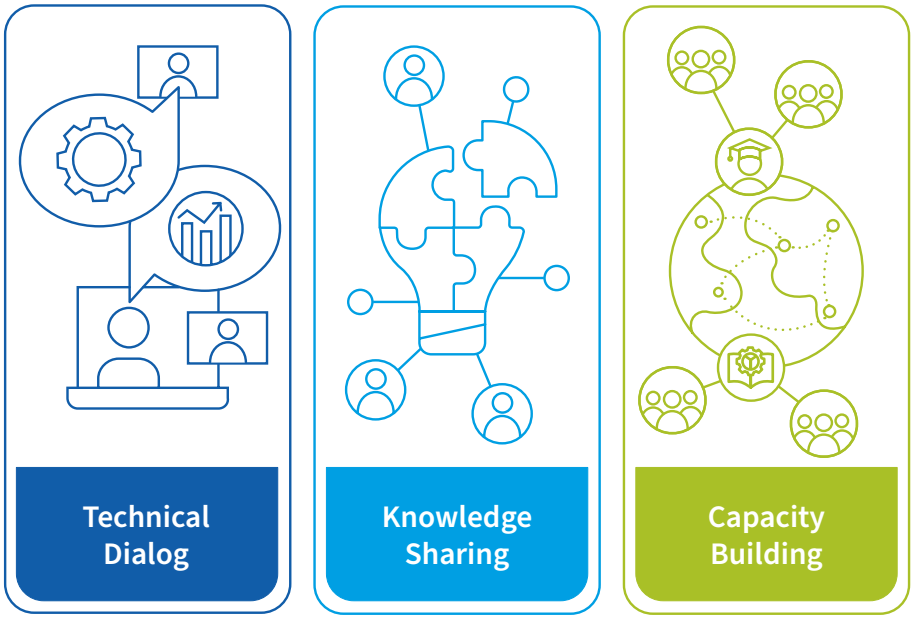
- Highlight the key role of emissions trading as an effective tool to address climate change.
- Facilitate the development, implementation, and refinement of ETSs around the world.
- Build and strengthen partnerships among governments to share best practices and lessons learned.

MEMBERS (AS OF APRIL 2024)

Arizona, Australia, Austria, 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

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



THREE PILLARS OF ICAP'S WORK

Technical Dialog: ICAP provides a unique platform for its Members, Observers and experts to exchange on ETS design and operation. Within this workstream, ICAP establishes working groups, publishes papers, and organizes webinars and public events on pertinent ETS topics. Past and ongoing topics include ETS linking, the use of offsets across ETSs, carbon capture and storage, Article 6, carbon leakage, and free allocation.

Knowledge Sharing: ICAP acts as a central repository of information on emissions trading for those who want to learn more about emissions trading and access information about the latest ETS developments worldwide. ICAP organizes conferences and public workshops on specific ETS design topics, participates in various events to promote emissions trading, and publishes useful tools and knowledge products on the **ICAP website**, e.g., the **Allowance Price Explorer**, the **ETS map**, the **ICAP Briefs** on ETS basics, and the annual **ICAP Status Report** on the latest developments of ETSs around the world.

Capacity Building: ICAP builds capacity on the design, implementation, and operation of ETSs around the world by offering **training courses and workshops** to policymakers and other stakeholders on all aspects of emissions trading. The ICAP alumni network, comprising over 1,000 practitioners from over 70 countries, stays connected, works together, and exchanges knowledge during international climate events or alumni events that ICAP organizes on a regular basis.

NOTES ON METHODS AND SOURCES

GENERAL NOTES

1. The report draws on a range of sources, including official ETS information and statements from governments and public authorities, data submitted to the UNFCCC, or where available, other official reporting, and information provided by ICAP members and observers, or in-country/local experts from our network. Information on emitting sectors is based on jurisdiction-specific data sources; therefore, categories are not necessarily consistent across jurisdictions.

2. Data in the report represents the current situation as of February 2024.

3. Where 2024 data is not yet available, we use the most recent available data. The covered emissions graph in the factsheets shows the latest year for which both verified emissions data and inventory data are available.

4. For the purpose of this report, emissions trading systems (ETS) include both systems that set an absolute limit on GHG emissions for regulated entities ("cap-and-trade" systems), as well as systems that set an intensity-based limit on GHG emissions for regulated entities. Systems that regulate other gases (e.g., other air pollutants) or trade other units (e.g., energy-efficiency certificates), other market-based instruments (e.g., carbon taxes) and voluntary programs do not fall under the scope of this report. Previous versions of the report only encompassed mandatory cap-and-trade systems. Where relevant, figures and graphs have been updated to include information on intensity-based systems.

5. The report uses metric tonnes throughout the report, unless otherwise indicated.

6. Emissions coverage as reported in the factsheets refers to the verified emissions of entities under the ETS in a jurisdiction as a proportion of that jurisdiction's inventory emissions. When this value is not available, an equivalent value provided by the jurisdiction or by local experts, or the cap of the system, is used.

7. Average allowance prices correspond to the following:

    a. For systems with a primary market for allowances, they are the weighted average of either settlement prices at auctions that took place during the year or, in some cases, of allowances with that year's vintage, which may have been auctioned before the calendar year.
    b. For systems without a primary market of allowances, they are the arithmetic mean of settlement prices over the year, as recorded by the exchange.
    c. For a limited number of systems, they are the values provided directly by the jurisdiction or by local experts.

8. All monetary values in national currency units are converted to USD using the annual average exchange rates provided by the international financial statistics of the IMF. For monetary values that are fixed over multiple years, the value reported in USD uses the most recent year's exchange rates.

9. Overall GHG emissions, the sum of the emissions categories, and the corresponding percentages reported in the factsheets may not add up exactly, due to rounding.

10. For national jurisdictions, the data in the "GHG emissions excl. LULUCF" section of the factsheets are drawn from the latest Annex 1 national inventory and non-Annex 1 Biennial Update Report submissions to the UNFCCC. For sub-national jurisdictions, domestic inventory data are used unless stated otherwise. Wherever possible, emissions are presented in line with standard IPCC sectoral categorization: "Energy", "Industrial Processes and Product Use", "Agriculture", and "Waste". Neither data from LULUCF nor "Memo items" is included unless stated otherwise. For jurisdictions that use the "Agriculture, Forestry and Land Use Change" (AFOLU) IPCC sector in their inventories, emissions data excludes emissions and removals from categories "3B Land" and "3D Products of collected wood" but includes the categories "3A Livestock" and "3C Aggregate sources and non-CO_2 emissions sources on land". Emissions from "Energy" are further disaggregated as follows:

    a. For Annex I countries and for jurisdictions where this information is available:

        i. "Energy industries": CRF Code 1.A.1 "Energy industries".
        ii. "Manufacturing Industries and construction": CRF Code 1.A.2 "Manufacturing Industries and construction".
        iii. "Transport": CRF Code 1.A.3 "Transport".
        iv. "Commercial, Institutional and Residential": CRF Codes 1.A.4.a "Commercial/institutional" and 1.A.4.b "Residential".
        v. "Other energy": All other CRF codes in the "Energy" IPCC sector.

    b. For other jurisdictions, emissions are presented consistent with their inventory-specific categories.

11. The following criteria are used to determine the three ETS status categories:

    a. In force: ETS is in force with implementation established in the relevant regulation or legislation.
    b. Under development: A mandate for ETS is established, ETS rules are currently being developed and are not yet in force.
    c. Under consideration: ETS is being considered as a mitigation instrument, the government or other relevant authorities have sent signals from past three years that refer to an ETS that is mandatory for regulated entities. A local contact point verified the initial information contained in the factsheet.

NOTES ON INFOGRAPHICS

For the infographics "From Supranational to Local", "Emissions Trading Worldwide" and "Sector Coverage", we draw on data contained in the factsheets, the online version of the ICAP ETS Map (**https://icapcarbonaction.com/en/ets-map**), as well as news articles from the ICAP Secretariat. For infographics involving quantitative data, the following sources and methods were used:

FROM SUPRANATIONAL TO LOCAL

Jurisdictions' shares of global GDP and world population are calculated based on the latest annual data available before the Status Report's editorial cut-off date at the end of January 2023. They typically cover 2022 or 2021 data. The total population of jurisdictions with an ETS in force and the total GDP of their respective economies are calculated as a share of world population and global GDP. The share of global GHG emissions covered by an ETS in force is calculated using the process described in note 5 under "Global Expansion of ETS" below. In cases where the 2024 cap data were not available, estimates based on most recent data were used. Specific sources and figures are available upon request from **info@icapcarbonaction.com**.

GLOBAL EXPANSION OF ETS

1. Whenever available, we use the official and most recent cap data. When those data are unavailable or when systems operate without a cap, the values or estimates of covered emissions in the regulated sectors are used instead.

2. The EU ETS cap in 2021 was revised down to reflect the UK leaving the system. It includes emissions covered under the aviation sector cap of the EU ETS. For more details, see the EU ETS factsheet.

3. The China National ETS started operating in 2021. In 2021, regulated entities had to surrender allowances pertaining to their 2019–2020 emissions. The infographic reflects the start date of the Chinese National ETS in 2021, while also indicating the retroactive coverage of the system in 2019 and 2020. When official data were not available, the emissions coverage or caps for the China National ETS and Chinese Pilots were estimated values provided by domestic ETS experts.

4. The caps of the Chinese Pilots in the infographic have been adjusted down to reflect the transition of coverage of power sector entities from the regional to the national system.

5. As the Massachusetts' system covers the same emissions as those covered by RGGI in Massachusetts, the Massachusetts system is excluded from the infographic to avoid double counting.

6. Global emissions data refer to GHG emissions in CO_2e excluding LULUCF and are obtained from EDGAR (Emissions Database for Global Atmospheric Research) Community GHG Database, a collaboration between the European Commission, Joint Research Centre (JRC), the International Energy Agency (IEA), and comprising IEA-EDGAR CO_2, EDGAR CH_4, EDGAR N_2O, EDGAR F-GASES version 8.0, (2023) European Commission, JRC (Datasets). EDGARv8.0 **website**. The report assumes that emissions in 2023 and 2024 remain at the same levels as emissions in 2022. Percentages of global emissions covered are rounded to the nearest full percentage.

SECTOR COVERAGE

1. For the purposes of this infographic, the following sector definitions are used:

SECTOR	DEFINITIONS
Power	Emissions from the combustion of fossil fuels for electricity generation, as well as large-scale centralized heat production.
Industry	Emissions from industrial activity, typically covering both energy emissions (e.g. from burning fossil fuels in furnaces), as well as process emissions (e.g. in the case of cement production). In the case of Kazakhstan, this also comprises extractive industries such as oil and gas mining.
Domestic Aviation	Emissions from fossil fuel combustion for flights arriving and departing within the jurisdiction ('domestic') which are not regulated by the International Civil Aviation Organization (ICAO).
Transport	Emissions from fossil fuel combustion for transport with the exception of aviation (domestic and international) and maritime transport. Coverage usually is upstream with fuel distributors facing compliance obligations.
Maritime	Emissions from fossil fuel combustion for maritime transport, usually referring to voyages starting and ending within the jurisdiction. Systems may include (a portion of) emissions of voyages starting or ending outside of the jurisdiction.
Buildings	Emissions originating from buildings. With upstream coverage, distributors of heating fuels face compliance obligations and all consumers are exposed to the carbon price. With downstream coverage, emissions of large buildings are regulated. In this case, emissions originating from other sectors (e.g. power production) may also be attributed to buildings.
Forestry	Emissions and removals resulting from forest land use, including forest management/harvest, deforestation and re/afforestation activities.
Waste	Emissions from waste disposal and management (e.g. methane from anaerobic decomposition in landfills).
Agriculture	Emissions from fossil fuel use in the agriculture sector, typically covered upstream.

2. The agriculture sector is also a major source of biological emissions. Currently, in New Zealand, agricultural emissions must be monitored and reported under the ETS, and some offset programs (e.g. California) allow for offset projects in the sector.

3. In most cases, emissions coverage of the different systems corresponds to the value that is reported in the relevant factsheets. In the case of the Chinese pilots, the coverage was calculated by adding the most recent reported caps of all the pilots and dividing that number by the sum of the most recent reported emissions in the pilots. Note that sector coverage differs across Chinese pilots as indicated in the relevant slice of the infographic. A limited number of heat plants which are below the inclusion threshold in the China National ETS continue to be covered under Chinese pilots where applicable. In the case of the China National ETS, the coverage figure is a jurisdiction provided estimate.

4. In the case of RGGI, emissions coverage is the result of comparing the emissions covered by the ETS with the aggregate emissions in RGGI states. Aggregate emissions data for the RGGI states are taken from the "Inventory of U.S. Greenhouse Gas Emissions and Sinks by State" by the **Environmental Protection Agency** (EPA 2023). While each state publishes official inventory data and the values published by the EPA should not be viewed as official state data, the EPA estimates are presented here to ensure the methodological consistency of data collection and aggregation for inventory categories across RGGI states, as well as to ensure a common reporting year in the data. There may be differences between the EPA estimates and the official state inventories.

DIFFERENT DIMENSIONS OF ETS

1. **Coverage:** The figure indicates the percentage of the jurisdiction's total GHG emissions that is covered by the ETS. The data are taken from the factsheets and refer to the latest emissions coverage figures available for each system. Additional jurisdiction-specific information on coverage figures can be found in the relevant factsheet..

2. **Allowance price:** The figure provides the average USD price over 2023 per tonne of CO_2e. Where available, the weighted average of settlement prices at auctions that took place during the year are used. Where necessary, local currency prices were converted using the annual average exchange rate as published in the IMF Financial Statistics. For additional information on sources of allowance prices and exchange rates see **https://icapcarbonaction.com/en/documentation-allowance-price-explorer**.

3. **Auction share:** This figure indicates the share of the cap's allowances that is not allocated for free but must be acquired at an auction for the latest year where information is available. For most systems, and depending on availability of information,, this value is obtained by dividing the allowances that have been offered for auction of a given vintage year and dividing that value by the cap of that year. Otherwise, this value is

obtained from the corresponding factsheet. The consignment auctions in California are not included in calculating the auction share. Allowances from the Cost Containment Reserve in RGGI are not included in calculating the auction share. Until 2026 German ETS allowances are sold at a fixed price rather than in an auction. Additional jurisdiction-specific information on auction share figures can be found in the relevant factsheet.

4. **Offset use:** This figure provides the share of a compliance entity's obligations which can be met using offsets for the latest year where information is available. Additional jurisdiction-specific information on offset use figures can be found in the relevant factsheet.

ALLOWANCE PRICES AND REVENUES

1. An allowance represents the right to emit one tonne of CO_2e in the jurisdiction(s) that accept(s) it for compliance. However, allowances from different systems cannot be treated as a single commodity because of differences in system design. Allowance prices are not directly comparable across systems.

2. Except for the Canada Carbon Pollution Price Schedule and the Alberta SGER/CCIR/TIER, the upper right panel of the infographic displays the daily allowance prices in 2023, while the upper left panel presents the monthly average allowance prices between January 2013 and December 2023 using data from the ICAP Allowance Price Explorer. Prices in the upper right panel are the daily observations in the systems with secondary market data, as well as the clearing prices in the systems with primary market data on the day of the auction/sale. In the upper left panel, daily observations are averaged over the calendar month. For additional information on sources of allowance prices and exchange rates see https://icapcarbonaction.com/en/documentation-allowance-price-explorer.

3. The data for the UK, Québec, California, Nova Scotia, RGGI, and Washington are from the primary market. For these systems the observations from two successive auctions are connected linearly. The data for the remaining systems, except Germany, the Canada Carbon Pollution Price Schedule and the Alberta SGER/CCIR/TIER are secondary market prices. They reflect settlement prices and do not capture intra-day trade variation. German ETS allowances are sold at a fixed price in the initial years of the system. The fixed price increases annually until 2026 when trading begins in earnest. As with the Canada Carbon Pollution Price Schedule and the Alberta SGER/CCIR/TIER, variation in the series reflect the changes in the EUR-USD exchange rate.

4. RGGI allowance prices are in short tonnes and have been converted to metric tonnes for the purposes of this infographic.

5. Where allowances have a limited vintage, the time series data compile these vintages in a way that reflects the compliance cycle.

6. The price range for the Chinese Pilot ETSs was determined as follows: 1) We computed the monthly average prices in USD; 2) For a given month, we determined the minimum and maximum prices across Chinese Pilots; 3) We applied a six-month moving average to smooth out the variability in maximum and minimum prices; 4) We shaded the region between the smooth series.

7. Auction revenues for the 27 systems (including the eight Chinese pilots reported as a group) that are depicted or reported were calculated using data from the European Commission; ICE and UK Department for Business, Energy & Industrial Strategy; SinoCarbon Innovation and Investment, German Environment Agency; ICE and Swiss Emissions Registry; California Air Resources Board; Québec Ministry of Sustainable Development, Environment, and Fight Against Climate Change; Nova Scotia Environment; Regional Greenhouse Gas Initiative; New Zealand Ministry for the Environment; Massachusetts Department of Environmental Protection; the website of the Korea Exchange (KRX); the state of Washington's Department of Ecology; the Austrian Federal Ministry of Finance; Environment and Climate Change Canada; Department of Environment and Climate Change of Newfoundland and Labrador; Ministry of Environment of Saskatchewan; Alberta Environment and Protected Areas; as well as from the factsheets of the New Brunswick OBPS, and Ontario EPS (links available upon request, info@icapcarbonaction.com).

8. Auction revenue for the EU ETS includes revenue from the domestic aviation sector.

9. For the California cap-and-trade system, the proceeds from consignment auctions are excluded.

10. For the Québec cap-and-trade system, joint auctions involve currency conversion for part of the proceeds. The rate and transaction fees on the date of conversion can affect the amount deposited to the Green Fund. As a result, the product of the number of permits sold and the settlement price may slightly differ from the actual amount deposited.

11. The Massachusetts quarterly reports are published by Potomac Economics, which is the official market monitor for the Massachusetts Department of Environmental Protection.

12. All allowance price data are in USD and are converted using the average exchange rate of the corresponding month as reported by the IMF. Revenue data are in USD and are converted using the average exchange rate of the corresponding year as reported by the IMF.

PRICES OF COVERED EMISSIONS

1. The infographic only shows ETSs in force where there is available information on the two dimensions that are shown, as of February 2024.

2. Data on average allowance prices and on the cap/coverage are taken from the respective factsheet.

3. For the average allowance prices, the values are the same as those of the infographic “Different Dimensions of ETS”.

4. For the systems without an absolute cap, the infographic shows an estimate of the absolute emissions coverage of the system.

LIST OF ACRONYMS

AFOLU	Agriculture, Forestry and Land Use Change
APCR	Allowance Price Containment Reserve
API	Allowance Price Index
ARP	Auction Reserve Price
BAU	Business-as-Usual
BEA	Beijing Carbon Emission Allowances
BEIS	Department for Business, Energy and Industrial Strategy
BMF	Austrian Federal Ministry of Finance
BMWK	German Federal Ministry for Economic Affairs and Climate Action
BPDLH	Badan Pengelola Dana Lingkungan Hidup (the Indonesian Environment Fund)
CAD	Canadian Dollar
CARB	California Air Resources Board
CBAM	Carbon Border Adjustment Mechanism
CCA	Climate Commitment Act
CCER	Chinese Certified Emission Reduction
CCI	Community Climate Investments
CCM	Cost Containment Mechanism
CCR	Cost Containment Reserve
CDM	Clean Development Mechanism
CEEX	China Emissions Exchange
CEP	Clean Energy Plan
CERF	Climate Emergency Response Fund
CFC	Chlorofluorocarbon
CHF	Swiss Franc
CH_4	Methane
CITSS	Compliance Instrument Tracking System Service
CLEF	Carbon Leakage Exposure Factor
CNY	Chinese Yuan Renminbi
CO_2	Carbon Dioxide
CO_2e	Carbon Dioxide Equivalent
COATS	CO_2 Allowance Tracking System
COCOSCE	Mexico Consultative Committee
COP	Conference of the Parties
CORSIA	Carbon Offsetting and Reduction Scheme
COVID-19	2019 Novel Coronavirus
CPI	Consumer Price Index/Carbon Pricing Instrument
CPP	Climate Protection Program
CPS	Carbon Price Support
CQCER	Chongqing Certified Emissions Reduction
CRF	Common Reporting Format
C&T	Cap-and-Trade
DACS	Direct Air Capture and Storage
DEBS	Direct Environmental Benefits for the State
DEC	Department of Environmental Conservation
DEHSt	German Emissions Trading Authority
DEP	Department of Environmental Protection
DEQ	Department of Environmental Quality
DHC	District Heating and Cooling
DNP	Department of National Planning
DOB	Department of Buildings
DRC	Development and Reform Commission
EBRS	Energy Bill Relief Scheme
EBSS	Energy Bills Support Scheme
ECR	Emissions Containment Reserve
EEA	European Economic Area
EEB	Ecology and Environment Bureau
EEC	Eastern Economic Corridor
EEX	European Exchange
EIB	European Investment Bank
EII	Energy-Intensive Industries
EITE	Emission-Intensive and Trade-Exposed
EMC	Environmental Management Commission
ENVI	Committee on the Environment, Public Health and Food Safety
EPA	Environmental Protection Agency
EPE	Empresa de Pesquisa Energética (Energy Research Corporation)
EPS	Emissions Performance Standards
EQB	Environmental Quality Board
EQC	Environmental Quality Commission
ESMA	European Securities and Markets Authority
ESR	European Effort Sharing Regulation
ETD	Energy Taxation Directive
ETS	Emissions Trading System/Emissions Trading Scheme
EU	European Union
EU ETS	European Union Emissions Trading System
EUR	Euro
FCER	Forest Certified Emission Reductions
FECC	Québec's Electrification and Climate Change Fund
FFCER	Fujian Forestry Certified Emission Reduction
FJEA	Spot trading of Fujian Emission Allowances
FOEN	Federal Office for the Environment
FTI	Federation of Thai Industries
FY	Fiscal Year
GBP	British Pound Sterling
GDEA	Guangdong Emission Allowance
GDP	Gross Domestic Product
GEI	Gases de Efecto Invernadero
GGPPA	Greenhouse Gas Pollution Pricing Act
GHG	Greenhouse Gas
GIR	Greenhouse Gas Inventory and Research Center of Korea
Gt	Gigatonne
HB	House Bill
HBEA	Hubei Emission Allowance
HCFC	Hydrochlorofluorocarbons

HFCs	Hydrofluorocarbons
HFC-23	Fluoroform
HGWP gases	High Global Warming Potential Gases
ICAO	International Civil Aviation Organization
ICAP	International Carbon Action Partnership
ICE	Intercontinental Exchange
IEA	International Energy Agency
IKI	German government's International Climate Initiative
IMF	International Monetary Fund
IPA	Instrument for Pre-Accession Assistance
IPCC	Intergovernmental Panel on Climate Change
IT	Information technology
ITMOs	Internationally Transferred Mitigation Outcomes
JCM	Joint Crediting Mechanism
JI	Joint Implementation
JPY	Japanese Yen
KASA	Kementerian Alam Sekitar Dan Air (Malaysian Ministry of Environment and Water)
KAU	Korean Allowance Unit
KAZ ETS	Kazakhstan Emissions Trading Scheme
KCU	Korean Credit Unit
K-ETS	Korean Emissions Trading System
kg	Kilogram
kL	Kiloliter
KOC	Korean Offset Credit
KRW	South Korean Won
KRX	Korea Exchange
KTF	Climate and Transformation Fund
kWh	Kilowatt hour
KZT	Kazakhstani Tenge
LNG	Liquefied Natural Gas
LPG	Liquefied Petroleum Gas
LULUCF	Land Use, Land-Use Change and Forestry
m^2	Square Meter
m^3	Cubic Meter
MassDEP	Massachusetts Department of Environmental Protection
MEE	Ministry of Ecology and Environment
MEMR	Ministry of Energy and Mineral Resources
METI	Ministry of Economy, Trade and Industry
MoCC	Ministry of Climate Change
MoE	Ministry of Environment
MoEF	Ministry of Economy and Finance
MoEUCC	Ministry of Environment, Urbanization and Climate Change
MONRE	Ministry of Natural Resources and Environment
MOS	Mayor Office of Sustainability
MOU	Memorandum Of Understanding
MRV	Monitoring, Reporting and Verification
MSR	Market Stability Reserve
$MtCO_2$	Million Tonnes of Carbon Dioxide
$MtCO_2e$	Million Tonnes of Carbon Dioxide equivalent
MW	Megawatt
MXN	Mexican Peso
N_2O	Nitrous Oxide
NCCC	National Council for Climate Change
NCEC	National Committee on Establishment of Carbon Markets
NCM	National Crediting Mechanism
NCUC	North Carolina Utilities Commission
NDC	Nationally Determined Contribution
NDRC	National Development Reform Commission
NEHG	Nationales Emissionszertifikatehandelsgesetz (National Emissions Trading Act)
NETs	Negative Emissions Technologies
NER	New Entrants' Reserve
NF_3	Nitrogen Trifluoride
NO_2	Nitrogen Dioxide
NOx	Nitrogen Oxide
NRECC	Ministry of Natural Resources, Environment, and Climate Change
NYC	New York City
NZ	New Zealand
NZ ETS	New Zealand Emissions Trading Scheme
NZD	New Zealand Dollar
NZU	New Zealand Unit
NZX	New Zealand Exchange
OBPS	Output-Based Pricing System
OECD	Organization for Economic Co-operation and Development
ONEP	Office for Natural Resources and Policy
OTC	Over-the-Counter
PAT	Perform, Achieve and Trade
PCER	Green Transport Certified Emission Reductions
PDR	People's Democratic Republic
PFC	Perfluorocarbon
PGE	Plan for a Green Economy
PHCER	Pu Hui Certified Emission Reductions
PL	Projecto de Lei
PNCTE	Programa Nacional de Cupos Transables de Emisión de Gases de Efecto Invernadero
PNMC	Política Nacional sobre Mudança do Clima
PMI	Partnership for Market Implementation
PMR	Partnership for Market Readiness
PV	Photovoltaic
PNCTE	Programa Nacional de Cupos Transables de Emisión de Gases de Efecto Invernadero (National Program of Greenhouse Gas Tradable Emission Quotas)
REC	Renewable Energy Credits
RENAMI	Registro Nacional de Acciones de Mitigación

RENE	Registro Nacional de Emisiones (Mexico National Emissions Register)
RGGI	Regional Greenhouse Gas Initiative
RGGI COATS	RGGI CO_2 Allowance Tracking System
SAM	Supply Adjustment Mechanism
SCF	Social Climate Fund
SEEE	Shanghai Environmental and Energy Exchange
SEMARNAT	Secretaría del Medio Ambiente y Recursos Naturales (Ministry of Environment and Natural Resources of Mexico)
SF_6	Sulfur Hexafluoride
SHEA	Shanghai Emission Allowance
SHEAF	Shanghai Emission Allowance Forward
SHIFT	Support for High-efficiency Installations for Facilities with Targets
SISCLIMA	Colombia National Climate Change System
SO_2	Sulfur Dioxide
SRN	Indonesia National Registry System
SZA	Shenzhen Allowances
tce	Tonne of Coal Equivalent
tCO_2	Tonne of Carbon Dioxide
tCO_2e	Tonne of Carbon Dioxide Equivalent
TEPA	Taiwanese Environmental Protection Administration
TGO	Thailand Greenhouse Gas Management Organization
TIER	Technology Innovation and Emissions Reductions Regulation
TMG	Tokyo Metropolitan Government
TMS	Target Management System
TNAC	Total Number of Allowances in Circulation
T-VER	Thailand Voluntary Emission Reduction
T-VETS	Thailand Voluntary Emissions Trading Scheme
UBA	German Environment Agency
UK	United Kingdom
UKA	UK Allowance
UK ETS	UK Emissions Trading Scheme
UN	United Nations
UNFCCC	United Nations Framework Convention on Climate Change
US	United States
USD	US Dollar
US EPA	US Environment Protection Agency
VCM	Voluntary Carbon Market
WCI	Western Climate Initiative

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