

## Canada - Nova Scotia

### General Information

<p>Summary</p>	<p><b>Status:</b> ETS in force</p> <p><b>Jurisdictions:</b> Nova Scotia</p> <p>Nova Scotia's cap-and-trade program sets a cap on the total amount of GHG emissions allowed in covered sectors in the province for the years 2019-2022 (compliance period). Final cap-and-trade program regulations were passed in November 2018. The program regulates the industry, power, heat (buildings), and transportation sectors and covers more than 80% of GHG emissions in Nova Scotia.</p> <p>The Nova Scotia program was found to meet the federally set benchmark introduced in the 'Pan-Canadian Framework on Clean Growth and Climate Change' (see Canada factsheet). This means that the province is not subject to the federal carbon pricing "backstop" measure.</p> <p>Since May 2018, Nova Scotia has been a member of the Western Climate Initiative, which provides technical services and support for Nova Scotia's cap-and-trade program.</p> <p>Nova Scotia is not linked to any jurisdictions.</p> <p>In October 2019, Nova Scotia introduced the 'Sustainable Development Goals Act,' which sets new targets to fight climate change, including a target of reaching 53% below 2005 levels by 2030, as well as net-zero emissions by 2050. The cap-and-trade program, along with other policies and programs, will help Nova Scotia achieve its 2030 and 2050 GHG targets.</p>														
<p>Year in Review</p>	<p>In June 2020, the Nova Scotia cap-and-trade program held its first auction, selling all allowances on offer. The minimum price for auctions held in 2020 was set at CAD 20 (USD 14.91), and in each subsequent year the minimum price will increase by 5% plus inflation. Regulated entities have the option to consign allowances to auction. In addition, purchase limits apply in order to secure market functioning.</p> <p>The most recent auction was held in December 2020, when 542,000 allowances were on offer, 15.3% less than in the program's first sale in June. The auction settled at CAD 24.70 (USD 18.42).</p>														
<p>Overall GHG emissions (excluding LULUCF)</p>	<p><b>Emissions:</b> 16.9 MtCO<sub>2</sub>e MtCO<sub>2</sub>e (2018)</p>														
<p>Overall GHG emissions by sector (in MtCO<sub>2</sub>)</p>	<table border="1"> <thead> <tr> <th>Sector Name</th> <th>MtCO<sub>2</sub>e</th> </tr> </thead> <tbody> <tr> <td>Electricity and heat generation (6.9)</td> <td>6.9</td> </tr> <tr> <td>Transportation (5.8)</td> <td>5.8</td> </tr> <tr> <td>Heat (residential) (1.4)</td> <td>1.4</td> </tr> <tr> <td>Industrial Processes (incl. oil and gas) (1.3)</td> <td>1.3</td> </tr> <tr> <td>Agriculture and waste (0.9)</td> <td>0.9</td> </tr> <tr> <td>Heat (commercial) (0.6)</td> <td>0.6</td> </tr> </tbody> </table>	Sector Name	MtCO <sub>2</sub> e	Electricity and heat generation (6.9)	6.9	Transportation (5.8)	5.8	Heat (residential) (1.4)	1.4	Industrial Processes (incl. oil and gas) (1.3)	1.3	Agriculture and waste (0.9)	0.9	Heat (commercial) (0.6)	0.6
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GHG reduction target	<p><b>BY 2030:</b> 53% below 2005 levels (Sustainable Development Goals Act)</p> <p><b>BY 2050:</b> Net-zero emissions (Sustainable Development Goals Act)</p>
Carbon Price	<p><i>Current Allowance Price (per t/CO<sub>2</sub>e):</i> CAD 24.35 (USD 18.16) (average price for 2020, recent prices can be found <a href="#">here</a>)</p>

## ETS Size

Covered emissions	0.82
GHGs covered	CO <sub>2</sub> , CH <sub>4</sub> , N <sub>2</sub> O, SF <sub>6</sub> , NF <sub>3</sub> , HFCs, PFCs
Sectors and thresholds	<p>The program covers the industrial and electricity sectors, as well as fuel suppliers (upstream coverage of transportation and heating).</p> <p><b>INCLUSION THRESHOLDS:</b> For the industrial and electricity sectors, facilities generating ≥50,000 tCO<sub>2</sub>e/year. Electricity importers responsible for &gt;10,000 tCO<sub>2</sub>e/year are also included. For fuel suppliers, the following thresholds apply: petroleum product suppliers selling ≥200 liters of fuel into the Nova Scotia market and natural gas distributors producing ≥10,000 tCO<sub>2</sub>e/year.</p> <p>There are no provisions for voluntary (“opt-in”) participation.</p>
Point of regulation	Mixed
Number of entities	27 entities (December 2020)
Cap	<p><b>FIRST COMPLIANCE PERIOD (2019-2022):</b></p> <p><b>2019:</b> 13.7 MtCO<sub>2</sub>e</p> <p><b>2020:</b> 12.7 MtCO<sub>2</sub>e</p> <p><b>2021:</b> 12.3 MtCO<sub>2</sub>e</p> <p><b>2022:</b> 12.1 MtCO<sub>2</sub>e</p>

## Phases & Allocation

Trading periods	<p>Nova Scotia’s cap-and-trade program is structured around four-year compliance periods; trading periods are not defined separately. The first compliance period is 2019-2022.</p>
Allocation	<p><b>FREE ALLOCATION:</b> Each year within the compliance period, free allowances are transferred to the program participants’ accounts. The amount of free allowances for the participating entities is calculated as follows:</p> <p><b>Industrial Facilities (output-based allocation):</b> Facilities receive allowances based on production intensity benchmarks. 75% of eligible emissions allowances are distributed to participating entities on 14 January of each year. The remaining eligible 25% are provided in the following year with production-level adjustments after the submission of a verified emissions report.</p> <p>The benchmark is based on historical facility emissions intensity, an assistance factor that varies between 1 (100%) for cement and 0.9 (90%) for pulp and paper as well as natural gas processing (these are the only three GHG activities, or components of a GHG activity explicitly specified in the regulatory framework).</p> <p>A cap adjustment factor is also applied, declining from 1 in 2019 to about 0.88 in 2022. This means that an entity would receive about 12% fewer allowances based on the output in 2022 compared to in 2019.</p>

**Fuel Suppliers and Electricity Importers (grandparenting):** Facilities receive 80% of free allocation based on verified GHG reports for the previous year's emissions on 14 April of each year.

**Nova Scotia Power Inc. (free allocation based on a reduction of BAU projections):** Allowances for the utility are allocated equivalent to the amount of approximately 90% of the business-as-usual projections for GHG emissions from the electricity sector for the compliance period. The BAU projections are established by the regulator. ~5.5 million allowances were freely allocated in 2020, and in 2021, ~5.1 million allowances will be allocated, declining to just over five million in 2022. Allowances are allocated on 14 January of each year.

**AUCTIONING:** The province holds two to four auctions per calendar year. Two auctions were held in 2020: the first in June and the second in December. Minimum price: CAD 20 (USD 14.91) for auctions held in 2020; the minimum price increases by 5% plus inflation in each subsequent year.

**Purchasing Limits at Auctions (for the 2019-2022 compliance period):** In order to minimize the risk of one participant manipulating the market by causing shortages and price spikes, purchasing limits restrict how many emission allowances each participant can buy at any one auction. The limits for the three types of participants are as follows:

- Industrial facilities: 3% of their previous year's verified GHG emissions per auction and 5% for the calendar year.
- Fuel suppliers: 15% of the previous year's verified GHG emissions per auction and 25% for the calendar year.
- Nova Scotia Power Inc.: 5% of the allowances available for sale at each auction.

Auctioning in Nova Scotia has two particularities:

(1) Option for regulated entities to consign allowances to auction: To minimize transaction costs for participants, regulated entities can consign their allowances to the government auctions. Allowances offered for sale through consignment are included in the government auctions and sold first, followed by allowances offered for sale by the province. 100% of the revenue from allowances sold on consignment is returned to the participants.

(2) Purchase limits to secure market functioning: To secure market functioning, bidders are subject to purchasing limits that restrict how many allowances each participant can buy at any one auction. Purchasing limits are intended to mitigate the risk that one participant can manipulate the market by causing shortages and price spikes.

## Flexibility

Banking and borrowing	Nova Scotia's cap-and-trade program does not allow for banking or borrowing across compliance periods.
Offsets and credits	Nova Scotia's cap-and-trade legislation includes the possibility for an offset system. Further consultations will be undertaken, and a study was completed in 2020 to explore offset potential in the province's carbon market.
Market Stability Provisions	<p><b>RESERVE:</b> In the first year of each compliance period, the government places 3% of allowances available under the cap of each year into a reserve. These allowances may be used for:</p> <p><b>(1) Cost containment:</b> Offering them for sale at set prices to participants at predetermined times throughout the year to cover their compliance obligations. Up to four reserve sales can occur in one calendar year. The initial price was set at CAD 50 (USD 37.28) in 2020, and this will rise annually by 5% plus inflation.</p> <p><b>(2) New entrants:</b> Accommodating new participants in the cap-and-trade program whose GHG emissions are not currently accounted for and that qualify for free allocation.</p> <p><b>(3) Reserve for adjustments in output-based free allocation:</b> Allowances from the reserve can be used as a buffer for uncertainty in output-based allocation for industrial facilities. If initial projections by the regulator on the yearly allocation levels fall short</p>

of necessary allocation based on real production levels, then output-based allocation according to allocation rules can be fulfilled by using allowances from the reserve.

## Compliance

Compliance Period	<p>Four years (2019-2022) to provide year-to-year flexibility (see “Phases and Allocation” section).</p> <p>By December 2023, entities must true up and surrender one allowance for each tonne of GHG emissions that they emitted over the course of the compliance period.</p>
Monitoring, Reporting, Verification (MRV)	<p>In Nova Scotia, MRV is referred to as “Quantification, Reporting, and Verification.”</p> <p><b>REPORTING FREQUENCY:</b> Annually. Reporting and verification must be submitted by 1 May each year for the previous calendar year.</p> <p><b>VERIFICATION:</b> Reports must be verified by an accredited third-party organization.</p> <p><b>FRAMEWORK:</b> The rules for reporting GHG emissions are outlined in Nova Scotia’s ‘Quantification, Reporting, and Verification of Greenhouse Gas Emissions Regulations’ and ‘Standards for Quantification, Reporting, and Verification of Greenhouse Gas Emissions.’</p>
Enforcement	<p>Participants that do not surrender sufficient allowances at the end of the compliance period will be subject to enforcement under the ‘Environment Act.’</p> <p>All revenue from fines issued for not surrendering sufficient allowances will go into the Nova Scotia Green Fund.</p>

## Linking

Links with other systems	Nova Scotia does not plan to link at this time.
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## Other Information

Institutions involved	Nova Scotia Environment, Climate Change Unit
Evaluation / ETS review	Annual reports on the program are published by the regulator. Nova Scotia must also report annually to Environment and Climate Change Canada as a part of the ‘Pan-Canadian Framework on Clean Growth and Climate Change.’
Revenue	<p>Since the beginning of the program: CAD 28.7 million (USD 21.4 million).</p> <p>Collected in 2020: CAD 28.7 million (USD 21.4 million).</p> <p>A Green Fund was established in 2019 to receive and distribute revenues from allowance auctions, sales of reserve emission allowances, and administrative penalties. The Green Fund must be used to support measures that mitigate GHG emissions, promote adaptation, encourage innovative technology, and reduce negative economic and social effects of mitigation action.</p>
Implementing Legislation	<p><a href="#">Nova Scotia’s Cap and Trade Program Regulatory Framework</a></p> <p><a href="#">Cap-and-Trade Program Regulations, Section 112Q of the Environment Act</a></p> <p><a href="#">Quantification, Reporting, and Verification of Greenhouse Gas Emissions Regulations</a></p> <p><a href="#">Standards for Quantification, Reporting, and Verification of Greenhouse Gas Emissions</a></p>

Sustainable Development Goals Act  
Environment Act

## Canada - Québec Cap-and-Trade System

### General Information

Summary	<p><b>Status:</b> ETS in force</p> <p><b>Jurisdictions:</b> Québec</p> <p>Québec's Cap-and-Trade System for GHG emissions became operational in 2013. Québec has been a member of the Western Climate Initiative since 2008 and formally linked its system with California's in January 2014 and with Ontario's in January 2018 (until the termination of Ontario's ETS in mid-2018). The system covers fossil fuel combustion and industrial emissions in power, buildings, transport, and industry.</p>														
Year in Review	<p>In October 2020, the National Assembly of Québec passed Bill 44, which amends numerous pieces of environmental legislation and impacts the cap-and-trade program. The bill maintains all funding generated by the cap-and-trade program to climate change measures and strengthens the authority of the Ministry of Environment and the Fight against Climate Change over this revenue. It also allows the ministry to implement a major part of its post-2023 allocation plan: a portion of allowances that were previously given to industrial emitters free of charge would be sold at auction, with the revenue reserved for those entities on the condition that they use it to finance mitigation. Regulations on this change and other facets of post-2023 allocation, including updated benchmarks (intensity targets), are expected to be finalized in 2021.</p> <p>Also in October 2020, Québec accepted to chair the 'Carbon Pricing in the Americas' platform, alongside Chile. The platform brings governments from all parts of the Americas together to identify and foster opportunities to increase alignment of carbon pricing systems and promote carbon markets in the Americas to maximize climate action.</p> <p>In November 2020, Québec published its latest climate change action plan (2030 Plan for a Green Economy), in which the government aims to achieve carbon neutrality by 2050.</p> <p>In December 2020, Québec amended its price tiers for sales of allowances from its reserves to more closely align with those of California (see "Market Stability Provisions" for more).</p>														
Overall GHG emissions (excluding LULUCF)	<p><b>Emissions:</b> 80.6 MtCO<sub>2e</sub> (2018)</p>														
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GHG reduction target	<p><b>BY 2020:</b> 20% reduction from 1990 GHG levels (Order in Council 1187-2009)</p> <p><b>BY 2030:</b> 37.5% reduction from 1990 GHG levels (Decree 1018-2015)</p> <p><b>BY 2050:</b> Carbon neutrality (2030 Plan for a Green Economy)</p>														
Carbon Price	<p><i>Current Allowance Price (per t/CO<sub>2e</sub>):</i> CAD 22.76/ tCO<sub>2</sub> (USD 16.97) (average price for 2020, updated prices available <a href="#">here</a>)</p>														

## ETS Size

Covered emissions	.78 (Includes an adjustment to account for differences between verified ETS emissions and the GHG inventory methodology.)
GHGs covered	CO <sub>2</sub> , CH <sub>4</sub> , N <sub>2</sub> O, SF <sub>6</sub> , HFCs, PFCs, NO <sub>3</sub> , and other fluorinated GHGs
Sectors and thresholds	<p><b>FIRST COMPLIANCE PERIOD (2013-2014):</b> electricity, industry</p> <p><b>SECOND COMPLIANCE PERIOD (2015-2017) AND THIRD COMPLIANCE PERIOD (2018-2020):</b> Sectors from first compliance period as well as distribution and importation of fuels used in the transport and building sectors and in small- and medium-sized businesses.</p> <p><b>INCLUSION THRESHOLDS:</b> &gt;25,000 tCO<sub>2</sub>e/year. As of 2016, fuel distributors that distributed 200L or more of fuel (in 2015) are also subject to inclusion, even if the combustion of their fuel resulted in emissions of less than 25,000 tCO<sub>2</sub>e.</p> <p><b>VOLUNTARY EMITTERS (OPT-IN COVERED ENTITIES):</b> Since 2019, emitters from capped sectors that have reported emissions between 10,000 tCO<sub>2</sub>e/year and 25,000 tCO<sub>2</sub>e/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.</p>
Point of regulation	Mixed
Number of entities	150 facilities (104 industrial facilities and 46 fuel distributors) (2019)
Cap	<p><b>FIRST COMPLIANCE PERIOD (2013-2014):</b> The system started in 2013 with a cap of 23.2 MtCO<sub>2</sub>e.</p> <p><b>SECOND COMPLIANCE PERIOD (2015-2017):</b> With the program expanding to include fuel distribution, the cap rose to 65.3 MtCO<sub>2</sub>e in 2015. The cap declined to 61 MtCO<sub>2</sub>e in 2017, an average of 3.2% per year.</p> <p><b>THIRD COMPLIANCE PERIOD (2018-2020):</b> The cap in the third compliance period started at 59 MtCO<sub>2</sub>e and declined at an average annual rate of 3.5% to 54.7 MtCO<sub>2</sub>e in 2020.</p> <p><b>FOURTH COMPLIANCE PERIOD (2021-2023) AND BEYOND:</b> After a slight nominal increase in the cap in 2021 due to an adjustment of the global warming potential of different GHGs, the cap will be reduced annually by about 2.2% on average until 2030. This will result in a cap of 44.14 million tCO<sub>2</sub>e in 2030.</p>

## Phases & Allocation

Trading periods	The Québec cap-and-trade system is structured around three-year compliance periods, except for the first period (see “Compliance” section). A cap trajectory until 2030 has been set (see “Cap” section). Allowances are allocated and auctioned with calendar vintage years.
Allocation	<p>Allowances—referred to as “emission units” in Québec’s cap-and-trade regulations—are distributed via auction and free allocation.</p> <p><b>FREE ALLOCATION:</b> Emission-intensive, trade-exposed (EITE) sectors receive a portion of free allowances 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 (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 a carbon cost are also eligible to receive free allowances. The amount of free allocation issued is generally determined by: recent levels of production or consumption</p>

of raw materials (depending on the reference unit for the sector); a declining intensity target based on historic 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%. For the 2021-2023 period, assistance factors for industrial activities have been determined based on trade exposure and emissions intensity. These metrics were used to group 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 off-site electricity and steam production for producers with fixed-price sales contracts signed before 2008 that were referenced above.

The rules on free allocation for entities that voluntarily opt into the cap-and-trade system are the same as those for regulated entities.

**AUCTIONING:** Electricity and fuel distributors must buy 100% of their allowances, with some narrow exceptions (e.g., on contracts prior to 2008 that have not been renewed or extended). Allowances are auctioned quarterly.

Allowances that remain unsold after an auction may be offered for sale again later when the price at two consecutive auctions settles above the minimum price.

In 2019, about 67% of allowances were allocated by auction or directed to reserves. About 33% of allowances were allocated for free.

## Flexibility

Banking and borrowing	<p>Banking is allowed, but the emitter is subject to the general holding limit on allowances to which all entities in the system are held. The holding limit declines based on the year's annual allowance budget.</p> <p>While borrowing is not allowed, some allowances from future vintages are offered at each auction and may be traded but not used for compliance until the compliance date for the vintage year.</p>
Offsets and credits	<p><b>QUANTITATIVE LIMIT:</b> Up to 8% of each entity's compliance obligation.</p> <p><b>QUALITATIVE LIMIT:</b> Currently, Québec's offset program has five offset protocols:</p> <ul style="list-style-type: none"> <li>• CH4 destruction from covered manure storage facilities;</li> <li>• CH4 destruction from landfill sites;</li> <li>• Destruction of ozone-depleting substances contained in insulating foam or used as refrigerant gases removed from domestic appliances in Canada;</li> <li>• CH4 destruction from drainage systems at active coal mines; and</li> <li>• CH4 destruction from ventilation systems of active underground coal mines.</li> </ul> <p>Québec has developed an offset protocol for afforestation and reforestation projects in private lands in the province, which is expected to be finalized and adopted in 2021. In addition, Québec is working to assess or develop other new protocols in order to increase offset supply, some of which may also be adopted in 2021, including biomethanation, fuel switching in the marine transport sector, conversion of refrigeration systems, and improvements in the application of agricultural fertilizers.</p> <p>Québec offset credits are recognized as compliance instruments by jurisdictions linked with Québec, and similarly for offset credits issued by linked jurisdictions.</p> <p>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 is required to replace them. If credit recovery is not possible, an equivalent number of credits will be retired from the minister's environmental integrity account. That account is funded by the automatic withholding of 3% of issued offset credits from all offset projects.</p>
Market Stability Provisions	<p><b>AUCTION RESERVE PRICE:</b> The auction reserve price sets the minimum price at which allowances are available at auction and increases annually by 5% plus inflation. It is set at CAD 17.36 (USD 12.94) for Québec and USD 17.71 for California in 2021. For joint auctions</p>



with California in 2021, the highest value in USD between Québec's or California's auction reserve prices, based on the exchange rate of the Bank of Canada the day prior to the auction, will be the auction reserve price for that particular auction.

**RESERVE ACCOUNT:** Québec maintains an allowance reserve to adjust levels of free allocation and 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 allowances on offer. Only covered entities in Québec are eligible to purchase allowances from the reserve, and only if they do not have valid compliance instruments for the current period in their general account.

In December 2020, Québec amended the prices of its three tiers to more closely align with California. For 2021, the prices of the three tiers are CAD 41.40 (USD 30.87), CAD 53.20 (USD 39.67), and CAD 65 (USD 48.47). However, if California has set higher prices per allowance for a corresponding category, Québec allowances 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. Reserve prices increase annually by 5% plus inflation.

## Compliance

Compliance Period	<p><b>FIRST COMPLIANCE PERIOD:</b> 2013-2014</p> <p><b>SUBSEQUENT COMPLIANCE PERIODS:</b> Three calendar years (2015-2017, 2018-2020, 2021-2023, and so forth)</p> <p>Allowances must be surrendered by 1 November following the end of the compliance period.</p>
Monitoring, Reporting, Verification (MRV)	<p><b>REPORTING FREQUENCY:</b> Annually.</p> <p><b>VERIFICATION:</b> All covered entities in the program require independent third-party verification of emissions reports.</p> <p><b>FRAMEWORK:</b> Regulation on the mandatory reporting of certain emissions of contaminants into the atmosphere is outlined in the 'Environment Quality Act'.</p>
Enforcement	<p>A covered entity that fails to cover its GHG emissions with enough allowances on 1 November following the end of a compliance period must remit each missing allowance and will have to remit three additional allowances for each allowance it failed to remit to the Minister of the Environment and the Fight against Climate Change.</p> <p>The person with legal responsibility for that entity would also be committing an infraction, subject to financial penalties, for each compliance instrument not surrendered as part of the compliance obligation.</p> <p>For noncompliance, entities can be fined CAD 3,000-500,000 (USD 2,237-372,814) and spend up to 18 months in jail in the case of a natural person, and CAD 10,000-3,000,000 (USD 7,456-2,236,882) in the case of a legal person.</p> <p>Fines are doubled in the case of a second offence. In addition, the Minister of the Environment and the Fight against Climate Change may suspend allowance allocation to any noncompliant emitter.</p>

## Linking

Links with other systems	Québec linked with California's ETS 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.
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## Other Information

Institutions involved	Ministère de l'Environnement et de la Lutte contre les changements climatiques (Ministry of the Environment and the Fight Against Climate Change), Carbon Market Division
Evaluation / ETS review	The regulation is adjusted almost annually to implement changes and, when necessary, maintain harmonization with linked jurisdiction.
Revenue	<p>Since the beginning of the program: CAD 4.54 billion (USD 3.39 billion).</p> <p>Collected in 2020: CAD 689.9 million (USD 514.4 million).</p> <p>All auction revenues go to the Electrification and Climate Change Fund (formerly the Québec Green Fund), which funds mitigation measures that include energy efficiency, electrification (Québec's electricity is 99.7% renewable), and public transport. Bill 44, passed by the National Assembly of Québec in 2020, renamed the Green Fund the Electrification and Climate Change Fund, devotes it entirely to climate action, and brings it fully under the direction of the Ministry of the Environment and the Fight against Climate Change.</p>
Implementing Legislation	<p><a href="#">Regulation respecting a cap-and-trade system for greenhouse gas emission allowances</a></p> <p><a href="#">Amendments are listed and linked on the site of the Ministry of the Environment and the Fight Against Climate Change</a></p> <p><a href="#">Environment Quality Act</a></p>

## China - Beijing pilot ETS

### General Information

<p>Summary</p>	<p><b>Status:</b> ETS in force</p> <p><b>Jurisdictions:</b> Beijing</p> <p>The Beijing Pilot ETS was launched in November 2013; to date, it has completed seven compliance years. Beijing is one of the two Chinese pilots with ETS regulation passed by its regional congress. The ETS covers ~45% of the city’s total emissions, including: both direct and indirect emissions from electricity providers; heat, cement, petrochemicals, and other industrial enterprises; manufacturers; the service sector; and public transport. In 2016, it lowered the inclusion thresholds from the original 10,000 to 5,000 tCO<sub>2</sub>/year while adding the public transport sector. In 2020, Beijing also included the aviation sector in its mandatory reporting scheme, preparing the sector to be included in the carbon market.</p> <p>Beijing is the only regional pilot in China that uses a price floor (CNY 20.00 (USD 2.90)) and ceiling (CNY 150.00 (USD 21.74)) 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, as compared to other pilots (average price in 2020 was above CNY 80.00 (USD 11.59)). The Beijing pilot is also open to diversified market participants including compliance entities, institutional investors, and individuals.</p> <p>Beijing also has pioneered cross-regional trading with its neighboring provinces. A ‘Framework Agreement for Cooperation on the Study of Cross-regional Carbon Emissions Trading’ with Tianjin, Hebei, Inner Mongolia, Shaanxi, and Shandong signed in 2013 provided a basis for cooperation. As a consequence of this, several cement companies from the Hebei province as well as companies from both the cement and power generation sectors voluntarily participated in the Beijing ETS in 2014 and 2015. Several companies from the same sectors in Inner Mongolia also voluntarily participated in 2015.</p> <p>The Beijing Pilot ETS is managed by the Beijing Municipal Ecology and Environment Bureau (EEB), which became the competent authority for the Beijing ETS in 2019. Updated implementing legislation is contained in the ‘2018 Carbon Emission Management and Trading Plan.’</p>
<p>Year in Review</p>	<p>In April 2020, the Beijing EEB released a notice on the ‘Management of Key Carbon Emission Units and the Pilot Work of Carbon Emissions Trading in 2020’; the notice had several documents on MRV, allowance allocation, and offsets as attachments. Most noticeably, the notice included the domestic aviation sector in the mandatory emissions reporting scheme, laying the foundation for covering this sector in its carbon market later. In this context, the Beijing EEB introduced monitoring and reporting guidelines for the aviation sector and updated its existing MRV guidelines for the other sectors.</p> <p>As part of the revisions to ‘the carbon allowance approval methods of enterprises (units) in Beijing’ which specifies the pilot’s allocation methods, the Beijing EEB adjusted the benchmark values of different unit types of power generation enterprises (combined heat and power), increasing their stringency. It also officially indicated that some sectors currently using grandfathering, such as cement as well as heat production and heat supply, will move to benchmarking soon. It further set the emission reduction factors for all the covered sectors for 2019 and 2020.</p> <p>In addition, the Beijing EEB published a new voluntary offset methodology for low-carbon transportation attached to the April notice, by modifying and improving the 2017 methodology focused on motor vehicles.</p>

	<p>The Beijing EEB moved the compliance deadline for 2019 emissions from 15 June to 15 November 2020 as a result of the COVID-19 pandemic. The government announced a 100% compliance rate at the end of 2020.</p> <p>According to the Chinese national ETS rules, regional markets that have already allocated allowances for 2019 and/or 2020 for the power sector will remain under the regional system for those years. As Beijing already announced the emission reduction factors for 2020, this implies that the power sector entities that are overlapping between Beijing and the national ETS will be covered under the regional carbon market in 2020 and moved to the national one from 2021 onwards.</p>
Overall GHG emissions (excluding LULUCF)	<b>Emissions:</b> 188.1 MtCO <sub>2e</sub> (2012)
Overall GHG emissions by sector (in MtCO <sub>2</sub> )	No information available yet.
GHG reduction target	<b>By 2020:</b> 20.5% reduction in carbon intensity compared to 2015 levels. Pledge to peak Beijing CO <sub>2</sub> emissions by 2020 (Beijing 13th Five-Year Plan on Energy Saving and Climate Change)
Carbon Price	<i>Current Allowance Price (per t/CO<sub>2e</sub>):</i> CNY 87.06 (USD 12.62) (average 2020 price)

## ETS Size

Covered emissions	0.45
GHGs covered	CO <sub>2</sub>
Sectors and thresholds	<p>Industrial and non-industrial companies and entities, including electricity providers, heating sector, cement, petrochemicals, other industrial enterprises, manufacturers, service sector, public transport, and domestic aviation.</p> <p><b>INCLUSION THRESHOLDS:</b>  <b>Until 2015:</b> 10,000 tCO<sub>2</sub>/year, considering both direct and indirect emissions.  <b>From 2016 onwards:</b> 5,000 tCO<sub>2</sub>/year, considering both direct and indirect emissions.  <b>MANDATORY REPORTING:</b> 2,000 tonnes of coal equivalent (tce) energy consumption/year.</p>
Point of regulation	<p>Downstream.</p> <p>Both direct and indirect emissions from electricity consumption are covered.</p>
Number of entities	831 (2019). In addition, 14 aviation entities and 634 other entities have mandatory reporting but no surrender obligations.
Cap	~50 MtCO <sub>2e</sub> (2018)

## Phases & Allocation

Trading periods	<p>2013 and ongoing*</p> <p>* In the short term, the existing Chinese regional carbon markets are expected to operate in parallel with the national Chinese carbon market. Over the medium to long term, they are expected to be integrated into the national market, once it is fully operational.</p>
Allocation	<b>FREE ALLOCATION:</b> Free allocation through grandparenting based on historical emissions or emissions intensity in the baseline years, which are the previous three years.

Benchmarking is used for new entrants and entities with expanded capacity, as well for the power sector. Benchmarking will be expanded to sectors such as heat production and cement.

**AUCTIONING:** Beijing could set aside up to 5% of allowances for regular and irregular auctions (see “Market Stability Provisions” section). To date, no auctions have been held.

## Flexibility

Banking and borrowing	<p>Banking is allowed.</p> <p>Borrowing is not allowed.</p>
Offsets and credits	<p><b>QUANTITATIVE LIMIT:</b> Domestic project-based carbon offset credits—Chinese Certified Emission Reduction (CCER) credits—are allowed. In addition, Beijing also has introduced its local offset programs focusing on carbon sinks, low-carbon transport, and energy saving. Offset use is limited to 5% of the annual allocation. The limit has been increased to 20% since 2019 only for the local low-carbon transport offsets.</p> <p><b>QUALITATIVE LIMIT:</b> CCERs from energy conservation projects and forestry carbon sink projects are allowed, whereas credits from hydropower, HFC, PFC, N<sub>2</sub>O, and SF<sub>6</sub> projects are not eligible. CCERs must come from projects that began operation after the beginning of 2013 (with exceptions for carbon sink projects, for which the date is February 2005).</p> <p>Out 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).</p>
Market Stability Provisions	<p><b>PRICE FLOOR AND CEILING:</b> The competent authority can auction extra allowances if the weighted average price exceeds CNY 150 (USD 21.74) for 10 consecutive days, and buy-back allowances from the market using a special funding source from the municipal budget if the price is below CNY 20 (USD 2.90).</p> <p><b>EXCHANGE:</b> The China Beijing Environment Exchange implements a system of limits on price increases and decreases for trading over the exchange which is <math>\pm 20\%</math> of 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 the compliance entities, one million tonnes for institutional investors, and 50,000 tonnes for natural persons.</p> <p><b>RESERVE:</b> The competent authority could set aside up to 5% of allowances for regular and irregular auctions. To date, no auctions have been held.</p>

## Compliance

Compliance Period	<p>One year (1 January to 31 December): covered entities have until 15 June of the following year to surrender allowances.</p>
Monitoring, Reporting, Verification (MRV)	<p><b>REPORTING FREQUENCY:</b> Annual reporting of CO<sub>2</sub> emissions.</p> <p><b>VERIFICATION:</b> Third-party verification is required. In addition, the government organizes expert review of all the verification reports; 30% of them are subject to further fourth-party verification.</p> <p><b>FRAMEWORK:</b> The Beijing EEB has updated the 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.</p>

	<b>OTHER:</b> In addition to the ETS participants, all legal entities with energy consumption of more than 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 up to CNY 50,000 (USD 7,245.57). 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 nonfinancial penalties include negative impacts on access to bank loans and subsidy programs.

## Linking

Links with other systems	No information available yet.
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## Other Information

Institutions involved	Beijing Ecology and Environment Bureau (competent authority) China Beijing Environment Exchange (trading platform) Beijing Research Center for Climate Change (registry)
Evaluation / ETS review	No information available yet.
Revenue	No information available yet.
Implementing Legislation	<a href="#">Beijing Municipal People's Congress ETS Pilot Bill</a> <a href="#">Interim Measures for the Management of Emissions Trading in Beijing</a> <a href="#">List of Covered Entities</a> (2019 compliance year) <a href="#">Beijing EEB Notice on the Management of Key Carbon Emission Units and the Pilot Work of Carbon Emission Rights Trading in 2020</a>

## China - Chongqing pilot ETS

### General Information

Summary	<p><b>Status:</b> ETS in force</p> <p><b>Jurisdictions:</b> Chongqing</p> <p>Chongqing launched its pilot ETS in June 2014; to date, it has concluded five compliance years. The system covers enterprises from seven sectors: power, electrolytic aluminum, ferroalloys, calcium carbide, cement, caustic soda, and iron and steel. The 180 enterprises covered by the system accounted for ~62% of the city's total emissions in 2018. Among the eight Chinese pilots, the Chongqing ETS is the only one that covers non-CO2 gases.</p> <p>One unique feature of the Chongqing Pilot ETS as compared to other Chinese pilot programs is that it has a clear path for cap-setting, in which an annual reduction rate is set and applied to the base-year emission level (i.e., the sum of each covered entity's highest annual emission of the year from 2008 to 2012). From 2013 to 2015, the annual reduction rate was 4.13% and afterwards 4.85%. The Chongqing Pilot ETS suffered from low liquidity in past years due to a relatively loose cap in its early years.</p> <p>2019 saw the completion of the transition of ETS-related responsibilities in Chongqing from the Development and Reform Commission (DRC) to the Ecology and Environment Bureau (EEB).</p>
Year in Review	<p>In April 2020, the Chongqing EEB released a notice on its ETS work for compliance year 2019, with a list of covered entities attached. The latest publicly available allocation plan dates from 2019 and is for the compliance year 2018.</p> <p>The Chongqing allocation plan differed from those of other Chinese pilots in that allowances were allocated based on entities' self-reported demand. Adjustment is made when an individual entity's self-reported demand level exceeds its highest historical annual emissions (2008-2012), by using the average of the two numbers. In addition, if the sum of the allocation for all the entities exceeds the top-down cap, a reduction factor is applied across the board.</p> <p>Following 2017, 2018 was the second year since the launch of the pilot where the cap (97 MtCO<sub>2</sub>e) was lower than the sum of the allocation based on self-declared demanded amount (106 MtCO<sub>2</sub>e); hence, downward adjustment to entities' allocation was made, indicating a potential allowance shortage for some companies in the market. However, 2018 saw relatively low liquidity of the Chongqing carbon market because some market investors released their holdings and increased the market supply. Since then, no detailed allocation plan has been publicly released.</p>
Overall GHG emissions (excluding LULUCF)	<b>Emissions:</b> ~156 MtCO <sub>2</sub> e MtCO <sub>2</sub> e (2018)
Overall GHG emissions by sector (in MtCO <sub>2</sub> )	No information available yet.
GHG reduction target	<b>BY 2020:</b> 19.5% reduction in carbon intensity compared to 2015 levels (13th Five-Year Plan)
Carbon Price	<i>Current Allowance Price (per t/CO<sub>2</sub>e):</i> 26.38 CNY (USD 3.82) (updated prices available <a href="#">here</a> )

### ETS Size

Covered emissions	0.62
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GHGs covered	CO <sub>2</sub> , CH <sub>4</sub> , N <sub>2</sub> O, HFCs, PFCs, SF <sub>6</sub>
Sectors and thresholds	Power, electrolytic aluminum, ferroalloys, calcium carbide, cement, caustic soda, and iron and steel.  <b>INCLUSION THRESHOLDS:</b> 20,000 tCO <sub>2</sub> /year or energy consumption of 10,000 tonnes of coal equivalent (tce)/year.
Point of regulation	Downstream  Both direct and indirect emissions from electricity and heat consumption are covered.
Number of entities	180 (2018 and 2019)
Cap	97 MtCO <sub>2</sub> e (2018)  From 2013 to 2015, the annual reduction rate of the cap was 4.13%. From 2016 onwards, it was revised to 4.85%.

## Phases & Allocation

Trading periods	2013 and ongoing*  * In the short term, the existing Chinese regional carbon markets are expected to operate in parallel to the Chinese national carbon market. Over the medium to long term, they are expected to be integrated into the national market, once it is fully operational.
Allocation	<b>FREE ALLOCATION:</b> Free allocation through grandparenting based on historical emissions (highest number in period 2008-2012). Regulated entities submit their allowance allocation demand on a yearly basis, forming the basis of their free allocation. This value is adjusted if it exceeds the highest historical annual emissions (2008-2012) of the respective entities, by using the average of the two numbers. In addition, if the sum of the allocation for all the entities exceeds the top-down cap (see “Cap” section), a reduction factor is applied to all the covered entities.

## Flexibility

Banking and borrowing	Banking is allowed.  Borrowing is not allowed.
Offsets and credits	<b>QUANTITATIVE LIMIT:</b> Domestic project-based carbon offset credits—CCERs—are allowed up to 8% of the compliance obligation.  <b>QUALITATIVE LIMIT:</b> Reductions must be achieved after 2010 with the exception of carbon sink projects. Credits from hydro projects are not allowed.
Market Stability Provisions	<b>EXCHANGE INTERVENTION:</b> Depending on transaction types, if prices vary more than 10% or 30% in one day, the Chongqing Carbon Emissions Exchange can institute price stabilization measures, such as temporarily suspending trading or imposing a holding limit.  <b>SALE AND TRADE LIMITS:</b> Compliance entities must not sell more than 50% of their annual free allocation.



## Compliance

Compliance Period	One year (1 January to 31 December): the exact date for the covered entities to surrender allowances is set by the government on an annual basis and varies across years.
Monitoring, Reporting, Verification (MRV)	<p><b>REPORTING FREQUENCY:</b> Annual reporting of GHG emissions.</p> <p><b>VERIFICATION:</b> Third-party verification is required.</p> <p><b>FRAMEWORK:</b> The Chongqing DRC released a guiding document for monitoring and reporting that includes methods for different emissions sources, including combustion, industrial processes, and electricity consumption.</p>
Enforcement	There are no financial penalties for noncompliance. Nonfinancial penalties may include public reporting, disqualification from energy saving and climate subsidies and associated awards for three years, and a record entered in the State-Owned Enterprise performance assessment system.

## Linking

Links with other systems	No information available yet.
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## Other Information

Institutions involved	<p>Chongqing Ecology and Environment Bureau (competent authority)</p> <p>Chongqing Carbon Emissions Trading Center (trading platform and registry)</p>
Evaluation / ETS review	No information available yet.
Revenue	No information available yet.
Implementing Legislation	<p><a href="#">Interim Measures for Management of Emissions Trading In Chongqing</a></p> <p><a href="#">Chongqing Allowance Allocation Management Rules</a></p> <p><a href="#">Chongqing EEB Notice on Carrying out ETS Work for Compliance Year 2019</a></p>

## China - Fujian pilot ETS

### General Information

<p>Summary</p>	<p><b>Status:</b> ETS in force</p> <p><b>Jurisdictions:</b> Fujian</p> <p>The province of Fujian launched its ETS in September 2016; it is the eighth regional pilot ETS in China. To date, it has completed four compliance years, achieving 100% compliance except in the first year. Unlike other Chinese pilots, which were mandated jointly 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.’ The NDRC approved the Haixia Equity Exchange in Fujian as one of nine trading platforms for trading Chinese Certified Emission Reductions (CCERs), demonstrating NDRC’s recognition of the regional market.</p> <p>The system covers nine sectors: electricity, petrochemical, chemical, building materials, iron and steel, nonferrous metals, paper, aviation, and ceramics. Given the prominence of the forestry sector in Fujian, its ETS pilot has a special focus on carbon sinks. In 2017, the Fujian government outlined a plan to promote forestry offsets projects in the province. By 2020, the selected counties in the province are required to develop forestry projects covering two million acres of forests, achieving an expected one million tonnes of emission reductions annually.</p> <p>In early 2019, the ETS-related responsibilities in Fujian completed the transition from the Fujian DRC to the Fujian Provincial Department of Ecology and Environment (DEE), as a result of the governance restructuring across China.</p>
<p>Year in Review</p>	<p>In August 2020, the Fujian government amended the ‘Interim Measures for the Administration of Carbon Emissions Trading in Fujian Province,’ fine-tuning its reporting, verification, and market oversight system.</p> <p>As a province dedicated to promoting its forestry-based offsets, by the end of October 2020 the Fujian ETS had traded 2.6 million tonnes of forestry offset credits, with a total turnover of over CNY 38 million (USD 5.5 million), overachieving the province’s target of forestry offsets set in 2017.</p> <p>The Fujian ETS finished its compliance work for 2019 at the end of October 2020, reporting a 100% compliance rate for its 269 covered entities from nine sectors.</p> <p>The latest publicly available detailed allocation plan, which dates from 2019, covers two years: 2018 and 2019. This plan was released by the Fujian DEE in June 2019. Almost 50% of the regulated entities are architectural ceramics companies. Since then, no detailed allocation plan has been released publicly.</p> <p>In late November 2020, Fujian published a notice on the pre-allocation of carbon emission allowances for the 2020 compliance year. The notice specifies that 269 covered entities are covered under the Fujian ETS. Following the allocation rules (see “Allocation” section), the entities receive 70% of the number of allowances based on their 2019 production data as pre-allocated allowances for 2020. The actual production data is then used to update allocation ex-post.</p> <p>According to the Chinese national ETS rules, regional markets that have already allocated allowances for 2019 and/or 2020 for the power sector will remain under the regional system for those years. This implies that the power sector entities that are overlapping between Fujian and the national ETS will be covered under the regional carbon market in 2020 and moved to the national one from 2021 onwards.</p>
<p>Overall GHG emissions (excluding LULUCF)</p>	<p><b>Emissions:</b> 240.0 MtCO<sub>2</sub>e MtCO<sub>2</sub>e (2014)</p>

Overall GHG emissions by sector (in MtCO <sub>2</sub> )	No information available yet.
GHG reduction target	<b>BY 2020:</b> 19.5% reduction in carbon intensity compared to 2015 levels
Carbon Price	<i>Current Allowance Price (per t/CO<sub>2</sub>e):</i> 17.24 CNY (USD 2.50) (updated prices available <a href="#">here</a> )

## ETS Size

Covered emissions	0.60
GHGs covered	CO <sub>2</sub>
Sectors and thresholds	<p>Electricity, petrochemical, chemical, building materials, iron and steel, nonferrous metals, paper, aviation, and ceramics.</p> <p><b>INCLUSION THRESHOLDS:</b> Energy consumption 10,000 tonnes of coal equivalent (tce)/year for any year between 2013 and 2016.</p> <p>In the future, the Fujian system may extend its coverage to smaller emitters, i.e., those with energy consumption of 5,000 tce or more.</p>
Point of regulation	<p>Downstream</p> <p>Both direct and indirect emissions from electricity and heat consumption are covered.</p>
Number of entities	<p>255 (2018)</p> <p>269 (2019)</p> <p>269 (2020)</p>
Cap	<p>~220 MtCO<sub>2</sub> (2019)*</p> <p>The cap includes three elements: existing entities' allowances, new entrants reserve, and market stability reserve.</p> <p>* There is no public data on the total cap, or the number of its three elements. This number is based on an estimate developed by experts.</p>

## Phases & Allocation

Trading periods	<p>2016-ongoing*</p> <p>*In the short term, the existing Chinese regional carbon markets are expected to operate in parallel with the national Chinese carbon market. Over the medium to long term, they are expected to be integrated into the national market, once it is fully operational.</p>
Allocation	<p><b>FREE ALLOCATION:</b> Benchmarking is applied to the electricity, cement, aluminum, and plate glass sectors.</p> <p>The other sectors are allocated allowances based on historical intensity. These entities can also apply for more allowances for early mitigation actions.</p> <p>A pre-allocation method is adopted for the annual allowance allocation. At first, entities receive 70% of the allowances in a given year, which are calculated based on their production levels in the previous year (for example, 2019 pre-allocation is based on 2018 production data). Allocation is then adjusted ex-post to reflect the actual production in the respective compliance year.</p> <p><b>AUCTIONING:</b> Auctioning may take place where considered appropriate by the ETS authorities (see "Market Stability Provisions" section) and may be introduced as a method</p>

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 (nonuniform price) auction of 50,000 allowances in 2016 from the government reserve, with the settlement prices ranging from CNY 26.50 (USD 3.84) to ~CNY 30 (USD 4.35). No further auctions have taken place to date.

## Flexibility

Banking and borrowing	<p>Banking is allowed.</p> <p>Borrowing is not allowed.</p>
Offsets and credits	<p><b>QUANTITATIVE LIMIT:</b> Domestic project-based carbon offset credits (CCERs) and Fujian Forestry Certified Emission Reduction credits (FFCER) are allowed. The use of CCER credits is limited to 5% of the annual compliance obligation. The limit is increased to 10% for companies that use both FFCER and CCER credits.</p> <p><b>QUALITATIVE LIMIT:</b> Eligible offsets are restricted to those generated in Fujian province, from CO<sub>2</sub> or CH<sub>4</sub> projects. Hydropower-related credits are not eligible. FFCER projects, with three project types (afforestation, forest management, and bamboo management) are eligible if implementation took place after 16 February 2005 and if the project developers have independent legal personality.</p>
Market Stability Provisions	<p><b>RESERVE:</b> 10% of the total cap is kept as a government reserve for market stabilization.</p> <p><b>INTERVENTION:</b> 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 in order 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.</p>

## Compliance

Compliance Period	<p>One year (1 January to 31 December): covered entities have until 30 June of the following year to surrender allowances.*</p> <p>* 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.</p>
Monitoring, Reporting, Verification (MRV)	<p><b>REPORTING FREQUENCY:</b> Annual reporting of CO<sub>2</sub> emissions.</p> <p><b>VERIFICATION:</b> Third-party verification is required for all the 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.</p> <p><b>FRAMEWORK:</b> 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 a measure for the administration of third-party verifiers, which specifies criteria for the verifiers and their staff. Both documents are still valid.</p>

Enforcement	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 1,449) to CNY 30,000 (USD 4,347). 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 4,347). Additionally, twice the amount of the missing allowances can be withdrawn from the account of the company or deducted from next year's allocation. Penalties for the misconduct of trading entities and their staff, such as not publishing relevant trading information or leaking commercial secrets, could range from CNY 10,000 (USD 1,449) to CNY 30,000 (USD 4,347).
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## Linking

Links with other systems	No information available yet.
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## Other Information

Institutions involved	Fujian Provincial Department of Ecology and Environment (competent authority) Fujian Haixia Equity Exchange (trading platform) Fujian Economic and Information Center (registry, market management, and MRV administration)
Evaluation / ETS review	No information available yet.
Revenue	No information available yet.
Implementing Legislation	<a href="#">Implementation Plan of Emissions Trading Market Construction in Fujian Province</a>  <a href="#">Interim Measures for the Management of Emissions Trading in Fujian Province</a>  <a href="#">2020 Amendments to the Interim Measures</a>  <a href="#">Fujian Provincial Department of Ecology and Environment—Allocation Plan for Vintage 2018 and 2019</a>

## China - Guangdong pilot ETS

### General Information

<p>Summary</p>	<p><b>Status:</b> ETS in force</p> <p><b>Jurisdictions:</b> Guangdong</p> <p>Launched in December 2013, the Guangdong Pilot ETS is the largest of the Chinese ETS pilots. Following a scope expansion in 2016 of two new sectors, the ETS now covers the power, cement, steel, petrochemical, papermaking, and domestic aviation sectors, accounting for about 70% of the province's emissions.</p> <p>The Guangdong Pilot ETS has one of the most active markets among Chinese pilots with the largest market share for spot trading. Guangdong is the first pilot to introduce auction as one of the key allocation methods. It was mandatory for enterprises to purchase 3% of their allowances from auctions in 2013 before receiving the remainder for free. Since 2014, participation in auctions has been voluntary and the non-free allocation rate has been raised to 5% for the power sector and 3% for the remaining sectors. Since 2017, auctions have been held on ad hoc dates (rather than quarterly). Guangdong is among the few pilots that are open to foreign investors. In November 2016, Guangdong increased the maximum position of institutional and individual investors from three million to eight million allowances. Guangdong also allows unincorporated organizations, such as funds and trusts, to trade in its carbon market. As of 2020, it had 96 institutional investors. Guangdong is the first and only province in China that both implements an ETS pilot and is also one of the pilots for green finance policy.</p> <p>In late 2018, the ETS-related responsibilities in Guangdong completed the transition from its Development and Reform Commission to the Department of Ecology and Environment (DEE), as a result of the governance restructuring across China.</p>
<p>Year in Review</p>	<p>In order to further standardize the province's own offsetting program, Pu Hui Certified Emission Reductions (PHCER), the Guangdong Province PHCER Trading Rules were revised and re-issued in June 2020, setting new rules on the quantity and price of certain transaction types.</p> <p>Guangdong also introduced a new method of allowance transaction for the secondary market in June 2020 to improve its market efficiency. Under this so-called "bidding transfer," covered entities entrust the Guangzhou Carbon Emission Trading Center to organize auctions of their allowances rather than pursue bilateral trading, determining the minimum price, timing of sale, and other transaction rules in conjunction with the Center.</p> <p>The Guangdong DEE moved the compliance deadline for 2019 emissions from June to November 2020 as a result of the COVID-19 pandemic. In December 2020, the Guangdong government announced that its pilot completed its 2019 compliance period with a 100% compliance rate.</p> <p>In December 2020, Guangdong released its 2020 allocation plan with the list of covered entities. Compared to previous years, the allocation plan introduced one major change, namely an increase of free allocation for the aviation sector from 97% to 100%. The total cap for the 268 covered entities for 2020 is 438 MtCO<sub>2</sub>; in addition, 27 MtCO<sub>2</sub> are kept as government reserves for new entrants and market stability.</p> <p>According to the Chinese national ETS rules, regional markets that have already allocated allowances for 2019 and/or 2020 for the power sector will remain under the regional system for those years. This implies that the power sector entities that are overlapping between Guangdong and the national ETS will be covered under the regional carbon market in 2020 and moved to the national one from 2021 onwards.</p>
<p>Overall GHG emissions (excluding LULUCF)</p>	<p><b>Emissions:</b> 610.5 MtCO<sub>2e</sub> (2012)</p>

Overall GHG emissions by sector (in MtCO <sub>2</sub> )	No information available yet.
GHG reduction target	<p><b>BY 2020:</b> 20.5% reduction in carbon intensity compared to 2015 levels (Guangdong Province Work Plan for Controlling Greenhouse Gas Emission During the 13th Five-Year Plan Period)</p> <p><b>BY 2030:</b> CO<sub>2</sub> peaking sometime before 2030 (Guangdong Province Work Plan for Controlling Greenhouse Gas Emission During the 13th Five-Year Plan Period). Some of the cities in the province, such as Guangzhou, have set the target of reaching or approaching the peak by as early as 2020 (Outline of Guangzhou Ecological Civilization Construction Plan 2016-2020)</p>
Carbon Price	<i>Current Allowance Price (per t/CO<sub>2</sub>e):</i> CNY 28.21 (USD 4.09) (updated prices available <a href="#">here</a> )

## ETS Size

Covered emissions	0.70
GHGs covered	CO <sub>2</sub>
Sectors and thresholds	<p>Power, iron and steel, cement, papermaking, aviation, and petrochemicals.</p> <p><b>INCLUSION THRESHOLDS:</b> 20,000 tCO<sub>2</sub>/year or energy consumption 10,000 tce/year.</p>
Point of regulation	<p>Downstream</p> <p>Both direct and indirect emissions from electricity and heat consumption are covered.*</p> <p>*The electricity market in Guangdong has undergone some changes following the national power sector reform process. Guangdong's electricity spot market was officially launched at the end of 2018, and it is planned that by 2020, the electricity trading volume in the market will account for no less than 60% of the power generation in Guangdong province. There is no publicly available data on this yet.</p>
Number of entities	<p>242 existing entities, 37 new entrants (2019)</p> <p>245 existing entities, 23 new entrants (2020)</p>
Cap	465 MtCO <sub>2</sub> e (2019), among which 27 MtCO <sub>2</sub> e are kept as government reserves for new entrants and market stability (2019 and 2020).

## Phases & Allocation

Trading periods	<p>2013 and ongoing*</p> <p>*In the short term, the existing Chinese regional carbon markets are expected to operate in parallel with the national Chinese carbon market. Over the medium to long term, they are expected to be integrated into the national market once it is fully operational.</p>
Allocation	<p><b>FREE ALLOCATION:</b> Mainly free allocation through grandparenting based on historical emissions or emissions intensity, or benchmarking.</p> <p>Benchmarking is applied to coal- and gas-fired electricity generators (including heating, and combined heat and power), as well as to some industrial processes in the aviation, cement, paper, and steel sectors.</p> <p>Grandparenting on the basis of historical emissions is applied to some processes in the cement and steel industries and the whole petrochemical industry. Grandparenting on</p>

the basis of historical emissions intensity is applied to the power industry using special fuel generating units and heating boilers, other powder products in cement industry, captive power plants in the steel industry, special paper and paper product manufacturers, enterprises with pulp manufacturing, and other aviation enterprises.

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.

Compared to previous years, the 2020 allocation plan has one major change, namely an increase of free allocation for the aviation sector from 97% to 100%.

**AUCTIONING:** Guangdong auctions a small share of allowances as a form of allowance allocation. During the first compliance year (2013), entities were required to purchase allowances in auctions in order to become eligible to receive their freely allocated allowances. This requirement was terminated in 2014. Since 2014, free allocation percentages remain the same, i.e., 95% for the power sector and 97% for the remaining sectors (for 2020, the aviation sector received 100% free allocation). 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 or 2019.

The allowance volume available for auction was adjusted from two million allowances (as had been the case until year 2018) to five million allowances from 2019 onwards. One auction took place in April 2020 with a floor price of CNY 25.84 per tCO<sub>2</sub>e (USD 3.74), selling 400,000 allowances at the price of CNY 28.2 (USD 4.09).

## Flexibility

Banking and borrowing	<p>Banking is allowed.</p> <p>Borrowing is not allowed.</p>
Offsets and credits	<p><b>QUANTITATIVE LIMIT:</b> The use of offsets is limited to 10% of covered entities’ annual emissions. Chinese Certified Emissions Reductions (CCERs) are allowed. As a mechanism that encourages the public to reduce carbon emissions, Pu Hui Certified Emission Reductions (PHCER) are also allowed since compliance year 2017. In addition to the quantitative limit applied to individual entities, Guangdong sets an upper limit to the total volume of offsets allowed. In 2019, entities were allowed to use up to 1.5 million offsets (CCER and PHCER) towards compliance obligations, with the priority given to the province’s CCERs and PHCERs first; then, other offsets will be allowed in accordance with the order of enterprises’ written applications until this limit is reached. The number for 2020 has not yet been announced.</p> <p><b>QUALITATIVE LIMIT:</b> At least 70% of offsets used by each regulated entity must come from within Guangdong province. This rate is adjusted to 60% if offsets are generated in certain priority regions within Guangdong, as identified by the government (e.g., poor and ethnic minority group areas). Pre-CDM credits are not eligible. Credits from hydro and from most fossil fuel projects are also not eligible. 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<sub>2</sub> and CH<sub>4</sub> emissions.</p>
Market Stability Provisions	<p><b>RESERVES:</b> 5% of allowances are set aside for government reserves for new entrants and market stability. The specific rules for market stability are provided by its ‘Trial Measures for ETS.’</p> <p><b>AUCTION RESERVE PRICE:</b> Auctions under the Guangdong Pilot ETS are subject to an auction reserve price. Initially in 2013, the reserve price was set at CNY 60 (USD 8.69), and it was lowered to CNY 25 (USD 3.62) and increased to CNY 40 (USD 5.80) in steps of CNY 5 (USD 0.72) with each quarterly auction in 2014. In 2015, a so-called “policy reserve price” was set as an effective reserve price, which links the auction reserve price with the secondary market price. The reserve price was set at 80% of the weighted average price for allowances over the previous three months in 2015. In 2016, the policy reserve price was set at 100% of the weighted average price for allowances over the previous three months. The policy reserve prices for the four auctions for the 2016 compliance period were as follows: CNY 9.37 (USD 1.36), CNY 11.27 (USD 1.63), CNY 16.09 (USD 2.33), and CNY 15.15 (USD 2.20).</p>



When auctions were 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 COVID impact.

**OFFSET AUCTIONS:** Guangdong introduced auctioning for PHCERs in addition to the existing secondary market trading modes, with an auction reserve price set by the Emissions Exchange Guangzhou and offset project developers. In the latest two auctions of PHCERs in 2020 (28 December 2020), the reserve price for one offset project was set at CNY 22.25/tonne (USD 3.22) (80% of the weighted average price for allowances over the previous three months). The offered 52,355 tonnes offsets were sold at the price of CNY 35.3/tonne (USD 5.12). For the other one, the reserve price was set as CNY 33/tonne (USD 4.78), with all the 9,789 tonnes offered being sold at the price of CNY 36.06/tonne (USD 5.23).

## Compliance

Compliance Period	<p>One year (1 January to 31 December): covered entities have until 20 June of the following year to surrender allowances.*</p> <p>* The 2020 compliance deadline was postponed due to the COVID-19 pandemic.</p>
Monitoring, Reporting, Verification (MRV)	<p><b>REPORTING FREQUENCY:</b> Annual reporting of CO2 emissions.</p> <p><b>VERIFICATION:</b> Third-party verification is required. In addition, further validation was initially carried out by government-assigned expert groups in the first three compliance years. Onsite cross reverifications were conducted for the entities with questionable verification reports, as well as for randomly selected entities. A so-called “fourth-party independent evaluation system” has been in place since the 2016 compliance period. The “technical evaluation organizations” selected by the government carry out technical review and evaluation of the annual emissions reports and verification reports and undertake further onsite review and random inspection tasks. These technical evaluation agencies do not undertake regular third-party verification tasks.</p> <p><b>FRAMEWORK:</b> The Department of Ecology and Environment of Guangdong has released guidelines for monitoring and reporting for the compliance and reporting sectors.</p> <p><b>OTHER:</b> Industrial enterprises with annual carbon emissions of more than 5,000 tonnes and less than 10,000 tonnes are required to report their emissions. Verification is not required.</p>
Enforcement	<p>Penalties for failing to submit emissions or verification reports on time range from CNY 10,000 (USD 1,449) to CNY 50,000 (USD 7,246). Furthermore, companies failing to surrender enough allowances to match their emissions will be deducted twice the amount of allowances from the following year’s allocation and are fined CNY 50,000 (USD 7,246). Other nonfinancial penalties include negative impacts on access to bank loans and subsidy programs.</p>

## Linking

Links with other systems	No information available yet.
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## Other Information

Institutions involved	<p>Guangdong Ecology and Environment Bureau (competent authority) China Emissions Exchange (Guangzhou) (trading platform) Guangdong Research Center for Climate Change (registry)</p>
Evaluation / ETS review	No information available yet.

Revenue	<p>Since beginning of program: CNY 815.46 million (USD 118.17 million)</p> <p>Collected in 2020: CNY 11.28 million (USD 1.63 million)</p> <p>Guangdong has been exploring the establishment of a Low Carbon Development Fund that would use auction revenues to promote further mitigation actions, carbon finance, and low-carbon industrial development. However, due to the change of the pilot's competent authority, further information regarding this measure has not yet been released.</p>
Implementing Legislation	<p><a href="#">Guangdong Pilot ETS Implementation Plan</a></p> <p><a href="#">Trial Measures for Carbon Emissions Trading in Guangdong</a></p> <p><a href="#">Department of Ecology and Environment of Guangdong—Allocation Plan for Vintage 2019 (including list of covered entities)</a></p> <p><a href="#">Department of Ecology and Environment of Guangdong—Allocation Plan for Vintage 2020 (including list of covered entities)</a></p>

## China - Hubei pilot ETS

### General Information

<p>Summary</p>	<p><b>Status:</b> ETS in force</p> <p><b>Jurisdictions:</b> Hubei</p> <p>Launched in April 2014, the Hubei Pilot ETS has since concluded six compliance years. Hubei has been one of the most active regional markets in China in terms of trading and has the second-largest market size in terms of spot trading volume, after Guangdong. It is also one of the regional pioneers for allowance spot forward trading in China. When spot forward trading is also considered, Hubei has the largest market share as of end 2020, with its total secondary market transaction volume of 347 million tonnes and value of CNY 8.13 billion (USD 1.18 billion). The system initially covered 138 of the most carbon-intensive companies in the province, accounting for ~35% of the province's total carbon emissions.</p> <p>Hubei has expanded its scope several times. In 2016, it lowered the thresholds of seven sectors from 60,000 to 10,000 tce. In 2017, it further lowered the thresholds of all the other sectors to 10,000 tce. In 2018, the water supply sector was added. As of 2020, the system covers more than 370 entities which accounts for ~42% of the province's carbon emissions.</p> <p>A government reserve with 8% of the total cap is available for market stabilization, and the government can also intervene in cases of market fluctuations, severe supply-demand imbalances, or for liquidity reasons. The Hubei ETS pilot is open to diversified market participants, including covered entities as well as institutional and individual (domestic and foreign) investors.</p> <p>According to the compliance notice by the Hubei Development and Reform Commission (DRC) in July 2017, the Hubei Pilot ETS will continue to run after the national ETS commences. The transition of Hubei allowances into the national ETS will be based on rules to be defined by the national competent authority.</p> <p>In December 2017, Hubei was selected to lead the development of the registry for the national ETS.</p> <p>In early 2019, the ETS-related responsibilities in Hubei completed the transition from DRC to the Department of Ecology and Environment (DEE) of Hubei, as a result of the governance restructuring across China.</p>
<p>Year in Review</p>	<p>The Hubei DEE released the 2019 allocation plan in August 2020. Key changes compared to the previous year's plan include: a cap increase of 14 million tonnes to reach 270 million tonnes; a decline in the market adjustment factor, which is a factor applied to all covered entities to reduce overall allocation; and updating of the base year from 2015-2017 to 2016-2018. In this plan, Hubei also clarifies how it plans to coordinate its ETS with the upcoming national ETS. According to the plan, if the national ETS had implemented 2019 compliance work, the overlapping companies would have no longer participated in Hubei's compliance and the regional government would have withdrawn the corresponding allowances issued. This cutoff date of September 2019 did not see the operationalization of the national ETS; hence, these entities were covered under the Hubei ETS for compliance year 2019.</p> <p>The Hubei DEE moved the compliance deadline for 2019 emissions from May to December 2020 as a result of the COVID-19 pandemic. In December 2020, the Hubei pilot completed its 2019 compliance period with a 100% compliance rate.</p>
<p>Overall GHG emissions (excluding LULUCF)</p>	<p><b>Emissions:</b> 463.1 MtCO<sub>2</sub>e (2012)</p>
<p>Overall GHG emissions by sector (in MtCO<sub>2</sub>)</p>	<p>No information available yet.</p>

GHG reduction target	<b>BY 2020:</b> 19.5% reduction in carbon intensity compared to 2015 levels (13th Five-Year Plan)
Carbon Price	<i>Current Allowance Price (per t/CO<sub>2</sub>e):</i> CNY 27.21 (USD 3.94) (updated prices available <a href="#">here</a> )

## ETS Size

Covered emissions	0.42
GHGs covered	CO <sub>2</sub>
Sectors and thresholds	<p>16 sectors*: power and heat supply, iron and steel, nonferrous metals, petrochemicals, chemicals, textile, cement, glass and other building materials, pulp and paper, ceramics, automobile and equipment manufacturing, food, beverage, and medicine producers, and water supply.</p> <p><b>INCLUSION THRESHOLDS:</b>  <b>Until 2015:</b> Annual energy consumption more than 60,000 tce in any year between 2010 and 2011, applying to all energy and industrial sectors.  <b>From 2016 onwards:</b> Annual energy consumption more than 10,000 tce in any year between 2016 and 2018, applying to all energy and industrial sectors.</p> <p>* Different from other Chinese pilots, Hubei does not pre-define which sectors are covered under its ETS; rather, it sets a threshold which applies to all power and industrial sectors. Those sectors with entities above the threshold then are covered.</p>
Point of regulation	<p>Downstream.</p> <p>Both direct and indirect emissions from electricity and heat consumption are covered.</p>
Number of entities	373 (2019)
Cap	270 MtCO <sub>2</sub> (2019), which includes reserves for new entrants and market stability.

## Phases & Allocation

Trading periods	<p>2014 and ongoing*</p> <p>*In the short term, the existing Chinese regional carbon markets are expected to operate parallel to the national Chinese carbon market. Over the medium to long term, they are expected to be integrated into the national market, once it is fully operational.</p>
Allocation	<p><b>FREE ALLOCATION, BENCHMARKING:</b> Free allocation of 2019 vintage allowances through benchmarks for power and cement (except for entities using outsourced clinker).</p> <p><b>FREE ALLOCATION, GRANDPARENTING:</b> Historical emissions intensity for heat, co-generation, glass and other building materials, some of the equipment manufacturing, and the pulp and papers sectors; grandparenting based on previous three years' historic emissions for all other sectors.</p> <p>Ex-post allocation adjustments are applied, especially for those sectors that use benchmarks and emissions intensity.</p> <p>Hubei also introduces the so-called market adjustment factor, a factor that is applied to all covered entities to reduce overall allocation. It is determined based on the previous year's market stock of the Hubei carbon market, while taking the province's overall economic development and the achievement of its climate mitigation targets and strategies into consideration. For the 2019 compliance year, it was set at 0.9723.</p>

**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 happened only in 2014, 2019, and 2020. The first auction took place in 2014, with two million allowances sold at the floor price of CNY 20 (USD 2.90).

In November 2019, through two separate auctions, five million allowances were made available from the government reserve. The auctions operated with a reserve price set at the weighted spot market price from 30 October 2017 to 30 October 2019. The first auction was restricted to compliance entities. Two million allowances were offered with 1.49 million sold at an average price of CNY 24.65 (USD 3.57). Remaining allowances were made available to covered entities as well as other market participants for a second auction. The total auction volume was 3.51 million tonnes, including 0.51 million that was left from the first auction. The average price was CNY 24.49 (USD 3.55).

Following an identical structure of two separate rounds of auctions targeting different types of entities, in December 2020 three million allowances were made available from the government reserve, with two-thirds dedicated to compliance entities only. The auctions operated with a reserve price set at CNY 27.56 (USD 3.99). 1.1 million and 671,000 tonnes were successfully auctioned respectively, with the average price of CNY 27.57 (USD 4.00).

## Flexibility

Banking and borrowing	Banking is allowed, but only for allowances that were traded at least once.  Borrowing is not allowed.
Offsets and credits	<b>QUANTITATIVE LIMIT:</b> The use of domestic project-based carbon offset credits (CCERs) is limited to 10% of the annual initial allocation for each entity.  <b>QUALITATIVE LIMIT:</b> CCERs must come from rural biogas or forestry projects in the key counties under the national or provincial poverty alleviation plan in urban agglomeration areas of the middle reaches of the Yangtze River (within Hubei). CCERs must have been generated between 1 January 2013 and 31 December 2015.
Market Stability Provisions	<b>RESERVE:</b> 8% of the total cap is kept as a government reserve for market stabilization.  <b>INTERVENTION:</b> In case of market fluctuations, severe imbalances between supply and demand, 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, if the allowance price reaches a low or high point six times during a 20-day time span, the Hubei EEB takes action.  <b>EXCHANGE:</b> The exchange limits day-to-day price fluctuations to between -10% and +10% respectively.

## Compliance

Compliance Period	One year (1 January to 31 December): covered entities have until the last working day of May of the following year to surrender allowances.*  * For the compliance year 2019, the deadline was postponed in 2020 due to the COVID-19 pandemic.
Monitoring, Reporting, Verification (MRV)	<b>REPORTING FREQUENCY:</b> Annual reporting of CO2 emissions.  <b>VERIFICATION:</b> Third-party verification is required. Third-party verifiers may be involved in mutual evaluation of each other's verification reports. In addition, further validation is carried out by government-assigned experts to further enhance the accuracy; this process is also called "fourth-party verification" in China.

	<p><b>FRAMEWORK:</b> The Hubei government has released general rules on monitoring and reporting guiding all the 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. The national-level guidelines on MRV, especially for the sectors outside these 11 sectors, are also used as reference for Hubei.</p>
Enforcement	<p>Hubei has introduced a capped mechanism for the compliance obligations. If the difference between the annual verified emissions and the allocated allowances of an entity exceeds either 20% of the allocation or 200,000 tonnes, the allowances will be added or deducted to cap the surplus or deficit within the 20%/200,000 tonnes limit.</p> <p>Penalties for failing to submit an emissions or verification report on time range from CNY 10,000 (USD 1,449) to CNY 30,000 (USD 4,347). Trade participants that manipulate the market face up to CNY 150,000 (USD 21,737) in fines. Furthermore, companies that fail to surrender enough allowances to match their emissions will be deducted twice the amount of allowances from next year's allocation and are fined one to three times the average market price for every allowance, with a maximum limit of CNY 150,000 (USD 21,737).</p>

## Linking

Links with other systems	No information available yet.
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## Other Information

Institutions involved	<p>Department of Ecology Environment of Hubei Province (competent authority) China Hubei Emission Exchange (trading platform and registry)</p>
Evaluation / ETS review	No information available yet.
Revenue	<p>Since beginning of program: CNY 212 million (USD 30.7 million)</p> <p>Collected in 2020: CNY 49.32 million (USD 7.15 million)</p> <p>No information available yet.</p>
Implementing Legislation	<p><a href="#">Hubei Pilot ETS Implementation Plan</a></p> <p><a href="#">Interim Measures for Management of Emissions Trading in Hubei Province</a></p> <p><a href="#">Department of Ecology Environment of Hubei Province- Allocation Plan for Vintage 2019 (including list of covered entities)</a></p>

## China - Shanghai pilot ETS

### General Information

<p>Summary</p>	<p><b>Status:</b> ETS in force</p> <p><b>Jurisdictions:</b> Shanghai</p> <p>Shanghai was the second Chinese region to start its pilot ETS in November 2013 and has concluded seven compliance years to date. The pilot covers more than half of the city's emissions, including power, industry, and non-industrial sectors such as building, aviation, and shipping. It is the only pilot that has achieved 100% compliance rate continuously since its launch. In 2016, Shanghai expanded its ETS coverage by adding the shipping sector, as well as lowering the participation threshold of power plants and industries (which were included in the 2013-2015 phase) to 10,000 tCO<sub>2</sub>/year.</p> <p>Shanghai is the most active among the Chinese pilots in terms of offset credits trading. It also pioneered allowance spot forward trading in China*. In January 2017, the Shanghai Environmental and Energy Exchange and the Shanghai Clearing House jointly launched the over-the-counter 'Shanghai Emission Allowance Forward' contract, with central counterparty clearing, as an innovative financial product that serves a purpose similar to carbon financial derivatives. Shanghai has also carried out various other carbon finance innovations such as repurchases, carbon funds, carbon trusts, CCER pledge loans, green bonds, and carbon margin trading.</p> <p>In December 2017, Shanghai was selected to lead the development of the trading platform for the national ETS.</p> <p>In early 2019, the ETS-related responsibilities in Shanghai completed the transition from the Development and Reform Commission (DRC) to the Ecology and Environment Bureau (EEB), as a result of the governance restructuring across China.</p> <p>*China is still in the exploratory and research stage of carbon futures trading, and according to the "Administrative Regulations on Futures Trading" document, futures trading can only be traded on approved professional futures exchanges. Therefore, regional ETS pilots cannot introduce futures trading. However, a few of them have developed carbon forward trading products with their own characteristics.</p>
<p>Year in Review</p>	<p>The Shanghai EEB released the 2019 allocation plan in June 2020. No significant changes were implemented compared to the allocation plan of the previous year.</p> <p>In 2020, the Shanghai pilot also opened its auctions to institutional investors for the first time. Before that, participation in the Shanghai auctions had been limited to the compliance entities. By diversifying the participants in the auctions, the Shanghai pilot further increases its liquidity and promotes price discovery.</p> <p>The Shanghai ETS completed its compliance work for 2019 in October 2020, after some delay due to the COVID-19 pandemic, reporting its 7th consecutive 100% compliance rate.</p>
<p>Overall GHG emissions (excluding LULUCF)</p>	<p><b>Emissions:</b> 297.7 MtCO<sub>2</sub>e (2012)</p>
<p>Overall GHG emissions by sector (in MtCO<sub>2</sub>)</p>	<p>No information available yet.</p>
<p>GHG reduction target</p>	<p><b>BY 2020:</b> 20.5% reduction in carbon intensity compared to 2015 levels. The total CO<sub>2</sub> emissions to be limited within 250 million tonnes (13th Five-Year Plan)</p> <p><b>BY 2025:</b> pledged to peak the total and per capita CO<sub>2</sub> emissions (Shanghai Urban Master Plan 2017-2035)</p> <p><b>BY 2040:</b> ~15% reduction in CO<sub>2</sub> emissions compared to the peak level (Shanghai Urban Master Plan 2017-2035)</p>

Carbon Price	Current Allowance Price (per t/CO <sub>2</sub> e): CNY 40.11 (USD 5.81) (updated prices available <a href="#">here</a> )
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## ETS Size

Covered emissions	0.57
GHGs covered	CO <sub>2</sub> only
Sectors and thresholds	<p>Airports, domestic aviation, chemical fibers, chemicals, commercial, power and heat, water suppliers, hotels, financial, iron and steel, petrochemicals, ports, shipping, nonferrous metals, building materials, paper, railways, rubber, and textiles.</p> <p><b>INCLUSION THRESHOLDS:</b>  <b>For power and industry:</b> Either 20,000 tCO<sub>2</sub>/year or 10,000 tce/year; and those that already participated in the 2013-2015 phase with 10,000 tCO<sub>2</sub>/year or 5,000 tce/year.  <b>For Transport:</b> Either 10,000 tCO<sub>2</sub>/year or 5,000 tce/year (aviation and ports), 100,000 tCO<sub>2</sub>/year or 50,000 tce/year (shipping).  <b>For Buildings:</b> Either 10,000t CO<sub>2</sub>/year or 5,000 tce/year.</p>
Point of regulation	<p>Downstream.</p> <p>Both direct and indirect emissions from electricity and heat consumption are covered.</p>
Number of entities	313 (2019), including 280 existing and 33 new entities
Cap	158 MtCO <sub>2</sub> e (2019, including reserve)

## Phases & Allocation

Trading periods	<p>Two trading periods:</p> <ul style="list-style-type: none"> <li>• the first period ran between 2013 and 2015;</li> <li>• the second period started in 2016, with no specific ending year.*</li> </ul> <p>*In the short term, the existing Chinese regional carbon markets are expected to operate parallel to the national Chinese carbon market. Over the medium to long term, they are expected to be integrated into the national market, once it is fully operational.</p>
Allocation	<p><b>FREE ALLOCATION:</b> Free allocation based on sector-specific benchmarks (for the electricity and heat producers, and electricity grid sector).</p> <p>Grandfathering based on historic emissions intensity for part of the industrial sectors, aviation, ports, shipping, and water suppliers, generally based on the previous three years' data.</p> <p>Grandfathering based on historic emissions for airports, buildings, commercial sector, and part of the industrial sectors with complex products or considerable change in emission boundary, generally based on the previous three years' data.</p> <p>Ex-post allocation adjustments, e.g., on the basis of production data, are applied for those with historic intensity or benchmarking allocations.</p> <p><b>AUCTIONING:</b> 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. One auction was held in each of the following years: 2014, 2016, 2018, and 2019.</p> <p>In 2020, Shanghai held two auctions: one in August and the other in October. The floor prices were set differently: for the first auction, which was open to institutional investors and compliance entities, the floor price was set at the market weighted average price of all</p>



trading days in the second quarter of 2020. For the second auction, which was open to the compliance entities only, the floor price was set at 1.1 times the market weighted average price of all trading days from December 1, 2019 to September 30, 2020. The auctions offered 2 million tonnes of allowances each, with 100% and 5.9% of them cleared at the floor price of CNY 39.61 (USD 5.74) and CNY 44.27 (USD 6.42) respectively.

## Flexibility

Banking and borrowing	<p>Banking is allowed both within and across trading periods, with some restrictions for the latter. For banked allowances from the first trading period (2013-2015), only one-third could be used per year between 2016 and 2018 by compliance entities; allowances are fully bankable for institutional investors.</p> <p>Borrowing is not allowed.</p>
Offsets and credits	<p><b>QUANTITATIVE LIMIT:</b> Domestic project-based carbon offset credits—CCERs—are allowed. For compliance year 2019, the use of CCER credits was limited to 3% of the verified emissions, of which up to 2% was for credits generated outside the Yangtze River Delta region*. Between 2016 and 2018, the use of CCER credits was limited to 1% of the annual allocation. Between 2013 and 2015, the limit was 5%.</p> <p><b>QUALITATIVE LIMIT:</b> Credits for reductions that were realized before January 2013 cannot be used for compliance. Credits from hydro projects are not allowed.</p> <p>*This region covers Shanghai, Jiangsu, Zhejiang, and Anhui.</p>
Market Stability Provisions	<p><b>EXCHANGE:</b> Depending on transaction types, if prices vary more than 10% or 30% in one day, the Shanghai Environment and Energy Exchange can institute price stabilization measures such as temporarily suspending trading or imposing holding limits.</p> <p><b>RESERVE:</b> 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 “Allocation” section).</p>

## Compliance

Compliance Period	<p>One year (1 January to 31 December): covered entities have until 30 June of the following year to surrender allowances*.</p> <p>* In some recent years, the compliance deadlines have been postponed to later dates, for reasons such as the COVID-19 pandemic and other factors</p>
Monitoring, Reporting, Verification (MRV)	<p><b>REPORTING FREQUENCY:</b> Annual reporting of CO2 emissions.</p> <p><b>VERIFICATION:</b> Third-party verification is required. In addition, the government also conducts quality checks.</p> <p><b>FRAMEWORK:</b> The Shanghai government has released general rules for monitoring and reporting as well as sector-specific guidelines for the following sectors: iron and steel, electricity and heat, chemicals, nonferrous metals, non-metallic mineral products, textiles and paper, aviation, shipping, large buildings (hotels, commercial, and financial), and transport stations.</p>
Enforcement	<p>Penalties for failing to submit an emissions report or verification report on time or providing fraudulent information range from CNY 10,000 (USD 1,449) to CNY 50,000 (USD 7,245).</p> <p>Between CNY 50,000 (USD 7,245) and CNY 100,000 (USD 14,491) can be imposed for noncompliance, in addition to surrendering the adequate amount of allowances. Further sanctions may also be imposed, such as entry into the credit record of the company,</p>

publication on the internet, cancelation of ability to access special funds for energy conservation, and emissions reduction measures.

## Linking

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Links with other systems

No information available yet.

## Other Information

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Institutions involved	Shanghai Ecology and Environment Bureau (competent authority); Shanghai Environment and Energy Exchange (trading platform); Shanghai Information Center (registry)
Evaluation / ETS review	No information available yet.
Revenue	Since beginning of programm: CNY 102.2 million (USD 14.8 million) Collected in 2020: CNY 84.4 million (USD 12.2 million)  The revenues are submitted to the general municipality budget.
Implementing Legislation	<a href="#">Shanghai Pilot ETS Implementation Plan Trial Measures for Management of Emissions Trading in Shanghai</a> <a href="#">Shanghai EEB- Allocation Plan for Vintage 2019 (including list of covered entities)</a>

## China - Shenzhen pilot ETS

### General Information

<p>Summary</p>	<p><b>Status:</b> ETS in force</p> <p><b>Jurisdictions:</b> Shenzhen</p> <p>The Shenzhen Pilot ETS began in June 2013 and was the first of the Chinese pilot ETSs to start operation. It is the only Chinese pilot at the sub-province level, and it covers a broad scope across the energy, industry, building, and transport sectors. The Shenzhen Pilot ETS covers a total of ~700 entities. A unique feature of this pilot ETS is its legal basis: although the majority of pilots are regulated by subnational government orders by the executive body of the government, the Shenzhen Pilot ETS is regulated by a dedicated ETS bill passed by its municipal legislator, the Shenzhen People’s Congress. This provides more legal stability.</p> <p>Shenzhen is one of the most active regional markets in China, despite its relatively small size compared to other pilots. As of July 2018, its accumulated transaction amount had reached CNY 1.091 billion (USD 160 million), with total volume of 35.7 million tonnes, which made it one of the few pilots in China to reach CNY one billion (USD 145 million). By end of 2020, Shenzhen’s cumulative trading volume and turnover amounted to 58.06 million tonnes and CNY 1.378 billion (USD 200 million) respectively. Shenzhen ETS pilot is open to diversified market participants, including covered entities and institutional as well as individual (domestic and foreign) investors.</p> <p>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.’ As a consequence of this, six companies in Baotou City of the Inner Mongolia Autonomous Region were covered by the Shenzhen Pilot ETS on a voluntary basis for one compliance year starting in June 2016.</p> <p>In early 2019, the ETS-related responsibilities in Shenzhen completed the transition from the Development and Reform Commission to the Ecology and Environment Bureau (EEB)*, as a result of the governance restructuring across China.</p> <p>*EEB’s predecessor was the Human Settlements and Environment Commission</p>
<p>Year in Review</p>	<p>In May 2020, Shenzhen EEB released the ‘Notice on Carrying out ETS Work for Compliance Year 2019’ which included an updated list of covered entities and adjusted the reporting, verification, and compliance schedule. However, Shenzhen’s allocation plans since 2013 have not been made publicly available.</p> <p>Due to the COVID-19 pandemic, the Shenzhen ETS postponed the 2019 compliance deadline for its system from the end of June to the end of September 2020. In October 2020, the Shenzhen EEB announced three companies had failed to comply, while announcing that the remaining 704 covered entities had successfully completed their 2019 compliance, achieving another high compliance rate of over 99%.</p>
<p>Overall GHG emissions (excluding LULUCF)</p>	<p><b>Emissions:</b> 83.45 MtCO<sub>2e</sub> (2010)</p>
<p>Overall GHG emissions by sector (in MtCO<sub>2</sub>)</p>	<p>No information available yet.</p>
<p>GHG reduction target</p>	<p><b>BY 2020:</b> 45% reduction in carbon intensity compared to 2005 (13th Five-Year Plan)</p> <p><b>BY 2022:</b> pledged to peak its GHG emissions by 2022 (political pledge made by Shenzhen government leader in 2015)</p>
<p>Carbon Price</p>	<p><i>Current Allowance Price (per t/CO<sub>2e</sub>):</i> CNY 23.91 (USD 3.46) (updated prices available <a href="#">here</a>)</p>

## ETS Size

Covered emissions	0.40
GHGs covered	CO2 only
Sectors and thresholds	Power, water, gas, manufacturing sectors, buildings, port and subway sectors, public buses, and other non-transport sectors.  <b>INCLUSION THRESHOLDS:</b> Annual emissions of 3,000 tCO <sub>2</sub> e/year for enterprises; 10,000m <sup>2</sup> for large public buildings and government buildings.
Point of regulation	Downstream  Both direct and indirect emissions from electricity, heat, cooling, and steam consumption are covered.
Number of entities	707 (2019) 706 (2020)
Cap	31.45 MtCO <sub>2</sub> (excluding buildings, 2015) for the existing entities.  In addition, the government sets aside reserves for the new entrants (2%) and market stability measures (2%).

## Phases & Allocation

Trading periods	2013 and ongoing*  *In the short term, the existing Chinese regional carbon markets are expected to operate parallel to the national Chinese carbon market. Over the medium to long term, they are expected to be integrated into the national market, once it is fully operational.
Allocation	Allowances are largely distributed for free and allowance allocation is adjusted ex-post, based on output data.  <b>FREE ALLOCATION, BENCHMARKING:</b> Benchmarking is applied to the water, power, and gas sectors based on sectoral historical emissions intensity.  <b>FREE ALLOCATION, GRANDPARENTING:</b> Grandparenting is applied to port and subway sectors, public buses, and other non-transport sectors based on the entity's historical emissions intensity.  <b>AUCTIONING:</b> Although the 'Interim Measure for the Administration of Carbon Emission Trading of Shenzhen' document states that at least 3% of allowances should be auctioned, this has not yet been implemented. So far, only one auction has been held (in June 2014); its purpose was to increase market supply and price stability.

## Flexibility

Banking and borrowing	Banking is allowed.  Borrowing is not allowed.  Unlike some other pilots, Shenzhen releases its annual allowances before the compliance date of the previous vintage. Nevertheless, entities are not allowed to use allowances of the following year for the purpose of previous vintage compliance.
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Offsets and credits	<p><b>QUANTITATIVE LIMIT:</b> Domestic project-based carbon offset credits (CCERs) are allowed. The use of CCER credits is limited to 10% of the annual compliance obligation.</p> <p><b>QUALITATIVE LIMIT:</b> Credits from hydro projects are not eligible, and additional geographic restrictions apply to the use of certain CCERs.</p>
Market Stability Provisions	<p><b>RESERVE:</b> 2% of the total cap is kept as a government reserve for market stabilization.</p> <p><b>INTERVENTION:</b> 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 be also used for the market stability auctions.</p>

## Compliance

Compliance Period	One year (1 January to 31 December): covered entities have until 30 June of the following year to surrender allowances.
Monitoring, Reporting, Verification (MRV)	<p><b>REPORTING FREQUENCY:</b> Annual reporting of CO<sub>2</sub> emissions to the ETS competent authority, using different tiers of emission factors depending on the size of the company. A quarterly emissions report is also submitted. In addition, covered industrial entities must annually submit a statistical indicator report covering their production data to the municipality's statistics department.</p> <p><b>VERIFICATION:</b> Third-party verification of the emissions report is required. Covered entities cannot use the same verifiers for three consecutive years. In addition, the government conducts further random checks of emission reports and verification reports. The proportion of these checks must not be less than 10% of the total number of covered entities. The competent authority may assign this inspection work to a specialized agency.</p> <p><b>FRAMEWORK:</b> Shenzhen has released two documents:</p> <ul style="list-style-type: none"> <li>• a general guiding document in the form of regional standards on monitoring and reporting; and</li> <li>• a guiding document on monitoring and reporting of the building sector.</li> </ul>
Enforcement	Covered entities providing false information can be fined for the difference between reported and actual emissions at three times the average allowance price of the past six months. Penalties for disturbing the market order can cost up to CNY 100,000 (USD 14,491). Covered entities failing to surrender enough allowances to match their emissions are fined three times the average market price of the past six months. The missing allowances can be withdrawn from the account of the company or deducted from next year's allocation. Other nonfinancial 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.

## Linking

Links with other systems	No information available yet.
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## Other Information

Institutions involved	Shenzhen Environment and Ecology Bureau (competent authority; registry) China Shenzhen Emissions Exchange (trading platform)
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Evaluation / ETS review	No formal evaluation has been conducted. Research on improving the Shenzhen ETS has been undertaken every year, funded by the Shenzhen government.
Revenue	<p>Since beginning of program: CNY 2.6 million in 2014* (USD 380,000)</p> <p>Collected in 2020: No auctions were held in 2020.</p> <p>*The auction's objective was to increase market supply and price stability, with the participation of covered entities being voluntary, and not as a means of allowance allocation in which covered entities have to purchase a certain percentage of their allocation via auction.</p> <p>No information available yet.</p>
Implementing Legislation	<p><a href="#">Shenzhen Special Economic Zone ETS Bill</a></p> <p><a href="#">Interim Measures for Management of Emissions Trading in Shenzhen</a></p> <p><a href="#">Shenzhen DRC – Notice of Carrying Out Emissions Trading Work for Vintage 2016</a></p> <p><a href="#">Shenzhen EEB - Notice on Carrying out ETS Work for Compliance Year 2019</a></p>

## China - Tianjin pilot ETS

### General Information

<p>Summary</p>	<p><b>Status:</b> ETS in force</p> <p><b>Jurisdictions:</b> Tianjin</p> <p>Tianjin launched its pilot ETS in December 2013 and has concluded seven compliance years so far. The system covers: heat and electricity production; iron and steel; petrochemicals; chemicals; oil and gas exploration; papermaking; aviation; and building materials. Covered entities account for 50-60% of the city's total emissions. Despite not having any financial penalties in place, Tianjin has achieved full or close to full compliance since its launch.</p> <p>2019 saw changes to the governance of the Tianjin ETS as well as to the design of the system. With regards to governance, responsibility for the Tianjin ETS was moved from the Tianjin Development and Reform Commission (DRC) to the Ecology and Environment Bureau (EEB). With regards to design, the Tianjin ETS was expanded to also cover enterprises from the building materials, papermaking, and aviation sectors that previously only reported. Furthermore, allowance auctions were also held for the first time in 2019. These changes have indicated the regional EEB's commitment to further improve the effectiveness and robustness of its regional carbon market.</p>
<p>Year in Review</p>	<p>The Tianjin EEB released the 2019 allocation plan at the end of that year. The main allocation methods are historical intensity and total emission-based free allocation through grandparenting. Entities receive 50% of their pre-allocation based on 2018 emissions data and the remaining as ex-post adjustments on the basis of real production data. The plan also states that entities covered by the national Chinese ETS within the compliance period will be excluded from the compliance in the Tianjin Pilot ETS; in this case, the regional government will also withdraw the corresponding allowances issued for these entities.</p> <p>In June 2020, the Tianjin municipal government released the latest version of the 'Tianjin Interim Measures for the Administration of Carbon Emissions Trading,' which is the regulative document released every few years providing the legal basis for its regional carbon market. The document extended the Tianjin Pilot ETS until 30 June 2025. As well, the document introduces the following main changes:</p> <ul style="list-style-type: none"> <li>• relocating the responsibility of the regional ETS from the Municipal DRC to its EEB;</li> <li>• adding air pollution control as one of the purposes;</li> <li>• explicitly excluding covered entities under the operational national ETS from the Tianjin Pilot ETS; and</li> <li>• strengthening enforcement measures: companies failing to surrender enough allowances to match their emissions will face deduction of double the amount of the gap in the next year's allocation, and third-party verifiers found to not comply with regulations will be banned for three years.</li> </ul> <p>Following the first auction in 2019, the Tianjin pilot held two auctions in 2020. The first auction for the 2019 compliance year was held in June, with two million allowances sold at prices between CNY 17.31 (USD 2.51) and CNY 21.55 (USD 3.12). The second, held in August, sold 812,573 allowances at CNY 26.24 (USD 3.80).</p> <p>In September 2020, the Tianjin pilot completed its 2019 compliance period with a 100% reported compliance rate, becoming the first Chinese pilot to conclude the 2019 compliance process.</p> <p>In December 2020, Tianjin released its 2020 allocation plan*. According to the Chinese national ETS rules, regional markets that already have allocated allowances for 2019 and/or 2020 for the power sector will remain under the regional system for those years.</p>

	<p>This implies that the power sector entities that are overlapping between Tianjin and the national ETS will be covered under the regional carbon market in 2020 and moved to the national one from 2021 onwards.</p> <p>*This document, however, is not publicly available.</p>
Overall GHG emissions (excluding LULUCF)	<b>Emissions:</b> 215 MtCO <sub>2e</sub> (2012)
Overall GHG emissions by sector (in MtCO <sub>2</sub> )	No information available yet.
GHG reduction target	<p><b>BY 2020:</b> 20.5% reduction in carbon intensity compared to 2015 levels (13th Five-Year Plan)</p> <p><b>BY 2025:</b> pledged to peak its CO<sub>2</sub> emissions by about 2025 (Tianjin Work Plan for Controlling Greenhouse Gas Emissions During the 13th Five-Year Plan Period)</p>
Carbon Price	<i>Current Allowance Price (per t/CO<sub>2e</sub>):</i> 22.64 CNY (USD 3.28) (updated prices available <a href="#">here</a> )

## ETS Size

Covered emissions	0.55
GHGs covered	CO <sub>2</sub> only
Sectors and thresholds	<p>Heat and electricity production, iron and steel, petrochemicals, chemicals, oil and gas exploration, papermaking, aviation, and building materials*.</p> <p><b>INCLUSION THRESHOLDS:</b> 20,000t CO<sub>2</sub>/year considering both direct and indirect emissions.</p> <p>*The last three sectors were added in 2019.</p>
Point of regulation	<p>Downstream.</p> <p>Both direct and indirect emissions from electricity and heat consumption are covered.</p>
Number of entities	113 (2019)
Cap	160-170 MtCO <sub>2</sub> (2014)

## Phases & Allocation

Trading periods	<p>2013 and ongoing*</p> <p>*In the short term, the existing Chinese regional carbon markets are expected to operate parallel to the national Chinese carbon market. Over the medium to long term, they are expected to be integrated into the national market, once it is fully operational.</p>
Allocation	<p><b>FREE ALLOCATION:</b> Mainly free allocation through grandparenting based on either base year (for example, 2018 for the allocation of 2019 allowances) total emissions (for iron and steel, petrochemicals, chemicals, exploration for oil and gas, and aviation) or on emissions intensity (for heat and electricity production, papermaking, and building materials). Benchmarking for new entrants and expanded capacity.</p> <p>Ex-post allocation adjustments are applied, especially for those sectors that use benchmarks and emissions intensity.</p> <p><b>AUCTIONING:</b> A small share of the annual cap could 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. The Tianjin EEB held its first allowance auction in June 2019. Two million tonnes were on offer with the auction clearing at CNY 14.63/tonne (USD 2.12). Following</p>



the first auction in 2019, the Tianjin pilot held two auctions in 2020. The first auction for the 2019 compliance year was held in June, with two million allowances sold at prices between CNY 17.31 (USD 2.51) and 21.55 (USD 3.12). The second, held in August, sold 812,573 allowances at CNY 26.24 (USD 3.80).

## Flexibility

Banking and borrowing	Banking is allowed.  Borrowing is not allowed.
Offsets and credits	<b>QUANTITATIVE LIMIT:</b> Domestic project-based China Carbon Offset Credits (CCERs) are allowed as well as Tianjin regional forestry offsets. The use of CCER credits is limited to 10% of the annual compliance obligation. For the 2019 compliance year, at least 50% of the credits must originate from Beijing, Tianjin, or Hubei.  <b>QUALITATIVE LIMIT:</b> Credits must stem from CO2 reduction projects, excluding hydro. They must be realized after 2013.
Market Stability Provisions	<b>Intervention:</b> In case of market fluctuations, the Tianjin EEB can buy or sell allowances (on a fixed price or through auctioning) in order to stabilize the market.

## Compliance

Compliance Period	One year (1 January to 31 December): covered entities have until 30 June of the following year to surrender allowances*.  *The deadline was postponed in 2020 due to the COVID-19 pandemic.
Monitoring, Reporting, Verification (MRV)	<b>REPORTING FREQUENCY:</b> Annual reporting of CO2 emissions.  <b>VERIFICATION:</b> Third-party verification is required. Covered entities cannot use the same verifiers for three consecutive years.  <b>FRAMEWORK:</b> The Tianjin DRC 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	There are no financial penalties for noncompliance. In case of noncompliance, companies are disqualified for three years for preferential financial support and other national supporting policies, e.g., on recycling economy, energy-saving measures, and emission reductions. In addition, since mid-2020, companies and third-party verifiers face further penalties. Companies failing to surrender enough allowances to match their emissions will face deduction of double the amount of the gap in the next year's allocation. Third-party verifiers found not to comply with regulations (e.g., in the case of false verification reports) will be banned from providing verification services for three years in Tianjin.

## Linking

Links with other systems	No information available yet.
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## Other Information

Institutions involved	Tianjin Ecology and Environment Bureau;
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	Tianjin Climate Exchange (trading platform and registry)
Evaluation / ETS review	No information available yet.
Revenue	<p><b>Since beginning of program:</b> CNY 349.67 million (USD 50.7 million)</p> <p><b>2020:</b> CNY 240.88 million (USD 34.9 million)</p> <p>No information available yet.</p>
Implementing Legislation	<p><a href="#">Tianjin Pilot ETS Implementation Plan</a></p> <p><a href="#">Interim Measure for Management of Emissions Trading in Tianjin</a></p> <p><a href="#">Interim Measure for Management of Emissions Trading in Tianjin (2020)</a></p> <p><a href="#">Tianjin EEB - Allocation Plan for Vintage 2019</a></p>

## China National ETS

### General Information

<p>Summary</p>	<p><b>Status:</b> ETS in force</p> <p><b>Jurisdictions:</b> China</p> <p>China's national ETS started operating in 2021, bringing the world's largest ETS online after three years of preparation since the political launch. In early January 2021, the Chinese Ministry of Ecology and Environment (MEE) published key ETS policy documents, along with an announcement that regulated entities will need to surrender allowances pertaining to their 2019-2020 emissions in 2021. In mid-2021 the Chinese national ETS commenced trading on the trading platform operated by the Shanghai Environment and Energy Exchange (SEEE).</p> <p>Building on its experience of successfully piloting carbon markets in eight regions, China launched its national ETS politically in December 2017. A step-by-step development roadmap was then outlined in a work plan, which was endorsed by the country's highest administrative body, the State Council. The launch of the ETS was a goal set in 2015 by China's highest political level, and the goal was reaffirmed by the country's Nationally Determined Contribution (NDC) under the Paris Agreement and the '13th Five-Year Work Plan (FYP) for Greenhouse Gas Emission Control.'</p> <p>The objective of the China national ETS is to contribute to the effective control and gradual reduction of carbon emissions in China and to the achievement of green and low-carbon development. The ETS regulates more than 2,200 companies from the power sector (including combined heat and power, as well as captive power plants of other sectors), which emit more than 26,000 tCO<sub>2</sub> per year. The Chinese national ETS is estimated to cover more than four billion tCO<sub>2</sub>, accounting for ~40% of national carbon emissions. The system's scope is to be further expanded in the future. Currently, it is an intensity-based ETS with the cap being adjusted ex-post based on actual production levels. The compliance obligations are also limited.</p> <p>From the institutional perspective, the National Development and Reform Commission (NDRC) was responsible for national ETS development until 2018. That year, as part of a broader government restructuring, the climate change policy portfolio (including the development of the ETS) was shifted to the newly established MEE.</p> <p>Key pillars of the development of the national ETS include: reporting and verification of historical emissions data from eight emission-intensive sectors; development of the national registry, trading system, and national enterprise GHG reporting system; set-up of the legislative and regulatory framework; and capacity building.</p> <p>The existing Chinese regional ETS pilots are gradually transitioning into the national ETS. In the short term, the pilots continue to operate in parallel to the national market, covering the sectors and entities not included in the national market. Over the medium to long term, as more sectors are included in the national ETS, overlapping entities are expected to be integrated into the national market.</p> <p>China's national ETS is expected to be one of the key policy instruments to realize the country's climate ambition in both the short and long term. The country's key mitigation targets include peaking carbon emissions before 2030 and achieving carbon neutrality by 2060.</p>
<p>Year in Review</p>	<p>Many technical and political processes for the launch of the national ETS were concluded in 2020. The turning point was President Xi Jinping's announcement in September 2020, committing China to achieve peak carbon emissions before 2030 and carbon neutrality by 2060. This generated great momentum for the development of the national ETS, leading to the system's operationalization at the beginning of 2021.</p>

A key milestone for the national ETS was achieved with the finalization and publication of two important policy documents:

- ‘The National Measures for the Administration of Carbon Emission Trading (Trial)’ (short form: the National Measures); and
- the ‘2019-2020 National Carbon Emission Trading Cap Setting and Allowance Allocation Implementation Plan (Power Generation Industry)’ (short form: the Allocation Plan).

The National Measures, which took effect in February 2021, provide the legal basis for the national ETS and supersede the interim measures published in 2014.\* It is issued in the form of a departmental regulation, which is subject to future review and revision.\*\* The document includes: general rules and provisions related to allowance allocation and registration; emissions trading; MRV; compliance; offsets; supervision and management; and penalties.

In March of 2021 the Ministry of Ecology and Environment (MEE) published new draft ETS legislation that refines existing measures and places them on a higher level in the Chinese legal hierarchy. Titled the ‘[Interim Regulations for the Management of Carbon Emissions Trading](#)’, the new draft legislation will replace the National Measures once they are finalized following a consultation period.

The Allocation Plan adopts benchmarking as the main allowance allocation approach and includes processes for pre-allocation and ex-post adjustments. It further clarifies the relationship between regional ETS pilots and the national ETS: the overlapping entities between them that are already covered by regional allocation plans in 2019 and/or 2020 are excluded from the national ETS for those years and remain in the regional systems. However, after the release of the Allocation Plan for the national ETS, the regional pilots will no longer issue allowances to them. Together with the Allocation Plan, the MEE also released the list of covered entities, according to which the national ETS covers 2,225 companies. The confirmation of the covered entities builds on an extensive historical data collection process that started in 2013 and continued until 2020.

The MEE is also working on the policy documents outlining other key areas of the national ETS design, with some already released for public consultation even though they have not yet been finalized:

- ‘The Administrative Measures for the Registration, Trading, and Settlement of the National Carbon Emission Rights (Trial)’ was released in November 2020. It clarifies the basic elements and oversight system of allowance registration, trading, and settlement, as well as the functions of the agencies responsible for the registry and trading system’s operation.
- Two documents on MRV were released in December 2020. The ‘Guidelines on Enterprise Greenhouse Gas Emissions Accounting and Reporting – Power Generation Facilities’ build on two existing technical guidelines and aim to establish the MRV foundation for the national ETS. The ‘Guidelines for Enterprise Greenhouse Gas Verification (Trial)’ build on a previous document from 2016 and provide further details on verification.

The two documents on MRV were finalized in March 2021 after a public consultation process.

A key ongoing technical task is the development of the registry and of the trading platform, which are led by the local governments of Hubei and Shanghai respectively. In May 2020, the MEE organized an expert review meeting on the construction plan of these two systems. They have been further developed and improved, with several rounds of inspections by experts since then. The national government has indicated that the trading of allowances will start by the middle of 2021.

Following the announcement of the country’s 2030 and 2060 targets, China put forward its enhanced NDC in December 2020, committing to reduce its carbon intensity by more than 65% by 2030 compared to 2005 levels. China is in the process of developing its 14th Five-Year Plan (2021-2025) and 2030 carbon emissions peaking plan. Its national ETS will then be aligned with these targets and plans.

\* In December 2014, the NDRC—the former national competent authority for climate change—issued the Interim Measures for the Administration of Carbon Emissions Trading (NDRC Order No. 17) to regulate the construction of carbon markets in China.

\*\* This level of regulation (in Chinese: Guanli Banfa) is lower in the legal hierarchy compared to the State Council regulation, with implications for the level of financial fines it could impose. The document itself also leaves space for the further development of higher-

	level legislation such as national regulation (in Chinese: Zanxing Tiaoli) as the national ETS develops further.										
Overall GHG emissions (excluding LULUCF)	<b>Emissions:</b> 12,301 MtCO <sub>2</sub> e (2014)										
Overall GHG emissions by sector (in MtCO <sub>2</sub> )	<table border="1"> <thead> <tr> <th>Sector Name</th> <th>MtCO<sub>2</sub>e</th> </tr> </thead> <tbody> <tr> <td>Energy (9,559)</td> <td>9559</td> </tr> <tr> <td>Industrial Processes (1,718)</td> <td>1718</td> </tr> <tr> <td>Agriculture (830)</td> <td>830</td> </tr> <tr> <td>Waste (195)</td> <td>195</td> </tr> </tbody> </table>	Sector Name	MtCO <sub>2</sub> e	Energy (9,559)	9559	Industrial Processes (1,718)	1718	Agriculture (830)	830	Waste (195)	195
Sector Name	MtCO <sub>2</sub> e										
Energy (9,559)	9559										
Industrial Processes (1,718)	1718										
Agriculture (830)	830										
Waste (195)	195										
GHG reduction target	<p><b>2016-2020:</b> Reduction in carbon emissions per unit of GDP by 18% compared to 2015 levels (13th FYP)</p> <p><b>BY 2020:</b> 40-45% reductions in carbon intensity compared to 2005 levels (voluntary commitment under the Copenhagen Accord of 2009)</p> <p><b>2021-2025:</b> Reduction in carbon emissions per unit of GDP by 18% compared to 2020 levels (14th FYP)</p> <p><b>BY 2030:</b> Peak CO<sub>2</sub> emissions before 2030 (announcement by President Xi in September 2020); lowering CO<sub>2</sub> emissions per unit of GDP by over 65% from 2005 levels (updated NDC)</p> <p><b>BY 2060:</b> Carbon neutrality (announcement by President Xi in September 2020)</p>										
Carbon Price	<i>Current Allowance Price (per t/CO<sub>2</sub>e):</i> No information available yet.										

## ETS Size

Covered emissions	0.40
GHGs covered	CO <sub>2</sub>
Sectors and thresholds	<p>Power sector (including combined heat and power, as well as captive power plants of other sectors). Compliance obligations are currently limited (see “Enforcement” section).</p> <p>The scope is expected to be gradually expanded to cover seven other sectors in addition to power: petrochemical, chemical, building materials, steel, nonferrous metals, paper, and domestic aviation. There is no specific timeline for this expansion.</p> <p><b>INCLUSION THRESHOLDS:</b> Entities with annual emissions of 26,000 tCO<sub>2</sub> in any year over the period 2013-2019.</p>
Point of regulation	<p>Downstream</p> <p>In the long run, both direct emissions from the power sector and indirect emissions from electricity and heat consumption are expected to be included.</p>
Number of entities	<p>The Chinese regional ETS pilots covered power sector entities, which may also fall under the national ETS. These entities are transitioning into the national market. Below is an estimation, based on publicly available information, of the number of covered entities under the national ETS:</p> <p>1,961 (2019) 2,070 (2020) 2,225 (2021)</p>
Cap	The cap is set bottom-up, i.e., the sum of the total allowance allocation to all covered entities forms the cap. It is also an intensity-based cap, which changes according to the actual production levels. The national ETS is estimated to have a cap of over 4,000 MtCO <sub>2</sub> /year for 2021.*

\* Moreover, according to the National Measures, voluntary allowance cancellation is allowed: covered entities, other institutions and individuals can voluntarily purchase and cancel emission allowances.

## Phases & Allocation

Trading periods	In mid-2021 the Chinese national ETS commenced trading on the trading platform operated by the Shanghai Environment and Energy Exchange (SEEE). The current regulation does not yet define specific trading periods for the Chinese national ETS. The current rules only apply to the first compliance period which covers 2019 and 2020.
Allocation	<p><b>FREE ALLOCATION:</b> 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.</p> <p>At first, entities will receive allowances at 70% of their 2018 output multiplied by the corresponding benchmark factor. Allocation will be adjusted later to reflect actual generation in 2019 and 2020. A unit load (output) adjustment factor distributes more allowances for entities operating at load rates lower than 85%. This may provide more allowances to less efficient power units. A regional adjustment factor that would give regional governments the opportunity to tighten allocation in line with regional climate targets had been proposed during the drafting phase of the Allocation Plan, but was not included in the final version.</p> <p><b>AUCTION:</b> Currently, allocation is to take place mainly through free allocation, but the National Measures clarify that auctioning may be introduced at a later point in time.</p>

## Flexibility

Banking and borrowing	Rules on banking and borrowing are not yet specified in the published policy documents. The system is expected to allow for banking but not for borrowing.
Offsets and credits	<p>The National Measures allow for the use of China Certified Emissions Reduction (CCER) already from 2021 onwards: covered entities can use offsets for up to 5% of their verified emissions from CCER projects in renewable energy, carbon sinks, methane utilization, and others.</p> <p>The CCER offset program was developed in China alongside the development of the regional ETS pilots. In 2012, the NDRC issued the 'Interim Measures for the Management of Voluntary GHG Emission Reduction Transactions' (short form: Interim Measures), which provide guidelines for the issuance of CCERs. Further details on the development of CCER projects and the acceptance of CCERs in the national ETS are expected to be regulated through a revision of the Interim Measures and/or through the development of an 'Administration Measure of Offset Scheme for National ETS.'</p>
Market Stability Provisions	Adjustment mechanisms to prevent abnormal price fluctuations, as well as risk prevention and control mechanisms to prevent market manipulations, are under development.

## Compliance

Compliance Period	One year (1 January to 31 December). Nevertheless, entities are expected to surrender allowances in 2021 for the years 2019 and 2020.
Monitoring, Reporting, Verification (MRV)	<b>REPORTING FREQUENCY:</b> Under the national ETS, covered entities submit the previous year's emission reports by the end of March each year. Entities in the power sector have had MRV obligations since 2013.

	<p><b>VERIFICATION:</b> Provincial-level ecological and environmental authorities will organize the verification of GHG reports. They may commission technical service agencies to provide verification services.</p> <p>The draft verification guidelines outline a six-step verification process and indicate a strong reliance on document review such that on-site verification in many cases would be deemed unnecessary. The verification entities could be the ecological and environmental units at provincial and subprovincial levels, government-affiliated institutions, and other technical service institutions selected (and paid) by the government.</p> <p><b>FRAMEWORK:</b> 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. In 2020, updated technical guidelines on emissions accounting, reporting, and verification were released for public consultation and are yet to be finalized.</p> <p><b>OTHER:</b> The MEE will further improve the existing MRV guidelines and technical specifications for the national ETS, based on the practice.</p>
Enforcement	<p>According to the current 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. The compliance obligation of other covered entities is limited to the level of free allocation as per benchmarks, plus 20% of their verified emissions. This means that no allowances must be surrendered for verified emissions above this threshold. These measures aim to promote gas-fired units and reduce the overall compliance burden.</p> <p>The National Measures define that failures in reporting are subject to a fine of CNY 10,000 to 30,000 (USD 1,449 to 4,347), while failures in compliance obligations are subject to a fine of CNY 20,000 to 30,000 (USD 2,898 to 4,347). Any gap between the (limited) compliance obligation and allowances surrendered also will be deducted from the following year's allocation.</p>

## Linking

Links with other systems	No information available yet.
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## Other Information

Institutions involved	<p>The China national ETS has a multi-level governance structure involving three levels of government:</p> <ul style="list-style-type: none"> <li>• the MEE acts as the national competent authority setting the rules and overseeing the system, with joint oversight of trading activities with other national regulators;</li> <li>• the MEE subsidiaries at the provincial level oversee the implementation of these rules; and</li> <li>• the municipal-level authorities take on some management duties locally.</li> </ul>
Evaluation / ETS review	No information available yet.
Revenue	No information available yet.
Implementing Legislation	<p><a href="#">Work Plan for Construction of the National Emissions Trading System (Power Sector)</a></p> <p><a href="#">Notice on Key Works in Preparation for the Launch of the National ETS</a></p> <p>Interim Administrative Measures on Emissions Trading (2014) 24 Guidelines for GHG Monitoring and Reporting for various sectors (2013, 2014, and 2015)</p> <p><a href="#">The National Measures for the Administration of Carbon Emission Trading (Trial), final</a></p> <p><a href="#">The National Measures for the Administration of Carbon Emission Trading (Trial), draft for comments (English translation)</a></p>

[Allocation Plan for the Power Sector \(2019-2020\) and list of covered entities, final \(English translation\)](#)

[Allocation Plan for the Power Sector \(2019-2020\), draft for comments released in November 2020 \(English translation\)](#)

[Guidelines on enterprises greenhouse gas emissions accounting and reporting – Power generation facilities, draft for comments](#)

[Guidelines for Enterprises Greenhouse Gas Verification \(Trial\), draft for comments](#)



## EU Emissions Trading System (EU ETS)

### General Information

<p>Summary</p>	<p><b>Status:</b> ETS in force</p> <p><b>Jurisdictions:</b> Member states: 27 EU Member States and three European Economic Area-European Free Trade Association (EEA-EFTA) states: Iceland, Liechtenstein and Norway</p> <p>The European Union Emissions Trading System (EU ETS) is a cornerstone of the EU’s policy to combat climate change and a key tool for reducing, on a cost-effective basis, GHG emissions from the regulated sectors. The system covers ~40% of the EU’s emissions, from the power sector, manufacturing industry, and aviation within the European Economic Area. It is the oldest and now second-largest ETS in force. Introduced in 2005 and now in its fourth trading phase, the EU ETS has gone through several reforms. The latest reform of the ETS was proposed in July of 2021 as a part of the European Green Deal. As of January 2020, the EU ETS became linked to the Swiss ETS, the first linking of this kind for both parties.</p>												
<p>Year in Review</p>	<p>In July 2021, the European Commission released the “Fit for 55” package – a sweeping set of policy proposals spanning all major sectors of the economy to achieve emission reductions of at least 55% below 1990 levels. The package places the EU ETS at the heart of the EU’s decarbonization agenda with major changes that include: a one-off reduction to the cap and increased linear reduction factor (from 2.2% to 4.2%); the inclusion of the maritime sector into the EU ETS’ scope from 2023 onwards; a separate fuel ETS for buildings and transport; strengthened benchmarks and a faster phase down of free allocation which would be tied to low-carbon investment by the receiving entity; the introduction of a carbon border adjustment mechanism (CBAM) that prices imported goods based on their embedded emissions to become fully operational by 2026; updated parameters of the Market Stability Reserve (MSR) including a new buffer threshold and an extension of the current intake rate of 24% beyond 2023; and new regulations around revenue use to address distributional effects and spur innovation, including the creation of the Social Climate Fund.</p> <p>The package has yet to go through the EU’s ordinary legislative procedure before entering effect in its final form in the coming years, a process requiring approval — likely with some amendments — by the Council of the EU and the European Parliament. It comes less than a year after the European Commission launched its revision process for the system as part of the 2030 Climate Plan under the European Green Deal. The widely anticipated reforms supported allowance demand even last year as emissions declined amidst the height of the COVID-19 pandemic. Meanwhile, the MSR absorbed a total of 773 million allowances through reduced auction volumes in 2019 and 2020.</p> <p>2020 also saw the finalization of regulatory preparations ahead of Phase 4 (2021-2030) which took effect this year. On the international front, The UK formally withdrew from the EU on 31 January 2020 but continued to participate in the EU ETS until the end of the year as part of the transition period. In parallel, the linking agreement between the EU ETS and the Swiss ETS entered into force in January 2020. A provisional link was established in September, enabling allowance transfers between both registries on pre-announced dates.</p>												
<p>Overall GHG emissions (excluding LULUCF)</p>	<p><b>Emissions:</b> 3,893.1 MtCO<sub>2</sub>e (2018*)</p> <p>*Overall GHG emissions for the EU-27 that comprises all European Member States, which as of 2021 no longer includes the United Kingdom.</p>												
<p>Overall GHG emissions by sector (in MtCO<sub>2</sub>)</p>	<table border="1"> <thead> <tr> <th>Sector Name</th> <th>MtCO<sub>2</sub>e</th> </tr> </thead> <tbody> <tr> <td>Energy (2,907.1)</td> <td>2907.1</td> </tr> <tr> <td>Industrial Processes (343.5)</td> <td>343.5</td> </tr> <tr> <td>Agriculture (394.4)</td> <td>394.4</td> </tr> <tr> <td>Waste (117.2)</td> <td>117.2</td> </tr> <tr> <td>International Aviation (129.2)</td> <td>129.2</td> </tr> </tbody> </table>	Sector Name	MtCO <sub>2</sub> e	Energy (2,907.1)	2907.1	Industrial Processes (343.5)	343.5	Agriculture (394.4)	394.4	Waste (117.2)	117.2	International Aviation (129.2)	129.2
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GHG reduction target	<p><b>By 2030:</b> At least 55% below 1990 GHG levels proposed (European Green Deal), to be set in the Climate Law</p> <p><b>By 2050:</b> Climate neutrality target proposed (European Green Deal), to be set in the Climate Law*</p> <p>*Both updated targets (2030 and 2050) recently have been endorsed by the European Parliament and European Council, and are currently in the process of being enshrined into the European Climate Law.</p>
Carbon Price	<p><i>Current Allowance Price (per t/CO<sub>2</sub>e):</i> EUR 24.76 (USD 28.28) (average 2020 secondary market spot price from EEX exchange; updated prices available <a href="#">here</a>)</p>

## ETS Size

Covered emissions	0.39
GHGs covered	CO <sub>2</sub> , N <sub>2</sub> O, PFCs
Sectors and thresholds	<p><b>PHASE ONE (2005-2007):</b> Power stations and other combustion installations with &gt;20MW 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.</p> <p><b>PHASE TWO (2008-2012):</b> Aviation was introduced in 2012 (&gt;10,000 tCO<sub>2</sub>/year for commercial aviation; &gt;1,000 tCO<sub>2</sub>/year for non-commercial aviation since 2013) (see "Aviation" section). A number of countries included NO<sub>x</sub> emissions from the production of nitric acid. The EU ETS also expanded to include Iceland, Liechtenstein, and Norway.</p> <p><b>PHASE THREE (2013-2020):</b> 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 included.</p> <p><b>PHASE FOUR (2021-2030):</b> Based on the current legislation, no changes to the scope have been agreed on for Phase 4. Changes are being considered as part of the review of the ETS foreseen under the 2030 Climate Target Plan (see "Year in Review" section).</p> <p><b>Aviation:</b> Emissions from international aviation were included in the EU ETS in 2012. In November 2012, the EU temporarily suspended enforcement of the EU ETS requirements for flights operating from or to non-EEA countries ("stop the clock") while continuing to apply the legislation to flights within and between countries in the EEA. Exemptions for operators with low emissions have also been introduced.</p> <p>In light of the progress made under the International Civil Aviation Organization (ICAO) towards a global measure to reduce emissions from the aviation sector (the Carbon Offsetting and Reduction Scheme [CORSIA]), the EU will maintain the intra-EEA scope for the ETS Aviation until 31 December 2023. In 2020, the Commission initiated a process to revise the ETS Directive to address the implementation of CORSIA in EU law in a way that is consistent with the EU's 2030 climate target, with a view of adoption in 2021.</p>
Point of regulation	Downstream
Number of entities	10,569 power plants and manufacturing installations.
Cap	<p><b>PHASE ONE (2005-2008) and PHASE TWO (2009-2012):</b> The cap was established 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<sub>2</sub>e in 2005; Phase 2 started with a cap of 2,049 MtCO<sub>2</sub>e in 2009.</p> <p><b>PHASE THREE (2013-2020):</b> A single EU-wide cap for stationary sources: 2,084 MtCO<sub>2</sub>e in 2013, which is annually reduced by a linear reduction factor (currently 1.74% or ~38.3 million allowances). This amounts to a cap of 1,816 MtCO<sub>2</sub>e in 2020.</p> <p><b>PHASE FOUR (2021-2030):</b> A single EU-wide cap for stationary installations set for 2021 at 1,572 MtCO<sub>2</sub>e. A linear cap reduction factor of 2.2% (of 2008-2012 baseline emissions)</p>

applies to both stationary sources and the aviation sector each year. This translates into a year-on-year reduction of the cap by 43 million allowances. The linear reduction factor does not have a sunset clause and the cap will continue to decline beyond 2030. Starting 2021, emissions from UK entities previously covered by the EU ETS are no longer considered in the cap. However, pursuant to Article 9 and Annex 4 of the Protocol on Ireland/Northern Ireland, the cap trajectory in Phase 4 does account for emissions from electricity generators in Northern Ireland.

**Aviation Sector Cap:** Emissions for intra-EEA aviation in 2021 are capped at 38 million allowances and will decrease each year by the linear reduction factor of 2.2%. The aviation sector cap was set in 2012 at 210 MtCO<sub>2</sub>e/year. This cap was meant to reflect the initial inclusion of all flights from, to, and within the EEA in the EU ETS. However, following the “stop the clock” temporary suspension until the end of 2016, the number of aviation allowances put into circulation in 2013-2016 was reduced to 38 million allowances annually and set considerably below verified intra-EEA aviation emissions. In 2017, the intra-EEA scope for aviation was prolonged until 2023. The adjusted annual aviation cap applies up to 2021 and decreases thereafter.

## Phases & Allocation

Trading periods	<p><b>Phase 1:</b> 3 years (2005-2007)</p> <p><b>Phase 2:</b> 5 years (2008-2012)</p> <p><b>Phase 3:</b> 8 years (2013-2020)</p> <p><b>Phase 4:</b> 10 years (2021-2030)</p>
Allocation	<p><b>PHASE ONE (2005-2007):</b> Allocation established through the Member State national allocation plans. Allocation through grandfathering. Some Member States used auctioning and some used benchmark-based allocation.</p> <p><b>PHASE TWO (2008-2012):</b> Similar to Phase 1, with ~90% of allowances allocated for free. Some benchmark-based free allocation; and some auctioning in eight Member States (Germany, United Kingdom, The Netherlands, Austria, Ireland, Hungary, Czech Republic, and Lithuania), amounting to ~3% of total allowance allocation.</p> <p><b>PHASE THREE (2013-2020):</b> 57% of allowances auctioned over the entire trading period with the remaining allowances allocated through benchmarking.</p> <p>88% of the auctioned allowances were distributed to EU Member States based on verified 2005 or average 2005-2007 emissions.</p> <p>10% was allocated to lower-income EU Member States and the remaining 2% distributed among nine Member States that reduced 2005 emissions by 20% compared to the base year.</p> <p><b>Power Sector:</b> 100% auctioning with an optional derogation for the modernization of the electricity sector in certain Member States whose GDP per capita was below 60% of the EU average in 2013.</p> <p><b>Manufacturing/Industry:</b> Free allocation follows product-based benchmarks. Benchmarks were based on activity levels in 2007-2008 and were set at the average of the 10% most efficient installations in the (sub)sector.</p> <p>Subsectors deemed at risk of carbon leakage received free allocation at 100% of the predetermined benchmarks. Subsectors deemed not at risk of carbon leakage had free allocation phased out gradually from 80% of the respective benchmarks in 2013 to 30% by 2020. Where free allocation exceeded the amount reserved for free allocation, a cross-sectoral correction factor applied.</p> <p>Carbon leakage risk was assessed against the following criteria of emissions intensity and trade exposure:</p> <ul style="list-style-type: none"> <li>• direct and indirect cost increase &gt;30%; or</li> <li>• non-EU trade intensity &gt;30%; or</li> </ul>

- direct and indirect cost increase >5% and trade intensity >10%.

Cost intensity was determined by the formula  
$$[\text{Carbon price} \times (\text{direct emissions} \times \text{auctioning factor} + \text{electricity consumption} \times \text{electricity emission factor})] / \text{GVA}$$

Trade intensity was determined by the formula  
$$(\text{imports} + \text{exports}) / (\text{imports} + \text{production})$$

**Aviation Sector:** In 2012, 85% of allowances were allocated for free, based on benchmarks. In Phase 3 (2013-2020), 15% of allowances were auctioned and 82% allocated for free, based on benchmarks. The remaining 3% constituted a special reserve for new entrants and fast-growing airlines. Due to the temporary derogation that applied to flights with third countries, the allocation was adjusted to the intra-EEA scope.

**Back-loading:** As a short-term measure to address a growing surplus in the EU ETS, the auctioning of 900 million allowances from 2014-2016 was postponed to 2019-2020. In line with the decision to create the market stability reserve, the back-loaded allowances were placed in the MSR, which became operational in 2019.

**New Entrants Reserve:** 5% of the total allowances are set aside to assist new installations coming into the EU ETS or to cover installations whose capacity has significantly increased since their free allocation was determined. Until June 2020, a total of 171.1 million allowances were reserved for 1,089 installations during Phase 3. At the end of Phase 3, any unallocated allowances (excluding 200 million reserved for the NER300\* in Phase 4) were placed into the MSR.

#### PHASE FOUR (2021-2030):

**Manufacturing/Industry:** Benchmark values are updated twice to reflect technological progress in different sectors. The first set of benchmark values applies to the period 2021-2025; the second set of values will cover the period from 2026 to 2030. Member States submitted lists of incumbent installations and updated emissions data by 30 September 2019 and are required to do so again by 30 September 2024. Based on this data, the European Commission will update Phase 3 benchmarks.

- Benchmark values in Phase 4 will be adjusted for technological progress year-on-year. An annual reduction rate (0.2% to 1.6%) will be determined for each benchmark. For the steel sector, which faces high abatement costs and leakage risks, the lower end of 0.2% annual benchmark reduction will apply. Further updates on the above may be released as part of the broader ETS review.
- Free allocation may be updated annually to mirror sustained changes in production (if the change is more than 15% compared to the initial level, based on a 2-year rolling average).

Carbon leakage rules:

- The third carbon leakage list adopted in February 2019 applies for the period 2021-2030. The revised list includes a reduced number of sectors classified at risk of carbon leakage. Free allocation for other sectors will be discontinued by 2030 (except district heating).
- Carbon leakage is assessed against a composite indicator of trade intensity and emissions intensity.
- As an additional safeguard for industry, the Phase 4 cap breakdown includes a free allocation buffer of more than 450 million allowances, initially earmarked for auctioning, which can be made available for free allocation if the initial free allocation volume is fully absorbed (thereby avoiding the need to apply the cross-sector correction factor).

Carbon leakage risk is assessed according to the following criteria:

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

Emissions intensity is determined by:  
$$[\text{direct emissions} + (\text{electricity consumption} \times \text{electricity emission factor})] / \text{GVA}$$

Trade exposure is determined by:  
$$(\text{imports} + \text{exports}) / (\text{imports} + \text{production})$$

**Power Sector:** 100% auctioning with an optional derogation for the modernization of the electricity sector in certain Member States. Those Member States whose GDP per capita was below 60% of the EU average in 2013 may continue to make use of this optional free

allocation through benchmarking. Three out of ten eligible Member States make use of the derogation in Phase 4 (2021-2030). Some Member States chose to monetize the corresponding share of allowances or use them to boost their share of the Modernization Fund.

**Aviation:** Free allocation for the aviation sector will be reduced compared to the 82% in Phase 3. A proposal is expected in June 2021.

**Auctioning:** 57% of allowances in Phase 4 will be auctioned. Out of these, 90% will be distributed to Member States based on their share of verified emissions, with 10% distributed among the lower-income EU Member States. Authorities have the right to cancel auctions when the highest bidding price is significantly below the prevailing secondary market price to avoid market distortion. In such a situation, allowances are transferred to subsequent auctions scheduled at the same trading platform.

**NER:** The New Entrants Reserve in Phase 4 (2021-30) has been supplied with 200 million from the unallocated NER allowances from Phase 3 (2013-2020).

\*The NER 300 is an EU low-carbon technology funding program of approximately EUR 2 billion (USD 2.3 billion) monetized through the sale of 300 million allowances that awarded proposals in 2012 and 2014, the latest of which will enter into operation by June 2021.

## Flexibility

Banking and borrowing	<p>Unlimited banking has been allowed since 2008.</p> <p>Borrowing is not allowed. However, implicit borrowing within trading periods is allowed, i.e., the use of allowances allocated in the current year for compliance in the previous year.</p>
Offsets and credits	<p><b>PHASE ONE (2005-2007):</b> Unlimited use of Clean Development Mechanism (CDM) credits and Joint Implementation (JI) credits was provided for in the directive. In practice, no credits were used in Phase 1.</p> <p><b>PHASE TWO (2008-2012):</b> Qualitative Limits: Most categories of CDM/JI credits were allowed; no credits from LULUCF and nuclear power sectors were allowed. Strict requirements for large hydro projects exceeding 20 MW.</p> <p><b>Quantitative Limits:</b> 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 Plans. Unused entitlements were transferred to Phase 3 (2013-2020).</p> <p><b>PHASE THREE (2013-2020):</b>  <b>Qualitative Limits:</b> Newly generated (post-2012) international credits 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 31 December 2012. Projects from industrial gas credits (projects involving the destruction of HFC-23 and N<sub>2</sub>O) 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 31 March 2015.</p> <p><b>Quantitative Limits:</b> 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<sub>2</sub>e).</p> <p><b>PHASE FOUR (2021-2030):</b> Based on the current legislation, the use of offsets is not envisaged.</p>
Market Stability Provisions	<p><b>MARKET STABILITY RESERVE:</b> The MSR started operating in January 2019. Its purpose is to address any supply-demand imbalance of allowances prevailing in the EU carbon market and to improve the EU ETS's resilience to future shocks.</p> <p><b>Thresholds:</b> The European Commission publishes the total numbers of allowances in circulation (TNAC) by 15 May each year.</p> <ul style="list-style-type: none"> <li>• When the TNAC is above 833 million, 24% (12% beyond 2023) of the surplus is withdrawn from future auctions and placed into the reserve over a period of 12 months.</li> </ul>

- When the TNAC is less than 400 million allowances, 100 million allowances are taken from the reserve and injected into the market through auctions.

From 2023 onwards, the number of allowances held in the reserve will be limited to the auction volume of the previous year. Holdings above that amount will be invalidated. Thresholds, withdrawal rates, and cancellation provisions of the MSR will be reviewed in June 2021.

In 2019, a total of 397 million allowances were placed in the reserve. In 2020, the total number of allowances withdrawn amounted to more than 375 million, corresponding to a 35% reduction in auction volumes for that year.

Swiss allowance supply is not taken into account when the annual EU withdrawal amount is calculated, and Swiss auction quotas will not be reduced by the mechanism.

**CANCELLATIONS:** As of Phase 4, a Member State may also cancel allowances from their auction share in the event that they take additional policy measures that result in 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.

## Compliance

Compliance Period	One year (1 January to 31 December): every year, operators must submit an emissions report. Data for a given year must be verified by an accredited verifier by 31 March of the following year. Once verified, operators must surrender the equivalent number of allowances by 30 April of that year.
Monitoring, Reporting, Verification (MRV)	<p><b>REPORTING FREQUENCY:</b> Annual self-reporting based on harmonized electronic templates prepared by the European Commission.</p> <p><b>VERIFICATION:</b> Verification by independent accredited verifiers is required before 31 March each year.</p> <p><b>MRV FRAMEWORK:</b> Since Phase 3, the MRV framework for the EU ETS has been further harmonized. European Commission regulations now apply for emissions monitoring and reporting, as well as verification and accreditation of verifiers. A monitoring plan is required for every installation and aircraft operator (approved by a competent authority). MRV procedures were updated in 2020 in preparation for Phase 4.</p>
Enforcement	Regulated entities must pay an excess emissions penalty of EUR 100/tCO <sub>2</sub> (USD 114.22/tCO <sub>2</sub> ) for each tonne of CO <sub>2</sub> emitted for which no allowance has been surrendered, in addition to buying and surrendering the equivalent amount of allowances. The name of the non-compliant operator is also made public. Member States may enforce different penalties for other forms of noncompliance.

## Linking

Links with other systems	<p>Following final regulatory changes in the design of the Swiss ETS, a link between the Swiss ETS and the EU ETS took effect on 1 January 2020. The link allows covered entities in both systems to use allowances from either ETS for compliance. A provisional link was implemented in September the same year, enabling the transfer of allowances between registries on pre-announced dates. This system is set to be replaced with an electronic link that would facilitate transfers of emission allowances between both ETS registries on a continuous basis.</p> <p>The link caps a ten-year process of reaching an agreement on regulatory alignment. Formal negotiations began in December 2010, culminating in the conclusion of a linking agreement in late 2017*. Both sides announced on 12 December 2019 that the link would become operational in January 2020.</p> <p>*Agreement between the European Union and the Swiss Confederation on the linking of their GHG emissions trading systems, OJ L 322, 12 December 2017, p. 3.</p>
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## Other Information

Institutions involved	The European Commission and the relevant authorities of all EU Member States as well as Iceland, Liechtenstein, and Norway.
Evaluation / ETS review	<p>The European Commission publishes annual reports on the functioning of the European carbon market (<a href="#">2020 report</a>).</p> <p>Two major EU ETS reviews—before Phase 3 and before Phase 4—have been conducted to date, introducing changes to the system’s operational framework. The ETS Directive stipulates that the system be kept under review in light of the implementation of the Paris Agreement and the development of carbon markets in other major economies.</p>
Revenue	<p><b>Since beginning of program:</b> EUR 69.7 billion (USD 80.7 billion) <b>Collected in 2020:</b> EUR 19.2 billion (USD 21.8 billion)</p> <p>In the EU ETS, revenues from the auctioning of allowances accrue to Member States. At least 50% of revenues should be used for climate- and energy-related purposes. Member States are obliged to inform the European Commission about how they use the revenues. In 2019, on average, Member States spent ~77% of their revenues on domestic and international climate-related purposes.</p> <p><b>PHASE FOUR (2021-2030):</b> The latest revision of the EU ETS set up two new funds to support EU stakeholders in the low-carbon investment challenge.</p> <ul style="list-style-type: none"> <li>• <b>Innovation Fund:</b> Supports demonstration of innovative breakthrough technologies in industry, as well as carbon capture and storage/use and renewable energy. The fund is monetized through the sale of at least 450 million allowances, and the remaining budget from the NER300. In 2020, the first batch of 50 million allowances was auctioned to capitalize the Fund.</li> <li>• <b>Modernisation Fund:</b> Supports investments in modernizing energy systems and improving energy efficiency in 10 lower-income Member States, including investments to support a socially just transition to a low-carbon economy (e.g., upskilling/reskilling of affected workers). The Modernisation Fund is capitalized with the auction revenues of 2% of total allowances for Phase 4. Subject to the allowance price, up to EUR 14 billion (USD 16 billion) may be injected into the Fund over 2021-2030.</li> </ul>
Implementing Legislation	<p><a href="#">Directive 2003/87/EC</a> 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.</p> <p><a href="#">Decision concerning the establishment and operation of a market stability reserve</a> for the Union GHG emission trading scheme and amending Directive 2003/87/EC (6 October 2015).</p> <p><a href="#">Consolidated Auctioning Regulation</a> (25 February 2014): Commission Regulation <a href="#">EU No 176/2014</a> amending Regulation (EU) No 1031/2010 in particular to determine the volumes of GHG emission allowances to be auctioned in 2013-2020 (26 February 2014).</p> <p>All other legislation and documentation can be found <a href="#">here</a>.</p>

## German National Emissions Trading System

### General Information

<p>Summary</p>	<p><b>Status:</b> ETS in force</p> <p><b>Jurisdictions:</b> Germany</p> <p>Germany launched its National Emissions Trading System (in German: Nationales Emissionshandelssystem, or nEHS) for heating and transport fuels in 2021. This measure complements the EU ETS and forms part of the ‘Climate Action Programme 2030,’ a package of measures adopted by the German Federal Cabinet to reach Germany’s 2030 climate targets and aim for climate neutrality by 2050. Because GHG emissions from the country’s energy, industry, and domestic aviation sectors are already covered by the EU ETS, the introduction of the national ETS leads to most major sectors in Germany facing a CO<sub>2</sub> price from 2021 onwards.</p> <p>After the release of the ‘Cornerstones for the Design of a National ETS’ in October 2019, the implementing legislation for the nEHS—the ‘Fuel Emissions Trading Act’—was adopted in December 2019 and amended in November 2020.</p> <p>The national ETS will be phased in gradually, with a fixed price per tCO<sub>2</sub> from 2021 to 2025. In 2026, auctions with minimum and maximum prices will be introduced. Whether a price corridor will be applied from 2027 onwards has to be decided in 2025. The coverage of fuels will also be gradually expanded.</p>												
<p>Year in Review</p>	<p>Based on the key design features of the system laid out in the ‘Fuel Emissions Trading Act,’ regulatory efforts in 2020 focused on a first amendment and the further implementation of the law.</p> <p>The amendments to the ‘Fuel Emissions Trading Act’ adopted by the German legislative bodies in November 2020 increased the initially set fixed-price levels of the nEHS. Prices were set at EUR 25/tCO<sub>2</sub> (USD 28.55) in 2021, which will then increase yearly to EUR 55/tCO<sub>2</sub> (USD 62.82) in 2025. In 2026, a price corridor between EUR 55/tCO<sub>2</sub> (USD 62.82) and EUR 65/tCO<sub>2</sub> (USD 74.24) will apply. Whether a price corridor should be applied from 2027 onwards will be decided in 2025.</p> <p>Additional revenue raised through the increased prices is to be used to reduce electricity rates for consumers (renewable energy levy/surcharge) and additional income tax reliefs for commuters.</p> <p>Together with the changed price levels, the German Parliament required the establishment of a system to prevent carbon leakage from 2021 onwards.</p> <p>Further implementation steps of the law included the introduction of the ‘Emissions Reporting Regulation 2022’ which regulates monitoring, reporting and verification (MRV) obligations for 2021 and 2022 as well as the ‘Fuel Emissions Trading Regulation’ which regulates, among others, selling (or, later on, auctioning) of allowances and the set-up of the registry. Other regulations such as a Carbon Leakage Regulation and a Cap Setting Regulation are expected by mid-2021.</p>												
<p>Overall GHG emissions (excluding LULUCF)</p>	<p><b>Emissions:</b> 859 MtCO<sub>2</sub>e (2018)</p>												
<p>Overall GHG emissions by sector (in MtCO<sub>2</sub>)</p>	<table border="1"> <thead> <tr> <th>Sector Name</th> <th>MtCO<sub>2</sub>e</th> </tr> </thead> <tbody> <tr> <td>Energy (305)</td> <td>305</td> </tr> <tr> <td>Industrial Processes (195)</td> <td>195</td> </tr> <tr> <td>Transport (162)</td> <td>162</td> </tr> <tr> <td>Buildings (117)</td> <td>117</td> </tr> <tr> <td>Agriculture (70)</td> <td>70</td> </tr> </tbody> </table>	Sector Name	MtCO <sub>2</sub> e	Energy (305)	305	Industrial Processes (195)	195	Transport (162)	162	Buildings (117)	117	Agriculture (70)	70
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	Sector Name	MtCO <sub>2</sub> e
	Waste and others (10)	10
GHG reduction target	<b>BY 2030:</b> 55% below 1990 GHG levels (Climate Change Act) <b>BY 2050:</b> GHG neutrality (Climate Change Act)	
Carbon Price	Current Allowance Price (per t/CO <sub>2</sub> e): No information available yet.	

## ETS Size

Covered emissions	0.4
GHGs covered	CO <sub>2</sub> only
Sectors and thresholds	<p>The nEHS will cover 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.</p> <p>Biomass used as fuel in the transport sector and for heating purposes generally also falls under the scope of the nEHS. 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.</p> <p>The system starts with a limited scope in 2021 and 2022, including fuel oil, LPG, natural gas, gasoline, and diesel. Other fuels such as coal will be covered from 2023 onwards.</p> <p>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 have to be reported by the EU ETS installation in any case. These emissions may be deducted from the reported emissions of the fuel distributor under the nEHS if: (a) evidence can be provided that the emissions have been reported by the receiving EU ETS installation; and (b) no CO<sub>2</sub>-price has been passed through. If such evidence cannot be provided and if CO<sub>2</sub>-costs were passed through from the supplier under the nEHS to the EU ETS installation, the supplier is obligated to report and to surrender allowances to cover the emissions. In that case, the EU installation receives a full compensation for the CO<sub>2</sub>-price that has been passed through.</p>
Point of regulation	Upstream
Number of entities	N/A
Cap	<p>The cap will be determined annually based on a separate “Cap Regulation” which will be adopted in 2021. The cap will be set in line with Germany’s reduction targets for the non-EU ETS sectors as defined by the ‘European Effort Sharing Regulation’ (ESR), and will decline each year. However, if emissions (and therefore the demand for allowances) within the nEHS exceed the cap, additional allowances will be available for compliance entities. Such additional allowances will be covered by using the flexibility mechanisms provided for in the ESR, including transfer of additional emission reductions in sectors not covered by the EU ETS, and/or by acquiring annual emission allocations from other EU Member States.</p> <p>The aforementioned flexibility leads to a flexible cap and will be applied during the fixed-price phase and as long as a price corridor is deemed necessary.</p> <p>As soon as the price determination will be left to the market solely, the cap will be absolute without using the aforementioned flexibility provisions.</p>

## Phases & Allocation

Trading periods	<b>PHASE ONE:</b> 10 years (2021-2030)
Allocation	<p><b>PHASE ONE (2021-2030)</b>  <b>Fixed price phase (2021-2025):</b> Allowances will be sold for an annually increasing fixed price:</p> <ul style="list-style-type: none"> <li>• 2021: EUR 25 (USD 28.55)</li> <li>• 2022: EUR 30 (USD 34.27)</li> <li>• 2023: EUR 35 (USD 39.98)</li> <li>• 2024: EUR 45 (USD 51.40)</li> <li>• 2025: EUR 55 (USD 62.82)</li> </ul> <p>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 a certain year X can be acquired until 30 September of year X+1 at the fixed price of year X.</p> <p><b>Auctioning phase (from 2026):</b> Auctioning of allowances starts in 2026, and a price corridor with a minimum price of EUR 55 (USD 62.82) and a maximum price of EUR 65 (USD 74.24) per tCO<sub>2</sub> will apply.</p> <p>Based on a review of the system, it will be decided in 2025 whether a price corridor should also be applied from 2027 onwards.</p> <p><b>CARBON LEAKAGE RULES:</b> A compensation mechanism to avoid carbon leakage for emissions-intensive trade exposed sectors will come into effect as early as 1 January 2021. Respective regulations will be released by mid-2021 and will have retroactive effect. The carbon leakage rules will apply to companies from emission-intensive sectors that are in international competition. Industries eligible for compensation are those on the carbon leakage list of the EU ETS Phase 4. Furthermore, it is foreseen that additional sectors/ subsectors may qualify upon request.</p>

## Flexibility

Banking and borrowing	Banking is not allowed during the fixed price phase, but will be allowed in the auctioning phase.
Offsets and credits	No offsets will be allowed in Phase 1.
Market Stability Provisions	<p>Additional allowances exceeding the cap can be acquired by entities in the fixed-price phase.</p> <p>In 2026, auctions of allowances will contain a price corridor of a minimum price per tCO<sub>2</sub> of EUR 55 (USD 62.82) and a maximum price of EUR 65 (USD 74.24).</p> <p>A potential price corridor for the time after 2026 will be decided upon in 2025.</p>

## Compliance

Compliance Period	From 1 January until 31 December each year. Entities have to surrender allowances to cover the reported emissions of the previous year until 30 September annually.
Monitoring, Reporting, Verification (MRV)	<b>REPORTING FREQUENCY:</b> Annual self-reporting in the form of an emissions report based on electronic templates to be submitted by 31 July.

	<p>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 has been waived for 2021 and 2022.</p> <p>Emissions data are recorded in a national registry and will be publicly available.</p> <p><b>VERIFICATION:</b> Verification of the annual emissions by accredited independent third-party verifiers is mandatory from 2023 onwards. Similarly to the case of the monitoring plan requirement, the verification requirement has been waived for the years 2021 and 2022.</p>
Enforcement	<p>During the first phase, when allowances are allocated at a fixed price, entities must pay an excess emissions penalty for each tCO<sub>2</sub> emitted for which no allowance has been surrendered, which is two times the fixed price. Mistakes in the emissions reports also lead to penalty payments in the equivalent amount. Payment of the penalty doesn't release the entity from the obligation to surrender allowances to cover the emissions: entities remain obliged to purchase and surrender the outstanding allowances.</p> <p>During the second phase, entities must pay an "excess emissions penalty" of EUR 100/tCO<sub>2</sub> (USD 114.22) for each tCO<sub>2</sub> emitted for which no allowance was surrendered. This amount will increase annually by the European consumer price index.</p> <p>For other instances of noncompliance, e.g., misreporting, or late reporting, a fine can be imposed on an entity.</p>

## Linking

Links with other systems	The long-term goal is to establish emissions trading in the transport and heating sectors at the EU level.
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## Other Information

Institutions involved	<p>German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU);</p> <p>German Emissions Trading Authority (DEHSt) at the German Environment Agency (UBA).</p>
Evaluation / ETS review	The German government will publish evaluation reports on the functioning and implementation of the German national ETS every two years until 2024 (until end of November 2022 and 2024) and every four years from 2024 onwards.
Revenue	<p>No information available yet.</p> <p>Revenues will be partly used to support measures under the climate protection program such as incentivizing climate-friendly transport and energy-efficient buildings, and partly redistributed to consumers, e.g., in the form of rebates to compensate citizens for higher carbon costs.</p>
Implementing Legislation	<p><a href="#">Fuel Emissions Trading Act</a></p> <p>Further government regulations: <a href="#">Emissions Reporting Regulation 2022</a> and the <a href="#">Fuel Emissions Trading Regulation</a></p>

## Japan - Saitama Target Setting Emissions Trading System

### General Information

Summary	<p><b>Status:</b> ETS in force</p> <p><b>Jurisdictions:</b> Saitama</p> <p>Saitama Prefecture's ETS was established in April 2011 as part of the 'Saitama Prefecture Global Warming Strategy Promotion Ordinance.' Large buildings and factories in Saitama Prefecture covered under the program are required to reduce emissions below a facility-specific baseline. They are assigned a higher or lower target, depending on factors such as expected energy efficiency gains and the extent to which they consume energy supplied by other facilities.</p> <p>Saitama's ETS is linked to Tokyo's Cap and Trade Program.</p>										
Year in Review	<p>In fiscal year 2018, the Saitama ETS achieved a 29% reduction in emissions below base-year emissions.</p> <p>In April 2020, the Saitama ETS entered its third compliance period (FY2020-2024), which requires facilities to reduce emissions by 20% or 22% below baseline emissions, depending on their category.</p> <p>The 'Zero Carbon Saitama' initiative was announced in 2018 and includes cooperation with the Tokyo 2020 Organizing Committee to fully offset the GHG emissions from the (postponed) Tokyo 2020 Olympic and Paralympic Games. As part of this initiative, companies may donate excess credits from the ETS. Companies that do not possess credits but still wish to make donations may purchase credits from larger facilities within the ETS. Credit donations to the program closed in September 2020.</p>										
Overall GHG emissions (excluding LULUCF)	<p><b>Emissions:</b> 37.2* MtCO<sub>2</sub>e (2017)</p> <p>* The overall emissions figure for Saitama is higher than the total of the emissions by sector because the former includes all GHGs in Saitama, whereas the emissions by sector only measures CO<sub>2</sub> emissions.</p>										
Overall GHG emissions by sector (in MtCO <sub>2</sub> )	<table border="1"> <thead> <tr> <th>Sector Name</th> <th>MtCO<sub>2</sub>e</th> </tr> </thead> <tbody> <tr> <td>Industrial Processes (11.2)</td> <td>11.2</td> </tr> <tr> <td>Residential (9.1)</td> <td>9.1</td> </tr> <tr> <td>Transport (9.4)</td> <td>9.4</td> </tr> <tr> <td>Commercial (4.8)</td> <td>4.8</td> </tr> </tbody> </table>	Sector Name	MtCO <sub>2</sub> e	Industrial Processes (11.2)	11.2	Residential (9.1)	9.1	Transport (9.4)	9.4	Commercial (4.8)	4.8
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Transport (9.4)	9.4										
Commercial (4.8)	4.8										
GHG reduction target	<p><b>BY 2030:</b> 26% reduction from 2013 levels (Saitama Prefecture Global Warming Countermeasures Action Plan Second Phase)</p>										
Carbon Price	<p><i>Current Allowance Price (per t/CO<sub>2</sub>e):</i> No information available yet.</p>										

### ETS Size

Covered emissions	0.20
GHGs covered	CO <sub>2</sub>
Sectors and thresholds	Consumption of fuels, heat, and electricity in commercial and industrial buildings

	<b>INCLUSION THRESHOLDS:</b> Facilities that consume the energy equivalent of at least 1,500kL of crude oil for three consecutive years.
Point of regulation	Downstream
Number of entities	~608 facilities (first compliance period): • Office/commercial buildings: ~180 • Factories: ~428
Cap	The cap is aggregated from the bottom up, based on facility-level “baselines” which are calculated using base-year emissions and a compliance factor (see “Allocation” section).  The bottom-up cap for the first compliance period (FY2011-FY2014) was 33.3 MtCO <sub>2</sub> .

## Phases & Allocation

Trading periods	<p><b>FIRST TRADING PERIOD:</b> 1 April 2012 to 30 September 2016  <b>SECOND TRADING PERIOD:</b> 1 April 2015 to 30 September 2021  <b>THIRD TRADING PERIOD:</b> 1 April 2020 to 30 September 2026</p> <p>The Saitama ETS has both trading periods and compliance periods (see “Compliance” section). The trading period is defined as the compliance period plus an additional 18-month adjustment period, during which time entities may continue to trade credits in order to reach their targets for the corresponding compliance period.</p>
Allocation	<p>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: <i>Base-year emissions × (1 - compliance factor) × compliance period (5 years)</i>. The compliance factor for each period is determined based on regulations established by the Governor of Saitama Prefecture.</p> <p>Base-year emissions are the average emissions of any three consecutive years between FY2002 and FY2007, as chosen by each entity. Credits are issued to facilities whose emissions fall below the baseline.</p> <p>Baselines for new entrants are based on past emissions (the average of any three consecutive years of emissions from four years prior to the start of the compliance period up until the year before the start of the compliance period) or on emissions intensity standards.</p> <p><b>COMPLIANCE FACTOR:</b>  <b>First period (FY2011-FY2014):</b> 8% or 6% reduction below base-year emissions  <b>Second period (FY2015-FY2019):</b> 15% or 13% reduction below base-year emissions  <b>Third period (FY2020-FY2024):</b> 22% or 20% reduction below base-year emissions</p> <p>The higher compliance factor applies to commercial buildings, as well as to district heating and cooling (DHC) plant facilities. 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.</p> <p>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 category. Similarly, in medical facilities where electricity is vital to preserve life and health, the compliance factor is two percentage points lower than the 22% or 20% category.</p> <p><b>EMISSIONS REDUCTION METHODS:</b></p> <ul style="list-style-type: none"> <li>• 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 of the facility to be reported.</li> <li>• Low carbon electricity: In order to evaluate energy efficiency efforts of the covered facilities, CO<sub>2</sub> emissions factors of electricity suppliers are fixed during each compliance period. When covered facilities procure electricity from suppliers with lower emissions</li> </ul>

factors, they can reduce the difference between these emission factors from their emissions to be reported to Saitama Prefecture from the third compliance period.

Facilities demonstrating outstanding performance in emissions reduction, as well as in the introduction, use, and management of energy 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 highest-level energy-efficiency measures currently feasible, stipulating more than 200 different energy-saving measures.

## Flexibility

Banking and borrowing	<p>Banking is only allowed between two consecutive compliance periods.</p> <p>Borrowing is not allowed.</p>
Offsets and credits	<p>Credits from five offset types are allowed in the Saitama ETS.</p> <p><b>SMALL AND MID-SIZE FACILITY CREDITS:</b> Emissions reductions from non-covered small and medium-sized facilities in Saitama Prefecture. <b>Quantitative limits:</b> None.</p> <p><b>OUTSIDE SAITAMA CREDITS:</b> 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 150,000t or less. <b>Quantitative Limits:</b> Credits 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%.</p> <p><b>RENEWABLE ENERGY CREDITS:</b> 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 1,000kW) 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 1 to 1 basis. Credits from biomass (biomass rate of 95% or more, black liquor is excluded) are also converted with factor 1. <b>Quantitative limits:</b> None.</p> <p><b>TOKYO CREDITS (VIA LINK):</b></p> <ul style="list-style-type: none"> <li>• Excess Credits: Emissions reductions from facilities with base-year emissions of 150,000 tonnes or less. Issuance of credits from FY2015.</li> <li>• Small and mid-size Facility Credits: Issued by Saitama Prefecture. Issuance of credits from FY2012.</li> </ul> <p><b>Quantitative limits:</b> None.</p> <p><b>FOREST ABSORPTION CREDITS:</b> Credits from forests inside Saitama Prefecture are counted at 1.5 times the value of regular credits. Others are converted with the factor 1. <b>Quantitative limits:</b> None</p> <p>All offsets must be verified by verification agencies.</p>
Market Stability Provisions	<p>In general, Saitama does not use market stability provisions.</p>

## Compliance

Compliance Period	<p><b>FIRST COMPLIANCE PERIOD:</b> FY2011-2014 <b>SECOND COMPLIANCE PERIOD:</b> FY2015-2019 <b>THIRD COMPLIANCE PERIOD:</b> FY2020-2024</p>
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	<p>Covered entities must submit a global warming countermeasures plan preparation report and implementation status report by 31 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 31 July.</p> <p>Compliance instruments must be submitted and the predetermined target achieved by the end of the 18-month adjustment period, 30 September of the second fiscal year after the end of the compliance period.</p> <p>The next compliance period coincides, then, with the adjustment period for 18 months and begins immediately after the preceding period.</p>
Monitoring, Reporting, Verification (MRV)	<p><b>REPORTING FREQUENCY:</b> Annual emissions reporting, including emission reduction plans. All seven GHGs must be monitored and reported: CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, PFCs, HFCs, SF<sub>6</sub>, and NF<sub>3</sub>.</p> <p><b>VERIFICATION:</b> These reports require third-party verification by the end of the adjustment period.</p> <p><b>FRAMEWORK:</b> These are based on 'Saitama Monitoring/Reporting Guidelines' and 'Saitama Verification Guidelines.'</p>
Enforcement	<p>If the reduction target is not achieved, the name of the company is made public and the insufficient reduction amount added to the reduction amount of the following compliance period.</p> <p>Regardless of whether the target is achieved, the global warming countermeasures plan and implementation status report of each facility are published on Saitama Prefecture's website every year.</p>

## Linking

Links with other systems	<p>Linking with the Tokyo Cap and Trade Program started in April 2011. Tokyo and Saitama credits are officially eligible for trade between the two jurisdictions. During the first compliance period, 15 credit transfers took place between the Saitama Prefecture and Tokyo (nine cases from Tokyo to Saitama, six cases from Saitama to Tokyo).</p>
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## Other Information

Institutions involved	Saitama Prefectural Government
Evaluation / ETS review	No information available yet.
Revenue	No information available yet.
Implementing Legislation	<p><a href="#">Saitama Prefecture Global Warming Strategy Promotion Ordinance</a></p> <p><a href="#">Regulation on Saitama Prefecture Global Warming Strategy Promotion Ordinance</a></p>

## Japan - Tokyo Cap-and-Trade Program

### General Information

Summary	<p><b>Status:</b> ETS in force</p> <p><b>Jurisdictions:</b> Tokyo Metropolis</p> <p>Launched in April 2010, the Cap-and-Trade Program of the Tokyo Metropolitan Government (TMG) is Japan's first mandatory ETS and is linked to the Saitama ETS. Under the Tokyo ETS, large buildings, factories, heat suppliers, and other facilities that consume large quantities of fossil fuels are required to reduce emissions below a facility-specific baseline.</p> <p>Entities covered under the program are assigned a higher or lower target, depending on factors such as expected energy efficiency gains and the extent to which they consume energy supplied by other facilities.</p>												
Year in Review	<p>In March 2020, the TMG released emission data for fiscal year 2018 indicating that, on aggregate, emissions were reduced by 27% overall among covered entities during the second compliance period (FY2015-FY2019) compared to base-year emissions, overachieving the 15-17% target set for the period. The introduction of high-efficiency heat sources, light fittings, and other equipment has been key to reducing emissions in the buildings sector. Buildings have continued to decrease emissions despite an increase in gross floor space, indicating a decrease in emissions intensity in the sector.</p> <p>In April 2020, the Tokyo ETS began its third compliance period (FY2020-FY2024), which requires facilities to reduce emissions by 25% or 27% below base-year emissions, depending on their category. The third compliance period also aims to expand the use and production of low-carbon and renewable energy through additional incentives for covered entities to reduce their compliance obligations by switching to cleaner electricity. Most facilities thus far have achieved their targets via their own energy efficiency measures.</p> <p>Due to the COVID-19 pandemic, the Tokyo ETS postponed the deadline for the submission of annual reports by two months. MRV rules were also reformed via the establishment of an online verification process.</p>												
Overall GHG emissions (excluding LULUCF)	<p><b>Emissions:</b> 63.9 MtCO<sub>2</sub>e MtCO<sub>2</sub>e (2018*)</p> <p>*The overall emissions figure for Tokyo is higher than the total of the emissions by sector because the former includes all GHGs in Tokyo, whereas the emissions by sector only measures CO<sub>2</sub> emissions.</p>												
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Industrial Processes (4.2)	4.2												
Waste (1.8)	1.8												
GHG reduction target	<p><b>BY 2030:</b> 30% reduction from 2000 GHG levels (Zero Emission Tokyo Strategy) <b>BY 2050:</b> Net zero CO<sub>2</sub> emissions (Zero Emission Tokyo Strategy)</p>												
Carbon Price	<p><i>Current Allowance Price (per t/CO<sub>2</sub>e):</i> ~JPY 540 (USD 5.06) (estimated standard transaction price in 2020 provided by TMG)</p>												



## ETS Size

Covered emissions	0.20
GHGs covered	CO <sub>2</sub>
Sectors and thresholds	<p>Consumption of fuels, heat, and electricity in commercial and industrial buildings.</p> <p>Building owners are subject to surrender obligations, but large tenants (floor space above 5,000m<sup>2</sup> or over six million kWh electricity usage per year) can assume obligations jointly or in place of building owners.</p> <p><b>INCLUSION THRESHOLDS:</b> Facilities that consume the energy equivalent to at least 1,500kL of crude oil per year.</p>
Point of regulation	Downstream
Number of entities	<p>~1,200 facilities:</p> <ul style="list-style-type: none"> <li>• Office/commercial buildings: ~1000</li> <li>• Factories: ~200</li> </ul>
Cap	A Tokyo-wide cap is aggregated from the bottom up from facility-level “baselines,” which are calculated using base-year emissions and a compliance factor (see “Allocation” section).

## Phases & Allocation

Trading periods	<p><b>FIRST TRADING PERIOD:</b> 1 April 2011 to 30 September 2016  <b>SECOND TRADING PERIOD:</b> 1 April 2015 to 30 September 2021  <b>THIRD TRADING PERIOD:</b> 1 April 2020 to 30 September 2026</p> <p>The Tokyo ETS has trading periods as well as compliance periods (see “Compliance” section). The trading period is defined as the compliance period plus an additional 18-month adjustment period, during which time entities may continue to trade credits in order to reach their targets for the corresponding compliance period.</p>
Allocation	<p>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: <i>Base-year emissions x (1 - compliance factor) x compliance period (5 years)</i>. 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 consultation meetings to garner experts’ opinions for determining the compliance factors.</p> <p>Base-year emissions are based on the average emissions of any three consecutive years between FY2002 and FY2007, as chosen by each entity. Credits are issued to facilities whose emissions fall below their baselines. Additional emissions reductions may be issued through use of renewable electricity (see also “Offsets and Credits” section).</p> <p>Baselines for new entrants are based on past emissions or on emissions intensity standards.</p> <p><b>COMPLIANCE FACTOR:</b>  <b>First period (FY2010-FY2014):</b> 8% or 6% reduction below base-year emissions  <b>Second period (FY2015-FY2019):</b> 17% or 15% reduction below base-year emissions  <b>Third period (FY2020-FY2024):</b> 27% or 25% reduction below base-year emissions</p>

The higher compliance factor applies to office buildings, as well as to district heating and cooling (DHC) plants (excluding facilities that use a large amount of DHC). The lower compliance factor applies to factories and office buildings that use DHC for more than 20% of their entire energy consumption.

For new entrant facilities from the third compliance period onward, the 17% and 15% compliance factors from the second period are applied (transitional measures are introduced).

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 the 27% or 25% category to which they would otherwise belong.

Facilities demonstrating outstanding performance in emissions reductions, as well as in the introduction, use, and management of energy equipment, are certified as top-level facilities that receive 50% or 75% lower compliance factors according to their rate of progress. The certification standards represent the highest-level energy efficiency measures currently feasible, stipulating more than 200 different energy-saving measures.

## Flexibility

Banking and borrowing	<p>Banking is allowed only between consecutive compliance periods.</p> <p>Borrowing is not allowed.</p>
Offsets and credits	<p>Credits from four offset types are permitted, to complement emissions reduction credits issued to facilities covered by the Tokyo ETS whose emissions fall below their baseline.</p> <p><b>SMALL AND MID-SIZE FACILITY CREDITS:</b> Emissions reductions from non-covered small and medium-sized facilities in Tokyo.</p> <p><b>Quantitative limits:</b> None.</p> <p><b>OUTSIDE TOKYO CREDITS:</b> Emissions reductions achieved from large facilities outside of the Tokyo area. Large facilities are those with an energy consumption equivalent to at least 1,500kL of crude oil in a base year and with base-year emissions of 150,000 tonnes or less.</p> <p><b>Quantitative limits:</b> Credits 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.</p> <p><b>RENEWABLE ENERGY CREDITS:</b> 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 1,000kW) electricity production for use under the Tokyo 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 1 to 1 basis. Credits from biomass (biomass rate of 95% or more, black liquor excluded) are also converted with factor 1.</p> <p><b>Quantitative limits:</b> None.</p> <p><b>SAITAMA CREDITS (VIA LINK):</b></p> <ul style="list-style-type: none"> <li>· Excess Credits: Emissions reductions from facilities in Saitama with base-year emissions of 150,000 tonnes or less. Issuance of credits from FY2015.</li> <li>· Small and Mid-Size Facility Credits issued by Saitama Prefecture. Issuance of credits from FY2012.</li> </ul> <p><b>Quantitative limits:</b> None.</p> <p>All offsets must be verified by verification agencies.</p>

**QUALIFYING FOR ADDITIONAL EMISSIONS REDUCTIONS THROUGH USE OF RENEWABLE ELECTRICITY**

(1) Low Carbon Electricity: In order to evaluate the energy efficiency efforts of the covered facilities, CO<sub>2</sub> 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<sub>2</sub>/1,000 kWh] or less), they can reduce the difference between these emission factors from their emissions to be reported to the TMG.

(2) 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 to the TMG.

(3) During the third compliance period, covered facilities can deduct emissions to be reported to the TMG if electricity with a higher renewable energy source rate (30% or higher) is procured (additional grant).

Market Stability Provisions

In general, covered facilities trade over the counter and the TMG does not control carbon prices. However, as a discretionary mechanism, the TMG sells its own offset credits for trading in case of excessive price development.

**Compliance**

Compliance Period

Entities must submit a GHG Emissions Reduction Plan and implementation status report by 30 November every year.\*

Compliance instruments must be submitted, and the predetermined target achieved by the end of the 18-month adjustment period, 30 September of the second fiscal year after the end of the compliance period.

The next compliance period coincides, then, with the adjustment period for 18 months and begins immediately after the preceding period.

**FIRST COMPLIANCE PERIOD:** FY2010-FY2014  
**SECOND COMPLIANCE PERIOD:** FY2015-FY2019  
**THIRD COMPLIANCE PERIOD:** FY2020-FY2024

\* Due to the COVID-19 pandemic, the deadline for 2020 only was postponed to 1 February 2021.

Monitoring, Reporting, Verification (MRV)

**REPORTING FREQUENCY:** Annual emissions reporting, including emission reduction plans. All seven GHGs must be monitored and reported: CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, PFCs, HFCs, SF<sub>6</sub>, and NF<sub>3</sub>. Large tenants, i.e., those with a floor space above 5,000m<sup>2</sup> or over six million kWh electricity use per year, are required to submit their own emissions reduction plans to the TMG in collaboration with building owners.

**VERIFICATION:** These annual reports require third-party verification.

**FRAMEWORK:** These are based on ‘TMG Monitoring/Reporting Guidelines’ and ‘TMG Verification Guidelines.’ These are based on ‘TMG Monitoring/Reporting Guidelines’ and ‘TMG Verification Guidelines.’

Enforcement

In the case of noncompliance, 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 4,683]) and surcharges (1.3 times the shortfall).

## Linking

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Links with other systems

Linking with the Saitama Prefecture ETS started in April 2011 when the Saitama program was launched. Tokyo and Saitama credits are officially eligible for trade between the two jurisdictions. During the first compliance period, 15 credit transfers took place between the Saitama Prefecture and Tokyo (nine cases from Tokyo to Saitama, six cases from Saitama to Tokyo).

## Other Information

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Institutions involved	Tokyo Metropolitan Government
Evaluation / ETS review	The TMG established a committee of experts to analyze the structure of the Tokyo Cap-and-Trade Program post-2020. In FY2020, the program entered a new stage to achieve the 2030 target and transition to a net zero-carbon society, promoting continued energy savings and expanding the utilization of low-carbon (renewable) energy.
Revenue	No information available yet.
Implementing Legislation	<a href="#">The Tokyo Metropolitan Security Ordinance and Regulation for the Enforcement of the Tokyo Metropolitan Environmental Security Ordinance</a> <a href="#">Detailed documents</a> on the Tokyo ETS can be found on the TMG website <a href="#">TMG Zero Emissions Strategy</a>

## Kazakhstan Emissions Trading Scheme

### General Information

Summary	<p><b>Status:</b> ETS in force</p> <p><b>Jurisdictions:</b> Kazakhstan</p> <p>Kazakhstan launched its ETS (KAZ ETS) in January 2013. The groundwork for the ETS development was laid out in 2011 through amendments and additions to Kazakhstan's environmental legislation. The system was temporarily suspended in 2016-2017 to tackle operational issues and reform allocation rules. MRV obligations applied during the suspension time. Amendments to the 'Environmental Code' were passed in 2016 to improve the MRV system, as well as the overall GHG emissions regulation and operation of the KAZ ETS. Further amendments to the Environmental Code in 2017 laid the groundwork for the introduction of benchmarking.</p> <p>The current 'National Allocation Plan' for 2021 sets a cap of 159.9 MtCO<sub>2</sub> for the year, with 225 participating installations belonging to 130 operators. According to the new Environmental Code, which will come into force in July 2021, the next National Allocation Plan will be developed for five years.</p>												
Year in Review	<p>2020 was the last year of the third phase of KAZ ETS operation, and the new National Allocation Plan was issued to set the cap for the year 2021. In the third phase, participating operators could choose the allocation method between grandparenting and product-based benchmarking. A full transition to benchmarking has been made for the current phase.</p>												
Overall GHG emissions (excluding LULUCF)	<p><b>Emissions:</b> 396.6 MtCO<sub>2</sub>e (2018)</p>												
Overall GHG emissions by sector (in MtCO <sub>2</sub> )	<table border="1"> <thead> <tr> <th>Sector Name</th> <th>MtCO<sub>2</sub>e</th> </tr> </thead> <tbody> <tr> <td>Energy (305.1)</td> <td>305.1</td> </tr> <tr> <td>Transportation (26.1)</td> <td>26.1</td> </tr> <tr> <td>Industrial processes (22.4)</td> <td>22.4</td> </tr> <tr> <td>Agriculture (36.2)</td> <td>36.2</td> </tr> <tr> <td>Waste (6.8)</td> <td>6.8</td> </tr> </tbody> </table>	Sector Name	MtCO <sub>2</sub> e	Energy (305.1)	305.1	Transportation (26.1)	26.1	Industrial processes (22.4)	22.4	Agriculture (36.2)	36.2	Waste (6.8)	6.8
Sector Name	MtCO <sub>2</sub> e												
Energy (305.1)	305.1												
Transportation (26.1)	26.1												
Industrial processes (22.4)	22.4												
Agriculture (36.2)	36.2												
Waste (6.8)	6.8												
GHG reduction target	<p><b>BY 2030:</b> 15% (unconditional) to 25% (conditional) reduction from 1990 GHG levels (NDC)</p> <p><b>BY 2050:</b> 40% CO<sub>2</sub> emission reduction in power sector from 2012 levels (2013 Concept of Transition to Green Economy)</p>												
Carbon Price	<p><i>Current Allowance Price (per t/CO<sub>2</sub>e):</i> KZT 456 (USD 1.10) (average 2020 price)</p>												

### ETS Size

Covered emissions	0.41
GHGs covered	CO <sub>2</sub> only
Sectors and thresholds	<p><b>PHASE ONE (2013):</b> Power sector and centralized heating. Extractive industries and manufacturing: oil and gas mining, metallurgy, chemical industry.</p> <p><b>PHASE TWO (2014-2015):</b> Same as Phase 1</p> <p>(2016-2017: System suspended)</p>

	<p><b>PHASE THREE (2018-2020):</b> Power sector and centralized heating. Extractive industries and manufacturing: oil and gas mining, metallurgy, chemical and processing industry (production of building materials: cement, lime, gypsum, and brick).</p> <p><b>PHASE FOUR (2021):</b> Same as Phase 3</p> <p><b>THRESHOLDS:</b> Facilities emitting more than 20,000 tCO<sub>2</sub>e/year.</p>
Point of regulation	Downstream
Number of entities	130 companies (225 installations)
Cap	<p><b>PHASE ONE (2013):</b> 147 MtCO<sub>2</sub> (plus new entrants' reserve of 20.6 MtCO<sub>2</sub>). This equalled a stabilization of the capped entities' emissions at 2010 levels.</p> <p><b>PHASE TWO (2014-2015):</b> 2014: 154.9 MtCO<sub>2</sub> (plus a reserve of 18 MtCO<sub>2</sub>); 2015: 152.8 MtCO<sub>2</sub> (plus a reserve of 20.5 MtCO<sub>2</sub>). This represented reduction targets of 0% and 1.5% respectively, compared to the average CO<sub>2</sub> emissions of capped entities in 2011-2012.</p> <p>(2016-2017: System suspended)</p> <p><b>PHASE THREE (2018-2020):</b> 485.9 MtCO<sub>2</sub> (plus a reserve of 35.3 MtCO<sub>2</sub>). 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.</p> <p><b>PHASE FOUR (2021):</b> 159.9 MtCO<sub>2</sub> (plus a reserve of 11.5 MtCO<sub>2</sub>).</p>

## Phases & Allocation

Trading periods	<p><b>PHASE ONE:</b> 1 year (2013)  <b>PHASE TWO:</b> 2 years (2014-2015)  <b>PHASE THREE:</b> 3 years (2018-2020)  <b>PHASE FOUR:</b> 1 year (2021)  (2016-2017: system suspended)</p> <p>According to the new Environmental Code, which will come into force in July 2021, the next National Allocation Plan will be developed for five years.</p>
Allocation	<p><b>PHASE ONE (2013):</b> Free allocation (grandparenting). Based on emissions data from 2010.</p> <p><b>PHASE TWO (2014-2015):</b> Grandparenting (0% and 1.5% below 2011-2012 average emissions), with a reserve of 18 MtCO<sub>2</sub> in 2014 and 20.5 MtCO<sub>2</sub> in 2015.</p> <p>(2016-2017: System suspended)</p> <p><b>PHASE THREE (2018-2020):</b> Allocation based on grandparenting or product-based benchmarking, chosen by each company (149 installations chose benchmarking and 76 installations chose grandparenting). A reserve contained 35.3 million allowances to accommodate for new entrants, new stationary emission sources, and changes in output in case of the choice of benchmarking.</p> <p><b>PHASE FOUR (2021):</b> Benchmarking. A reserve contains 11.5 million allowances.</p>

## Flexibility

Banking and borrowing	Banking is allowed within each trading period (one phase). Banking between trading periods is not possible.
Offsets and credits	<b>Qualitative Limits:</b> Domestic offsets in all economic sectors (GHG reduction or absorption activities), except for emissions reductions at the installations covered by the ETS. Project

	<p>applicants can submit their projects for consideration to the Ministry of Ecology, Geology and Natural Resources in order to obtain approval and gain offset credits. The approval of carbon offsets and the provision of offset credits are carried out in accordance with IPCC methodologies and the rules developed and approved by the Ministry of Ecology, Geology and Natural Resources.</p> <p><b>Quantitative Limits:</b> None.</p>
Market Stability Provisions	No information available yet.

## Compliance

Compliance Period	One year
Monitoring, Reporting, Verification (MRV)	<p><b>REPORTING FREQUENCY:</b> Reporting is required annually for businesses or financial facilities above the 20,000 tCO<sub>2</sub>/year threshold.</p> <p>Annual reporting also is required for operators of installations with emissions between 10,000 tCO<sub>2</sub>/year and 20,000 tCO<sub>2</sub>/year (so-called “subjects to administration”), even though these operators are not required to participate in the ETS or to verify annual emission reports.</p> <p>Aside from CO<sub>2</sub>, reporting also is required for CH<sub>4</sub>, N<sub>2</sub>O, and PFCs emissions.</p> <p><b>VERIFICATION:</b> Emissions data reports and their underlying data require third-party verification by an accredited auditor.</p> <p><b>FRAMEWORK:</b> Environmental Code of the Republic of Kazakhstan.</p>
Enforcement	The non-compliance penalty equals five monthly standard units for each tonne (approximately KZT 14,585/tCO <sub>2</sub> (USD 35.32) in 2021). In 2013 and in 2014, penalties for noncompliance were waived.

## Linking

Links with other systems	No information available yet.
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## Other Information

Institutions involved	Ministry of Energy; Ministry of Ecology, Geology and Natural Resources; JSC Zhasyl Damu, a state-owned joint stock company
Evaluation / ETS review	No information available yet.
Revenue	No information available yet.
Implementing Legislation	<p><a href="#">Environmental Code of the Republic of Kazakhstan (2007)</a></p> <p><a href="#">Environmental Code of the Republic of Kazakhstan (2021)</a></p> <p><a href="#">National GHG Emission Quota Allocation Plan for 2021</a></p> <p><a href="#">Rules for the allocation of quotas for GHG emissions and formation of reserves of the established number and volume of quotas</a></p> <p><a href="#">Rules of trading greenhouse gas emission quota and carbon units</a></p>

## Korea Emissions Trading Scheme

### General Information

<p>Summary</p>	<p><b>Status:</b> ETS in force</p> <p><b>Jurisdictions:</b> Republic of Korea</p> <p>The Korea ETS (K-ETS) was launched on 1 January 2015, becoming East Asia’s first nationwide mandatory ETS and, at the time, the second-largest carbon market after the EU ETS. The K-ETS covers 685 of the country’s largest emitters, accounting for ~73.5% of national GHG emissions. It covers direct emissions of six GHGs, as well as indirect emissions from electricity consumption. The K-ETS is meant to play an essential role in meeting Korea’s 2030 updated NDC target of a 24.4% reduction from 2017 emissions.</p> <p>The first and highest legal base for green growth and implementation of the K-ETS is the ‘Framework Act on Low Carbon, Green Growth’ (2010). The ‘Act on Allocation and Trading of Greenhouse Gas Emissions Allowances’ (‘Emissions Trading Act’) and its Enforcement Decree, passed in 2012, stipulate government actions, institutions, and timelines for the K-ETS. Further details of the K-ETS were outlined in two Master Plans (January 2014 and February 2017). Detailed Allocation Plans are released for each trading phase (January 2014, July 2018, and September 2020).</p> <p>The K-ETS was preceded by a mandatory GHG and Energy Target Management System (TMS) that was launched in 2012 (following a two-year pilot phase started in 2010). 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.</p>
<p>Year in Review</p>	<p>2020 was an important year for climate ambition in Korea with the government announcing a Green New Deal and a net-zero target for 2050, tied to a commitment to speed up investment in clean technologies across the economy. 2020 also saw notable developments in the K-ETS with the adoption of key regulations for the third trading phase which will commenced with the start of the new trading year in 2021. The updates include amendments to the ‘Emissions Trading Act’ and the adoption of the Phase 3 Allocation Plan in September 2020—the latter of which forms the main ETS document detailing updated design provisions ahead of the new trading phase.</p> <p>Starting from Phase 3, financial intermediaries can participate in the secondary market and trade allowances as well as converted carbon offsets on the Korea Exchange (KRX)—complementing the “market maker system” that was introduced in Phase 2 to support market liquidity. Furthermore, the system’s scope has been expanded to include construction companies and (large) transport companies. This corresponds to a rise in the number of compliance entities from ~610 to 685 and a 3.2% increase in the average annual cap, amounting to 609 million tCO<sub>2</sub>e during 2021-2025. The inclusion of these sectors brings the system’s coverage to 73.5% of national emissions, an increase of more than 2 percentage points. The allocation plan also foresees the introduction of a futures market at a yet-to-be-determined date.</p> <p>In line with earlier announcements about allocation provisions in Phase 3, the share of auctioning increases from 3% to 10% in 2021 for a total of 41 out of 69 industries eligible to participate in auctions. The remaining 28 subsectors receive 100% free allocation as determined by a carbon leakage index. The share of benchmarking increases from 50% to 60% and expands to a total of 12 sectors. The share of offsets in Phase 3 is reduced from 10% to 5%.</p> <p>In April 2021 in response to continuous declines in prices, the Korean Ministry of Environment introduced a temporary minimum price, which will remain in force for up to one month. Prices have declined steadily since late 2020 after beginning to recover in October 2020. The ministry’s move followed an announcement stating that Korean Allowance Units (KAUs) had traded below a rolling trigger price for market stabilization</p>



	measures for more than a month, enabling the government to intervene to stabilize price levels. This marks the first time that a price floor for secondary market trading has been applied.										
Overall GHG emissions (excluding LULUCF)	<b>Emissions:</b> 727.7 MtCO <sub>2</sub> e (2018)										
Overall GHG emissions by sector (in MtCO <sub>2</sub> )	<table border="1"> <thead> <tr> <th>Sector Name</th> <th>MtCO<sub>2</sub>e</th> </tr> </thead> <tbody> <tr> <td>Fuel combustion (including Transport) (632.4)</td> <td>632.4</td> </tr> <tr> <td>Industrial processes (57)</td> <td>57.0</td> </tr> <tr> <td>Agriculture (21.2)</td> <td>21.2</td> </tr> <tr> <td>Waste (17.1)</td> <td>17.1</td> </tr> </tbody> </table>	Sector Name	MtCO <sub>2</sub> e	Fuel combustion (including Transport) (632.4)	632.4	Industrial processes (57)	57.0	Agriculture (21.2)	21.2	Waste (17.1)	17.1
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Agriculture (21.2)	21.2										
Waste (17.1)	17.1										
GHG reduction target	<p><b>BY 2030:</b> 24.4% below 2017 emissions (i.e., 536 MtCO<sub>2</sub>e in 2030) (updated NDC); 38 million international credits may be used towards achieving this goal (2030 GHG mitigation roadmap)</p> <p><b>BY 2050:</b> Net-zero emissions (proposed)</p>										
Carbon Price	<i>Current Allowance Price (per t/CO<sub>2</sub>e):</i> KRW 32,595.83 (USD 27.62) (average secondary market price from KRX in 2020; updated prices available <a href="#">here</a> )										

## ETS Size

Covered emissions	0.74
GHGs covered	CO <sub>2</sub> , CH <sub>4</sub> , N <sub>2</sub> O, PFCs, HFCs, SF <sub>6</sub>
Sectors and thresholds	<p><b>PHASE ONE (2015-2017):</b> 23 subsectors from the following five sectors: power, industry (e.g., iron and steel, petrochemical, cement, oil refinery, nonferrous metals, paper, textile, machinery, mining, glass, and ceramics), buildings, waste, and transportation (domestic aviation).</p> <p><b>PHASE TWO (2018-2020):</b> According to the Phase 2 Allocation Plan, the public and waste sectors are disaggregated such that the K-ETS covers the following six sectors: heat and power, industry, buildings, transportation, waste sector, and the public sector. These sectors are disaggregated into 62 subsectors.</p> <p><b>PHASE THREE (2021-2025):</b> The K-ETS covers the following six sectors: heat and power, industry, buildings, transportation, waste sector, and the public sector. The transport sector (freight, rail, passenger, and shipping) and construction industries have been brought into the system's scope, increasing the number of subsectors covered to 69.</p> <p><b>INCLUSION THRESHOLDS:</b> company &gt;125,000 tCO<sub>2</sub>/year, facility &gt;25,000 tCO<sub>2</sub>/year</p> <p>Next to direct emissions coverage, the K-ETS covers indirect emissions from electricity consumption. The same inclusion thresholds apply.</p>
Point of regulation	Downstream
Number of entities	685 (2021)
Cap	<p><b>PHASE ONE (2015-2017):</b> 1,686.3 MtCO<sub>2</sub>e, including a reserve of 88 MtCO<sub>2</sub>e 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, bringing the total number of allowances in Phase 1 to 1700.6 million.</p> <p><b>Annual Caps in Phase One</b>  <b>2015:</b> 540.1 MtCO<sub>2</sub>e  <b>2016:</b> 560.7 MtCO<sub>2</sub>e  <b>2017:</b> 585.5 MtCO<sub>2</sub>e                  (Yearly caps do not include allowances set aside for market stabilization.)</p>

**PHASE TWO (2018-2020):** 1,777 MtCO<sub>2</sub>e, including 134 million for new entrants and other purposes. 14 million allowances were set aside for market stabilization and five million for the market makers (see “Market Stability Mechanisms” section) bringing the total amount of allowances to 1,796.1 million in Phase 2.

**Annual Caps in Phase Two**

**2018:** 601 MtCO<sub>2</sub>e

**2019:** 587.6 MtCO<sub>2</sub>e

**2020:** 545.1 MtCO<sub>2</sub>e

Unallocated and withdrawn allowances were transferred to the reserve.

**PHASE THREE (2021-2025):** 3,048.3 MtCO<sub>2</sub>e. This corresponds to an average annual cap of 610 MtCO<sub>2</sub>e, including reserves. Annual caps are higher in Phase 3 due to the expansion in scope, but reflect a 4.7% decrease in emissions compared to the 2017-2019 baseline. In addition, 14 million allowances are set aside for market stability purposes and 20 million for the 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<sub>2</sub>e

**2022:** 589.3 MtCO<sub>2</sub>e

**2023:** 589.3 MtCO<sub>2</sub>e

**2024:** 567.1 MtCO<sub>2</sub>e

**2025:** 567.1 MtCO<sub>2</sub>e

## Phases & Allocation

Trading periods	<p><b>PHASE ONE:</b> 3 years (2015-2017)  <b>PHASE TWO:</b> 3 years (2018-2020)  <b>PHASE THREE:</b> 5 years (2021-2025)</p>
Allocation	<p><b>PHASE ONE (2015-2017)</b>  <b>Free Allocation:</b> 100% of total allowance supply. Most sectors received free allowances based on the average GHG emissions of the base years (2011-2013). Three sectors (grey clinker, oil refinery, and aviation) were allocated free allowances following benchmarks based on previous activity data from the base years (2011-2013).</p> <p><b>PHASE TWO (2018-2020)</b>  <b>Free Allocation:</b> 97% of 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 sectors: grey clinker, oil refinery, domestic aviation, with the addition of waste, industrial parks, electricity generation, and district heating/cooling.</p> <p>EITE sectors received 100% of their allowances for free if they met one of the following three criteria:*</p> <ul style="list-style-type: none"> <li>• Additional Production Cost of &gt;5% and Trade Intensity of &gt;10%; or</li> <li>• Additional Production Cost of &gt;30%; or</li> <li>• Trade Intensity of &gt;30%.**</li> </ul> <p><b>Auctioning:</b> 3% of allocation to entities in sub-sectors subject to auctioning. 26 subsectors were eligible to participate in auctions, including entities from the electricity, domestic aviation, wooden products, and metal foundry sectors. Regular auctions began in 2019. In 2019, authorities auctioned a total of 7.95 million allowances. 9.3 million allowances were auctioned in 2020.</p> <p>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. No one bidder can purchase more than 30% of the allowances of one auction. The auctions are subject to a minimum price set by the following formula: (average price over the previous three months + average price of last month + average price over the previous three days)/3</p> <p><b>PHASE THREE (2021-2025)</b></p>

**Free Allocation:** Less than 90% of allocation to entities in sub-sectors subject to auctioning; 100% for EITE sectors. The share of sector-specific benchmarking is to reach 60% and has been expanded to a total of 12 sectors: grey clinker, oil refinery, domestic aviation, waste, industrial parks, electricity generation, and district heating/cooling, with the addition of steel, petrochemical, buildings, paper, and wood processing.

Fuel-specific benchmarks apply to electricity generators and will be updated again by the end of 2023. Industry benchmarks are currently undergoing revisions.

EITE sectors receive 100% free allocation when meeting the following criteria:  
Cost Incidence \* Trade Intensity  $\geq$  0.002

**Auctioning:** At least 10% of allocation to entities in sub-sectors subject to auctioning. Entities from 41 subsectors, which excludes EITE sectors, can participate in auctions. The same auction provisions as for Phase 2 apply.

Financial intermediaries and other third parties can participate in exchange trading since 2021. A futures market will be introduced as a part of Phase 3 reforms at a yet-to-be-determined date.

\* 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

\*\* Trade Intensity is calculated relative to the base year: (annual average exports + annual average imports) / (annual average sales + annual average imports)

## Flexibility

### Banking and borrowing

Banking is allowed with restrictions across and within phases.

Borrowing is allowed within a single trading phase.

#### PHASE ONE (2015-2017)

From Phase 1 to Phase 2, banking was limited for each installation to 10% of their annual average allocation at a maximum of 20,000 Korean Allowance Units (KAUs). The amount that exceeds the threshold was deducted from the Phase 2 allocation.

Borrowing in 2015 was limited to 10% of an entity's obligation and was increased to 20% in 2016 and 2017.

#### PHASE TWO (2018-2020)

From Phase 2 to Phase 3, banking was initially limited to the higher of two limits: the net annual amount 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: [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 selling amount or 75,000 allowances for companies emitting >125k tCO<sub>2</sub>e (or 15,000 allowances for companies emitting >25,000 tCO<sub>2</sub>e) —whichever of the two 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, again whichever is higher;
- For KAU20s, the amount represents a 2/3 reduction compared to the KAU18 rule.

#### PHASE THREE (2021-2025)

In the first trading year, entities can borrow up to 15% of their compliance obligation. From the second to fourth trading years, the same borrowing formula as for 2019 applies.

	<p>Banking in Phase 3:</p> <ul style="list-style-type: none"> <li>• In the first and second compliance years (2021-2023), entities can bank up to two times their net amount of allowances (KAUs) and offsets (Korean Credit Units, KCUs) sold on the secondary market.</li> <li>• In the third and fourth compliance years (2023-2024), entities' banking limit is equal to their net amount of allowances and offsets sold.</li> <li>• Phase 3 allowances and offsets can only be carried over to the first compliance year of Phase 4 (2026-2030). The banking limit in the fifth compliance year (2025) is set by an entity's annual average net sold units (KAU21-KAU25; KCU21-KCU25) on the secondary market during Phase 3.</li> </ul>
<p>Offsets and credits</p>	<p>Domestic offsets, 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 need to be converted to KCUs in order to be used for compliance.</p> <p><b>PHASE ONE (2015-2017)</b>  <b>Qualitative Limit:</b> Only domestic credits from external reduction activities implemented by non-ETS entities—and that meet international standards—could be used for compliance in this phase. Domestic CDM credits (CERs), and credits from domestically certified projects (Korean Offset Credits) were allowed. Eligible activities included those eligible under the CDM and Carbon Capture and Storage. However, only activities implemented after 14 April 2010 were eligible.</p> <p><b>Quantitative Limit:</b> Up to 10% of each entity's compliance obligation.</p> <p><b>PHASE TWO (2018-2020)</b>  <b>Qualitative Limit:</b> In Phase 2, CERs generated after 1 June 2016 from international CDM projects developed by domestic companies are allowed. CDM projects operated by Korean companies were allowed when:</p> <ul style="list-style-type: none"> <li>• at least 20% of the ownership rights, operating rights, or the voting stocks are owned by a Korean company;</li> <li>• a Korean company supplies the low-carbon technology worth at least 20% of the total project cost; or</li> <li>• the projects are funded by a Korean company with a national or regional government operating in a UN-designated Least Developed Country or a low-income economy as classified by the World Bank.</li> </ul> <p><b>Quantitative Limit:</b> Up to 10% of each entity's compliance obligation (of which up to 5% can be international offset credits).</p> <p><b>PHASE THREE (2021-2025):</b> Offsets will continue to be allowed according to the qualitative criteria outlined for Phase 2.</p> <p><b>Quantitative Limit:</b> In Phase 3, the share of offsets has decreased to 5% of an entity's compliance obligation. No separate limit for international credits applies.</p>
<p>Market Stability Provisions</p>	<p><b>AUCTION RESERVE PRICE:</b> Regular auctions as well as auctions for market stability are subject to a reserve price determined by a formula (see "Allocation" section).</p> <p><b>ALLOCATION COMMITTEE:</b> An Allocation Committee is in place to implement market stabilization measures in particular cases:</p> <ul style="list-style-type: none"> <li>• the market allowance price of six consecutive months is at least three times higher than the average price of the two previous years;</li> <li>• the market allowance price of the last month is at least twice 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;</li> <li>• the average market allowance price of a given month is lower than 40% of the average price of the two previous years; or</li> <li>• it is difficult to trade allowances due to an imbalance of supply or demand.</li> </ul> <p>The stabilization measures may include:</p> <ul style="list-style-type: none"> <li>• additional auctioning of allowances from the reserve (up to 25%);</li> <li>• establishment of a limit to the number of allowances in an entity's account: minimum (70%) or maximum (150%) of the allowance of the compliance year;</li> <li>• an increase or decrease of the borrowing limit;</li> <li>• an increase or decrease of the offsets limit; and</li> <li>• temporary setup of a price ceiling or price floor.</li> </ul>

In 2016, the Allocation Committee doubled the borrowing limit to 20%; as well, an additional 0.9 million allowances were auctioned at a reserve price of KRW 16,200 (USD 13.73) of which almost one-third were sold. In 2018, the Allocation Committee auctioned 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 allowances were sold.

In June 2019, the Korea Development Bank and the Industrial Bank of Korea were officially designated as “market makers.” These institutions can draw on a government-held reserve of five million allowances in a bid to increase liquidity in the market. Both banks, along with the Korean Export-Import Bank, engaged in market transactions on a daily basis. This has improved market liquidity and reduced bid-ask spreads.

The reserve for market liquidity increased to 20 million allowances for the third trading phase.

## Compliance

Compliance Period	One year. Entities need to surrender allowances for the previous emissions year by end of June.
Monitoring, Reporting, Verification (MRV)	<p><b>REPORTING FREQUENCY:</b> Annual reporting of emissions must be submitted within three months from the end of a given year (by the end of March).</p> <p><b>VERIFICATION:</b> Emissions must be verified by a third-party verifier.</p> <p><b>OTHER:</b> Emissions reports are reviewed and certified by the Certification Committee of the Ministry of Environment within five months from the end of a given compliance year (by the end of May).</p> <p>If the liable entity fails to report emissions correctly, the report will be disqualified.</p>
Enforcement	The penalty shall not exceed three times the average market price of allowances of the given compliance year or KRW 100,000 (USD 84.73)/tonne.

## Linking

Links with other systems	No linkage is currently considered.
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## Other Information

Institutions involved	In 2016, overall responsibility for the K-ETS moved from the Ministry of Environment to the Ministry of Economy and Finance (MOEF). In January 2018, responsibility was transferred back to the MOE, although the MOEF still chairs the Allocation Committee Korea Exchange (Trading Platform) Greenhouse Gas Inventory and Research Center (GIR; Registry and technical implementation)
Evaluation / ETS review	The GIR regularly releases summary (evaluation) reports that include key emissions statistics, market performance indicators, and survey results from covered entities.
Revenue	<p><b>Since beginning of program:</b> KRW 480.7 billion (USD 407.3 million)*</p> <p><b>Collected in 2020:</b> KRW 248.3 billion (USD 210.4 million)</p> <p>* The regular auction schedule began in 2019. Allowances were also auctioned in 2016 and 2018 by the Allocation Committee from the reserve for market stability measures. Revenues</p>

from these auctions totalled USD 99.6 million and are not included in the total auction revenue figure above.

The government has put forward possible options for the use of the revenues. These options include support for mitigation equipment, low-carbon innovation, and technology development of ETS-covered entities. Specific rules on the use of revenues are yet to be decided.

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Implementing Legislation

[Framework Act on Low Carbon, Green Growth](#)

[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 Master Plan for 2015-2024](#)

[Second Master Plan for 2017-2026](#)

[First Allocation Plan](#)

[Second Allocation Plan](#)

[Greenhouse Gas Emissions Allocation and Trade Act \(amended as of June 2020\)](#)

[Third Allocation Plan](#)

## Mexico

### General Information

<p>Summary</p>	<p><b>Status:</b> ETS in force</p> <p><b>Jurisdictions:</b> Mexico</p> <p>The Mexican Pilot ETS started operating in January 2020. It was mandated by Transitional Article 2 of the ‘General Law on Climate Change’ (as amended in July 2018) and is regulated by implementing regulation finalized in 2019. The Pilot ETS will help test system design and will run for two years, plus one year of transition to the full operational ETS. It aims to enhance the quality of emissions data and build capacity in emissions trading for covered entities, ultimately improving the design of the operational phase from 2023 onwards. The rules for the 2022 transitional phase are yet to be announced. Together, the Pilot phase (2020-2021) and the transition phase (2022) constitute the “test program” of the Mexican ETS.</p> <p>The Pilot covers direct CO<sub>2</sub> emissions from entities in the energy and industry sectors generating at least 100,000 tCO<sub>2</sub> per year. Approximately 300 entities are covered by the Pilot, corresponding to ~40% of national emissions.</p> <p>The Mexican Pilot ETS is designed to pose no economic impact on regulated entities; however, in case of noncompliance, entities lose the opportunity to bank unused allowances into the next compliance periods within the Pilot. Moreover, noncompliant entities will receive fewer allowances during the operational period of the national ETS (two fewer allowances for each nondelivered allowance during the Pilot).</p>
<p>Year in Review</p>	<p>In 2020, Mexico developed its ETS Registry (Sistema de Seguimiento de Derechos de Emisión). As of early 2021, the first allowance allocation into accounts in the Registry is underway, after a small delay to the original deadline due to the impact of the COVID-19 pandemic.</p> <p>In 2020, the country continued the development of offset provisions in priority sectors (forestry, agriculture, livestock, transport). Moreover, the Ministry of Environment and Natural Resources (SEMARNAT) is preparing a registry for mitigation outcomes from voluntary and regulated sources (such as offsets, early action offsets, Internationally Transferred Mitigation Outcomes (ITMOs), or voluntary projects, among others), referred to as the “second branch” of the National Emissions Registry (RENE). The eligibility rules for the use of offsets within the ETS are being developed based on a mapping of activities and projects that could be used for this purpose.</p> <p>In terms of stakeholder engagement, the Consultative Committee of the Pilot ETS has had three sessions as of January 2021 and its rules of operation are being developed. The Consultative Committee is the 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; five representatives of the regulated sectors; a representative from financial institutions or exchanges; and two representatives from civil society and two from universities, with voice but no vote in the Committee. As well, several capacity-building activities also took place during 2020, such as advanced training courses and a number of smaller courses aimed at regulated entities.</p> <p>Different studies and analyses are also being developed, such as:</p> <ul style="list-style-type: none"> <li>• an analysis of the interaction of the ETS with other carbon pricing instruments in the country (at both national and subnational levels);</li> </ul>

	<ul style="list-style-type: none"> <li>• an evaluation framework that reviews different methods, criteria, metrics, and international experiences on the evaluation of ETSs; and</li> <li>• an analysis of the Mexican climate policy framework and its suitability to engage in international cooperation through Article 6 of the Paris Agreement.</li> </ul>										
Overall GHG emissions (excluding LULUCF)	<b>Emissions:</b> 733.8 MtCO <sub>2</sub> e (2017)										
Overall GHG emissions by sector (in MtCO <sub>2</sub> )	<table border="1"> <thead> <tr> <th>Sector Name</th> <th>MtCO<sub>2</sub>e</th> </tr> </thead> <tbody> <tr> <td>Energy (522.4)</td> <td>522.4</td> </tr> <tr> <td>Industrial Processes (58)</td> <td>58.0</td> </tr> <tr> <td>Agriculture, Forestry and Other Land Use (106.7)</td> <td>106.7</td> </tr> <tr> <td>Waste (46.7)</td> <td>46.7</td> </tr> </tbody> </table>	Sector Name	MtCO <sub>2</sub> e	Energy (522.4)	522.4	Industrial Processes (58)	58.0	Agriculture, Forestry and Other Land Use (106.7)	106.7	Waste (46.7)	46.7
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Agriculture, Forestry and Other Land Use (106.7)	106.7										
Waste (46.7)	46.7										
GHG reduction target	<p><b>BY 2030:</b> 22% below BAU GHG emissions baseline (NDC, included in the ‘General Law of Climate Change’)</p> <p><b>BY 2050:</b> 50% below 2000 GHG levels (aspirational, included in the ‘General Law of Climate Change’)</p>										
Carbon Price	<i>Current Allowance Price (per t/CO<sub>2</sub>e):</i> No information available yet.										

## ETS Size

Covered emissions	0.40
GHGs covered	CO <sub>2</sub>
Sectors and thresholds	<p>The Pilot ETS covers the energy and industrial sectors. The energy sector encompasses electricity generation, transmission, and distribution, as well as fossil fuel extraction, production, transport, and distribution.</p> <p>The industry sector includes automobiles, cement, lime, chemical industry, food and beverages, glass, iron and steel, metallurgical, mining, petrochemicals, and pulp and paper, as well as other industrial subsectors generating direct CO<sub>2</sub> emissions from stationary sources at or above the threshold.</p> <p>The Pilot ETS covers installations whose annual direct emissions from stationary sources amount to at least 100,000 tCO<sub>2</sub>.</p>
Point of regulation	Downstream
Number of entities	<p>~300.</p> <p>The broader mandatory National Emissions Register (RENE) requires mandatory reporting of direct and indirect GHG emissions for facilities with annual emissions at or above 25,000 tCO<sub>2</sub>e (see ‘MRV’ section).</p>
Cap	<p><b>PILOT (2020-2021):</b>  <b>Year 2020:</b> 271.3 MtCO<sub>2</sub>  <b>Year 2021:</b> 273.1 MtCO<sub>2</sub> *</p> <p>Three reserves will be filled each year with allowances additional to the cap:</p> <ul style="list-style-type: none"> <li>• auctions reserve (equivalent to 5% of the cap);</li> <li>• new entrants reserve (equivalent to 10% of the cap, for new entrants as well as increases in production among existing regulated entities); and</li> <li>• general reserve (equivalent to 5% of the cap, for ex-post adjustment allocation for entities with higher emissions relative to their baselines).</li> </ul> <p>The reserves serve as safeguards to avoid economic impacts on regulated entities during the Pilot phase, as required by the ‘2018 General Law on Climate Change.’</p>



\* The increase in the cap between 2020 and 2021 is due to an increase in the sectoral allocation for regulated entities categorized as “others.”

## Phases & Allocation

Trading periods	<p>Pilot phase (2020-2021); and transition phase (2022) to the operational period of the ETS, which is scheduled to start in 2023.</p> <p>The schedule of implementation as contained in Annex I to the ETS Pilot regulation (Acuerdo por el que se establecen las bases preliminares del Programa de Prueba del Sistema de Comercio de Emisiones) contains compliance and allocation dates for the compliance cycle of 2020 and 2021. Emissions for 2022 will be covered by the operational period of the ETS.</p> <p>SEMARNAT is expected to publish the regulation of the operational period of the ETS in 2022.</p>
Allocation	<p>The Pilot will use free allocation with the following specifications.</p> <p><b>INITIAL ALLOCATION:</b> Entities will receive free allowances based on the most recent verified emissions. New entrants will receive free allowances based on their verified emissions in the year in which they first crossed the 100,000 tCO<sub>2</sub> threshold.</p> <p><b>EX-POST ADJUSTMENT:</b> An adjustment allocation will be carried out from the general reserve for those participants whose verified emissions in that year are higher than the free allocation received. Also, as per the ‘Notice on the rules and criteria for allowance allocation,’ participants may request additional allowances when an expansion in their production results in additional direct CO<sub>2</sub> emissions from stationary sources. As per the same Notice, in the event that demand for additional allowances exceeds reserves, SEMARNAT will make a distribution of additional allowances proportional to the requested amounts.</p> <p><b>PLANT CLOSURES:</b> When an installation closes permanently, the installation may have to surrender the allowances that it has for the compliance period of the year before its closure. As well, it may need to return the free allowances received for the compliance period in which it closes. Whether the installation has to only surrender allowances, only return allowances, or both, depends on the date of the year in which it closes. These allowances are then cancelled by SEMARNAT.</p> <p><b>AUCTIONS:</b> Starting from the second year of the Pilot and depending on market behavior, SEMARNAT may auction allowances from the auction reserve.</p>

## Flexibility

Banking and borrowing	<p>If participants are in compliance with their surrender obligations, then their remaining allowances may be banked for use in subsequent compliance periods within the Pilot. Allowances issued in the Pilot will be valid only for the Pilot, although SEMARNAT is tasked to also assess the viability of allowing a share of Pilot allowances to be banked into the national ETS.</p> <p>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.</p>
Offsets and credits	<p><b>QUALITATIVE LIMITS:</b> Two types of flexibility instruments are foreseen, both of which will generate “offset credits” eligible for use under the Pilot: offsets and early action.</p> <p><b>Offsets:</b> SEMARNAT will establish a domestic program for the generation of credits that can be surrendered for compliance in the national ETS. Eligible mitigation projects or activities are domestic projects that have been validated and verified under internationally</p>

	<p>or domestically recognized protocols (as yet unspecified). Emission reductions related to all GHGs will be eligible, except for those related to direct CO<sub>2</sub> emissions.</p> <p><b>Early action:</b> For those projects or mitigation activities operating under recognized protocols that receive offsets before the Pilot comes into force, SEMARNAT may issue offset credits if a certificate of cancellation is presented. These projects will be allowed to continue generating offsets during the Pilot.</p> <p><b>QUANTITATIVE LIMITS:</b> Participants will be able to meet up to 10% of their compliance obligations with offset or early action credits.</p> <p>SEMARNAT is currently working on the regulations to operationalize the offset and early action provisions in the Pilot ETS.</p>
Market Stability Provisions	No information available yet.

## Compliance

Compliance Period	From 1 January to 31 December. Regulated entities have until 1 November of the subsequent year to surrender allowances of a compliance period.
Monitoring, Reporting, Verification (MRV)	<p><b>REPORTING FREQUENCY:</b> Annual self-reporting based on electronic templates prepared by SEMARNAT.</p> <p><b>VERIFICATION:</b> Verification by independent accredited verifiers is required by 30 June each year.</p> <p><b>FRAMEWORK:</b> A monitoring plan is required from all regulated entities, but noncompliance has no effects on free allocation or ex-post adjustments. Verified annual CO<sub>2</sub> 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.</p> <p>Under RENE, emitters with annual emissions at or above 25,000 tCO<sub>2</sub>e in the energy, industrial, transport, agricultural, waste, commercial, and services sectors are required to report the six GHGs identified by UNFCCC, as well as black carbon, chlorofluorocarbons (CFCs), hydrochlorofluorocarbons (HCFCs), halogenated ethers, halocarbons, and their mixes.</p>
Enforcement	The system is designed to pose no economic impact on regulated entities; however, in case of noncompliance, entities lose the opportunity to bank unused allowances for the next compliance periods within the Pilot. Moreover, noncompliant entities will receive fewer allowances during the operational period of the national ETS (two fewer allowances for each nondelivered allowance during the Pilot).

## Linking

Links with other systems	The 'General Law on Climate Change' foresees possible linkages between the Mexican ETS and ETSs in other countries. 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 ETS. 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 among countries in the region.
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## Other Information

Institutions involved	SEMARNAT;
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	National Institute for Ecology and Climate Change (INECC)
Evaluation / ETS review	<p>Article 10 of the Agreement on the establishment of the preliminary basis of the Pilot Program provides that SEMARNAT will annually review the Pilot, publishing reports on topics such as price behavior and emissions reductions achieved. As well, an evaluation of the Pilot, supported by the INECC and by the Consultative Committee, will be conducted to determine if adjustments to the ETS design are necessary before the start of the operational period of the program. This evaluation process may involve consultations with civil society and academia.</p> <p>A preliminary study on different methods, criteria, metrics, and international experiences on the evaluation of ETSs is being developed, as an input for the evaluation process of the Pilot.</p> <p>Regulations for the operational period of the Mexican ETS are to be published in 2022.</p>
Revenue	No information available yet.
Implementing Legislation	<p><a href="#">General Law of Climate Change</a>  <a href="#">Agreement on the establishment of the preliminary basis of the Pilot Program of the Emissions Trading System (implementing regulation of the pilot)</a>  <a href="#">Regulation of the General Law on Climate Change on the National Emissions Register</a>  <a href="#">Notice on the cap for the years 2020 and 2021</a>  <a href="#">Notice on the reserve and sectoral allocation of allowances for the years 2020 and 2021</a>  <a href="#">Notice on the rules and criteria for allowance allocation</a></p>

## New Zealand Emissions Trading Scheme

### General Information

<p>Summary</p>	<p><b>Status:</b> ETS in force</p> <p><b>Jurisdictions:</b> New Zealand</p> <p>The NZ ETS was launched in 2008 and is a central policy for climate change mitigation in New Zealand. It has broad sectoral coverage, including forestry having emissions surrender obligations and the opportunity to earn units for emissions removals. Currently, biological emissions from agriculture have reporting obligations without surrender obligations. 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.</p> <p>After an extensive process of review and public consultation, the government has recently enacted sweeping legislative reforms of the NZ ETS to improve its design and operation, and enable it to better support New Zealand’s international and domestic emissions reduction obligations.</p> <p>The NZ ETS originally operated as a nested system under the Kyoto Protocol, with full links to international carbon markets. Since 2015, however, it has been a domestic-only system. Accessing high-integrity international carbon markets could form part of New Zealand’s strategy for meeting its NDC.</p>
<p>Year in Review</p>	<p>In June 2020, the New Zealand government completed comprehensive legislative reforms with the passing of the ‘Climate Change Response (Emissions Trading Reform) Amendment Act 2020.’ This legislation strengthens the NZ ETS and aligns it with the goals of the Paris Agreement and the new 2050 net-zero targets established under the ‘Climate Change Response (Zero Carbon) Amendment Act 2019.’</p> <p>With the legislative framework in place, the government announced the regulatory settings for the 2021-2025 period, which establish a cap on emissions for the first time under the NZ ETS. The cap represents an annual limit on units to be supplied into the NZ ETS under the economy-wide five-yearly emissions budgets, set by the government with advice from the newly established Climate Change Commission.</p> <p>Auctioning has been introduced to the NZ ETS beginning in March 2021 and price control regulations provide for release of additional units through a cost containment reserve to manage unacceptably high prices; and an auction reserve price as a price floor. In a joint bid, the New Zealand Exchange (NZX) and the European Exchange (EEX) were together selected by the New Zealand government to develop and operate the NZ ETS auctioning service.</p> <p>The legislation specifies a schedule to phase down free allocation for the industrial sector at a rate of 1% per year between 2021 and 2030, increasing to 2% in 2031-2040, and 3% in 2041-2050. A further review of the free allocation methodology will take place over 2021.</p> <p>The forestry sector is also undergoing a raft of reforms due to come into force in 2023, including simplified accounting measures for new entrants (e.g., a transition from “stock-change” to “averaging” accounting methodology).</p> <p>Under the new legislation, agricultural GHG emissions will be subject to a carbon price from 2025 onwards. Agricultural emissions, particularly from livestock, are to be covered preferably at the farm level by a levy/rebate system—a separate, alternative pricing mechanism to the NZ ETS. A partnership between the government and the agricultural sector, called “He Waka Eke Noa,” has been established to prepare for this pricing mechanism, including the development of on-farm accounting and reporting systems for GHG sources and sinks. However, if this partnership has not made enough progress by 2022 for implementation in 2025, agricultural emissions will be brought directly into the NZ ETS</p>

	from 2022, with livestock emissions priced at the processor level (e.g., milk processors and abattoirs). GHG emissions from fertilizer would then likely be covered upstream under the NZ ETS at the importer/manufacturer level.										
Overall GHG emissions (excluding LULUCF)	<b>Emissions:</b> 78.9 MtCO <sub>2</sub> e (2018)										
Overall GHG emissions by sector (in MtCO <sub>2</sub> )	<table border="1"> <thead> <tr> <th>Sector Name</th> <th>MtCO<sub>2</sub>e</th> </tr> </thead> <tbody> <tr> <td>Agriculture (37.7)</td> <td>37.7</td> </tr> <tr> <td>Energy (31.9)</td> <td>31.9</td> </tr> <tr> <td>Industrial Processes and Product Use (5.2)</td> <td>5.2</td> </tr> <tr> <td>Waste (4.1)</td> <td>4.1</td> </tr> </tbody> </table>	Sector Name	MtCO <sub>2</sub> e	Agriculture (37.7)	37.7	Energy (31.9)	31.9	Industrial Processes and Product Use (5.2)	5.2	Waste (4.1)	4.1
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GHG reduction target	<p><b>BY 2030:</b> Reduce emissions 30% below 2005 levels (NDC)</p> <p><b>BY 2050:</b> Reduce net emissions of all greenhouse gases (except biogenic methane) to zero. Reduce biogenic methane emissions 10% below 2017 levels by 2030, and 24-47% by 2050 (Climate Change Response (Zero Carbon) Amendment Act 2019)</p>										
Carbon Price	<i>Current Allowance Price (per t/CO<sub>2</sub>e):</i> NZD 30.83 (USD 19.99) (average secondary market price in 2020; updated prices available <a href="#">here</a> )										

## ETS Size

Covered emissions	0.51
GHGs covered	CO <sub>2</sub> , CH <sub>4</sub> , N <sub>2</sub> O, SF <sub>6</sub> , HFCs, and PFCs
Sectors and thresholds	<p>Sectors were gradually phased in between 2008 and 2013. Thresholds for participation are typically low.</p> <ul style="list-style-type: none"> <li>• Forestry (mandatory: deforesting pre-1990 forest land; voluntary: post-1989 forest land)</li> <li>• Stationary energy (various thresholds)</li> <li>• Industrial processing (various thresholds)</li> <li>• Liquid fossil fuels (various thresholds)</li> <li>• Waste (except for small and remote landfills)</li> <li>• Synthetic GHGs (various thresholds); synthetic GHGs not in the NZ ETS are subject to an equivalent levy</li> </ul> <p>Biological emissions from agriculture must be reported at the processor level but face no surrender obligations. By 2025, a carbon price will be levied on agricultural emissions either through the NZ ETS or a separate levy/rebate scheme.</p>
Point of regulation	The point of obligation is generally placed 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.
Number of entities	<p>2,398 entities registered, of which 2,321 have surrender obligations:</p> <ul style="list-style-type: none"> <li>• 218 entities with mandatory reporting and surrender obligations.</li> <li>• 2,103 entities with voluntary reporting and surrender obligations, most of which are for post-1989 forestry activities.</li> <li>• 77 entities with mandatory reporting without surrender obligations, all of which are for agricultural processing activities.</li> </ul>
Cap	<p>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 New Zealand Units (NZUs) in 2015. Potential future access to international units will be subject to quantitative limits.</p> <p>The 'Climate Change Response (Emissions Trading Reform) Amendment Act' requires the government to set a cap on emissions covered by the NZ ETS, based on the five-yearly emissions budgets mandated by the 'Zero Carbon Act' and announced over a rolling five-</p>

year period with annual updates. The Climate Change Commission will advise on further emissions budgets in 2021.

In the interim, the government has chosen a provisional emissions budget and associated cap for the period 2021-2025. The cap will limit the number of allowances that can be released to the market from auctioning, industrial allocation, and the new Cost Containment Reserve (CCR), as well as from any international units (not currently foreseen).

There will be no limit on NZUs generated from removal activities.

## Phases & Allocation

Trading periods	The NZ ETS has no fixed trading periods or phases.
Allocation	<p><b>FREE ALLOCATION:</b></p> <p><b>Leakage protection/Industrial free allocation:</b> Free allocation is provided, based on output and intensity-based benchmarks for 26 eligible industrial activities. Activities are deemed eligible if both emissions-intensive and trade-exposed (EITE) criteria are met. Highly emissions-intensive activities (over 1,600 tCO<sub>2</sub>e per NZD 1 million of revenue [1,600 tCO<sub>2</sub>e per USD 648 thousand of revenue]) receive 90% free allocation. Moderately emissions-intensive activities (over 800 tCO<sub>2</sub>e per NZD 1 million of revenue [USD 648 thousand]) receive 60% free allocation. Trade exposure is deemed if there is transoceanic trade in the good produced.</p> <p>8.4 million NZUs were allocated for industrial EITE activities in the 2019/2020 financial year (1 July 2019 to 30 June 2020).</p> <p>As a part of the 'Climate Change Response (Emissions Trading Reform) Amendment Act,' the government plans to phase down industrial free allocation from 2021. A minimum annual phase-down rate of 1% across all industrial activities will apply from 2021-2030. That rate will increase to 2% for the years 2031-2040, and to 3% for 2041-2050. The minimum phase-down rate will be complemented by further phase-down rates for activities that are considered at lower risk of carbon leakage.</p> <p><b>Forestry and Fisheries Sectors (one-off):</b> Owners of pre-1990 forest land, as well as owners of fishing quotas, received a one-off free allocation of NZUs when the NZ ETS was implemented to partially compensate for the impact of the ETS.</p> <p><b>AUCTIONING:</b></p> <p>Auctioning was introduced in 2021, with the first auction taking place on 17 March.</p> <p><b>ALLOWANCES GRANTED FOR REMOVALS</b></p> <p><b>Post-1989 Forestry Sector and Other Removal Activities:</b> NZUs are granted to participants that voluntarily register in the scheme for removal activities, as outlined under "Forestry Removal Activities" below.</p> <p><b>Forestry Removal Activities:</b> Participants are entitled to receive one NZU per tCO<sub>2</sub> removed for registered post-1989 forest land. If the forest is harvested or deforested, units must be surrendered to account for the emissions, and if the participant chooses to deregister from the scheme, NZUs equivalent to the number received must be returned. 9.1 million NZUs were issued for forest removal activities for the 2019/2020 financial year.</p> <p><b>Other Removal Activities:</b> Participants are entitled to receive one NZU per tonne of removal from the destruction or export of products that embed carbon as well as for the export of HFCs and PFCs. 3.1 million NZUs were issued for other removal activities for the 2019/2020 financial year.</p>

## Flexibility

Banking and borrowing

Banking is allowed except for those units that were purchased under the fixed price option (see "Market Stability Provisions" section).

	Borrowing is not allowed.
Offsets and credits	Units from Kyoto Protocol flexible mechanisms were eligible for use in the system with no restrictions until 2015. As of 1 June 2015, international units are not eligible for surrender in the NZ ETS. Access to high-integrity international carbon markets is likely to form part of New Zealand’s strategy for meeting 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 would be subject to quantitative limits.
Market Stability Provisions	<p>A Fixed Price Option of NZD 25 (USD 16.21), which acts as a form of price ceiling, was introduced in 2009 and raised to NZD 35 (USD 22.70) for emissions produced in 2020. It will be replaced with a CCR once the transition to auctioning has occurred.</p> <p><b>New Market Stability Measures:</b> The ‘Climate Change Response (Emissions Trading Reform) Amendment Act’ enables new measures to be implemented via the auctioning mechanism. These include a CCR and an auction reserve price, outlined below.</p> <p><b>COST CONTAINMENT RESERVE:</b> The CCR is implemented via auctioning. A specified number of allowances from the CCR will be released for auction if a predetermined trigger price is reached, currently set at NZD 50 (USD 32.42) in 2021 and rising by 2% per year in line with projected inflation.</p> <p>The volume of the reserve, in the years 2021-2025, will be composed of two sources: 1) units under the ETS cap which are to be withheld from auctioning in order to reduce the stockpile of units in circulation (~5.5 million per year); and 2) an additional volume equal to 5% of the total volume of the NZ ETS (~1.6 million per year), which will come from outside the cap and therefore must be “backed” by equivalent removals procured by the government, e.g., from international markets or through government funding of other domestic mitigation activities.</p> <p><b>PRICE FLOOR:</b> Via auctioning, the government will introduce a price floor of NZD 20 (USD 13.00) for the period 2020-2025. The price floor will operate through a reserve price below which NZUs will not be sold at auction. The minimum accepted bid at auction will rise by 2% for each subsequent year. In addition to the hard auction reserve price floor, the government plans to introduce a technical reserve price (TRP). The TRP will be set by referencing prices from the secondary market and will use a confidential methodology to determine a reserve price below which units cannot be sold. If the TRP is set higher than the hard auction reserve price, then it becomes the new reserve price floor for that auction.</p> <p>Any unsold units can be carried over to the following auction within the calendar year, but will be cancelled if it is the final auction of the year.</p>

## Compliance

Compliance Period	<p>One year</p> <p>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.</p>
Monitoring, Reporting, Verification (MRV)	<p><b>REPORTING FREQUENCY:</b> Most sectors are required to report annually; deadline of 31 March to submit an Annual Emissions Return (emissions report).</p> <p><b>VERIFICATION:</b> Self-reporting supplemented by a program of official audits. Participants must seek third-party verification if they apply for the use of a unique emissions factor.</p>
Enforcement	<p>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 15,564) 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 emissions return when required, or notify the administering agency or provide information when</p>

required to do so. Entities can also be fined up to NZD 50,000 (USD 32,424) 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 apply to entities that deliberately lie about obligations under the NZ ETS to gain financial benefit or avoid financial loss.

## Linking

Links with other systems	<p>Until 1 June 2015, the NZ ETS was indirectly linked to other systems (e.g., the EU ETS) via the international Kyoto Protocol flexible mechanisms. Since then, the NZ ETS has been a domestic-only system.</p> <p>The recent reforms make the NZ ETS more similar to ETSs in other countries, making it more compatible for international linking in the future.</p>
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## Other Information

Institutions involved	<p>Ministry for the Environment Environmental Protection Authority Ministry for Primary Industries</p>
Evaluation / ETS review	<p>The 'Climate Change Response Act 2002' includes provisions for statutory independent 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 statutory review took place in 2011-2012, and the second review took place in 2015-2017.</p> <p>Public consultation on proposed amendments to the 'Climate Change Response Act' was undertaken in 2018 following the second review.</p>
Revenue	<p>NZD 215 million (USD 139 million)*</p> <p>*Money paid to meet surrender obligations under the "fixed price option" – 8.6 million fixed price option units were used at NZD 25 (USD 16.21) each</p> <p>Currently, NZ ETS revenues are assigned to the general budget. There is no earmarking for specific purposes.</p>
Implementing Legislation	<p>'<a href="#">Climate Change Response Act 2002</a>—Part 4 New Zealand greenhouse gas emissions trading scheme'</p> <p>Note: in order to keep New Zealand's key climate change legislation under one act, the 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.</p>



## Swiss ETS

### General Information

Summary	<p><b>Status:</b> ETS in force</p> <p><b>Jurisdictions:</b> Switzerland</p> <p>The Switzerland (Swiss) ETS started in 2008 with a five-year voluntary phase as an alternative option to the CO<sub>2</sub> levy on fossil fuels. Revised regulations entered into force in January 2013. The system subsequently became mandatory for large, energy-intensive entities, while medium-sized entities may join voluntarily. The Swiss ETS linked with the EU ETS in January 2020 and expanded sector coverage to Swiss domestic aviation (including flights to the European Economic Area) and fossil-thermal power plants. The ETS furthermore applies to industrial entities, largely comprising companies from the cement, chemicals, pharmaceuticals, paper, refinery, and steel sectors. It covered about 10% of the country's total GHG emissions in 2019. Participants in the ETS are exempt from the CO<sub>2</sub> levy.</p>												
Year in Review	<p>In January 2020, the Swiss ETS officially linked with the EU ETS, thereby sealing a ten-year process of negotiations and regulatory alignment. A provisional registry link became operational in September 2020, allowing for transfers between both registries and enabling covered entities to use European Union Allowances (EUAs) for compliance. Under the provisional link, transfers between the EU and Swiss registries were executed on eight pre-announced dates in 2020. Considered the first phase of the agreement's implementation, the provisional link is set to be replaced with a permanent registry link that will enable transfers of emission allowances between both ETS registries on a continuous basis.</p> <p>2020 also marked the final year of the system's second trading period (2013-2020). The revised 'Ordinance on the Reduction of CO<sub>2</sub> Emissions (CO<sub>2</sub> Ordinance),' the implementing legislation of Switzerland's key climate instruments, was adopted in November 2020 to update provisions in line with Phase 4 of the EU ETS. Notable changes to the system include: a revised linear reduction factor from 1.74% to 2.2%; the implementation of updated EU ETS benchmarks by 2022 at the latest; and an indefinite extension of the system. The new legal base for the Swiss ETS has been embedded in the partially revised 'CO<sub>2</sub> Act'—the core framework of Switzerland's climate legislation—that entered into force in January 2021.</p> <p>Alongside new revisions to the ETS, the Swiss Parliament adopted in September 2020 the legal framework for Swiss Climate Policy 2030, which sets out a 50% emissions reduction target and has reinforced measures for the transport, buildings, and industry sectors. The updates will be enshrined in a fully revised 'CO<sub>2</sub> Act' that is planned to enter into force by 2022, subject to a referendum in Q3 2021.</p>												
Overall GHG emissions (excluding LULUCF)	<p><b>Emissions:</b> 46.4 MtCO<sub>2</sub>e (2018)</p>												
Overall GHG emissions by sector (in MtCO <sub>2</sub> )	<table border="1"> <thead> <tr> <th>Sector Name</th> <th>MtCO<sub>2</sub>e</th> </tr> </thead> <tbody> <tr> <td>Energy (excl. transport) (20.3)</td> <td>20.3</td> </tr> <tr> <td>Transport (14.9)</td> <td>14.9</td> </tr> <tr> <td>Industrial processes (4.4)</td> <td>4.4</td> </tr> <tr> <td>Agriculture (6)</td> <td>6.0</td> </tr> <tr> <td>Others (incl. waste and other) (0.7)</td> <td>0.7</td> </tr> </tbody> </table>	Sector Name	MtCO <sub>2</sub> e	Energy (excl. transport) (20.3)	20.3	Transport (14.9)	14.9	Industrial processes (4.4)	4.4	Agriculture (6)	6.0	Others (incl. waste and other) (0.7)	0.7
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GHG reduction target	<p><b>BY 2020:</b> At least 20% reduction from 1990 GHG levels (unconditional, domestic target)  <b>By 2025:</b> 35% reduction from 1990 GHG levels (NDC)  <b>BY 2030:</b> 50% reduction from 1990 GHG levels (NDC)  <b>BY 2050:</b> Net-zero GHG emissions (aspirational)</p>												

Carbon Price	<p><i>Current Allowance Price (per t/CO<sub>2</sub>e):</i> EUR 24.9/tCO<sub>2</sub>e (USD 28.45)* (average auction price in 2020; updated prices available <a href="#">here</a>)</p> <p>* Since linking with the EU ETS in 2020, Switzerland reports allowance prices and auction revenues in euros.</p>
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## ETS Size

Covered emissions	0.10
GHGs covered	CO <sub>2</sub> , N <sub>2</sub> O, CH <sub>4</sub> , HFCs, NF <sub>3</sub> , SF <sub>6</sub> , and theoretically PFCs. (In principle, all these gases are covered in accordance with the 'CO <sub>2</sub> Ordinance.' In practice, only CO <sub>2</sub> , N <sub>2</sub> O, and PFCs require monitoring, as the share of the other gases is negligible.)
Sectors and thresholds	<p><b>MANDATORY PARTICIPATION:</b> Industries listed under Annex 6 of the 'CO<sub>2</sub> Ordinance' must participate in the Swiss ETS. These include 25 categories, including companies from the cement, chemicals and pharmaceuticals, refineries, paper, district heating, steel, and other sectors. Since 2020, the ETS covers aviation (domestic and outbound flights to the EEA) and fossil-thermal power plants.</p> <p><b>INCLUSION THRESHOLDS:</b> Facilities pertaining to the sectors included in Annex 6 of the 'CO<sub>2</sub> Ordinance' that have a total rated thermal input of &gt;20MW. For aircraft operators, the same thresholds apply as in the EU ETS (see "Aviation" section).</p> <p><b>POSSIBLE VOLUNTARY OPT-IN:</b> Industries—listed under Annex 7 of the 'CO<sub>2</sub> Ordinance' (21 activities)—with a total rated thermal input of ≥10MW. A company that fulfils the participation conditions must submit the application no later than six months from the date of fulfilment.</p> <p><b>POSSIBLE OPT-OUT:</b> Industries with a total rated thermal input of &gt;20MW, but yearly emissions of &lt;25,000 tCO<sub>2</sub>e/year 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 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<sub>2</sub>e/year.</p> <p><b>AVIATION:</b> Commercial aircraft operators emitting more than 10,000 tCO<sub>2</sub>/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 t/CO<sub>2</sub> per year. The thresholds do not apply if the operator has obligations under the EU ETS.</p>
Point of regulation	Downstream
Number of entities	51 stationary installations, 6 aircraft operators (2020)
Cap	<p><b>VOLUNTARY PHASE (2008-2012):</b> Each participant received its own entity-specific reduction target.</p> <p><b>SECOND TRADING PERIOD (2013-2020):</b> Overall cap of 5.63 MtCO<sub>2</sub>e (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<sub>2</sub>e in 2020.</p> <p><b>Aviation Sector Cap:</b> 1.3 MtCO<sub>2</sub> (2020)</p> <p><b>THIRD TRADING PERIOD 2021-2030:</b> An annual linear reduction factor of 2.2% (2010 base year) applies to the cap for stationary installations (4.9 MtCO<sub>2</sub> in 2020). The cap for airline operators is reduced annually by 2.2% with 2020 as the base year (1.3MtCO<sub>2</sub> in 2020).</p>

## Phases & Allocation

Trading periods	<p><b>VOLUNTARY PHASE:</b> 2008-2012  <b>SECOND TRADING PERIOD:</b> 2013-2020  <b>THIRD TRADING PERIOD:</b> 2021-2030</p>
Allocation	<p><b>VOLUNTARY PHASE (2008-2012):</b>  <b>Free Allocation:</b> Each participant was granted free allocation of allowances covering emissions up to their own entity-specific emissions target.</p> <p><b>SECOND TRADING PERIOD (2013-2020):</b>  <b>Free Allocation:</b> Free allocation was based on industry benchmarks using a similar methodology to the EU ETS. Free allocation for sectors not exposed to the risk of carbon leakage was phased out gradually. In 2013, such entities received 80% free allocation, reduced to 30% in 2020.</p> <p>An overarching correction factor was applied, given that the benchmarked allocation exceeded the overall emissions cap.</p> <p>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).</p> <p><b>Auctioning:</b> Allowances that were not allocated for free were auctioned. Auctions took place two or three times a year, depending on available auction volumes. As of January 2020, auctions were opened 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 has the authority to cancel the auction results 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.</p> <p>5% of the allowances were set aside in a reserve for new entrants and fast-growing operators.</p> <p><b>Aviation Sector:</b> In line with EU ETS regulations, starting in 2020, 15% of aviation sector allowances were auctioned. 3% were placed in the reserve dedicated to new and fast-growing operators. The remaining 82% was allocated according to sector-specific benchmarks in line with the EU ETS.</p> <p><b>THIRD TRADING PERIOD (2021-2030):</b>  <b>Free Allocation:</b> Updated EU ETS benchmarks will apply starting in 2022 at the latest. Free allocation levels may be updated annually if production levels deviate at least 15 percentage points from the 2014-2018 base years.</p> <p><b>Auctioning:</b> The same provisions apply as in the second trading period.</p>

## Flexibility

Banking and borrowing	<p>Banking within and across phases is allowed without limits. Banked allowances from the EU ETS Phase 3 can equally be used for compliance in the 2021-2030 trading phase.</p> <p>Valid certificates (CERs, ERUs) from the 2008-2012 phase could be banked into the second trading period and surrendered until April 2015. Certificates from the 2008-2012 phase that were not requested to be carried over within the deadline have been canceled.</p> <p>Borrowing is not allowed. Implicit borrowing is allowed within trading periods, i.e., using allocated allowances from the current trading year for surrender obligations of the prior year.</p>
Offsets and credits	<p><b>QUALITATIVE LIMIT:</b> International offsets were allowed up to 2020, subject to certain criteria. Most categories of credits from CDM projects in least-developed countries were</p>

	<p>allowed. Credits from CDM and JI projects from other countries were eligible only if registered and implemented before 31 December 2012. Since 2021, offsets can no longer be used to meet compliance obligations.</p> <p><b>QUANTITATIVE LIMIT:</b> During 2013-2020, the maximum amount of offsets allowed into the scheme equaled 11% of five times the average emissions allowances allocated in the voluntary phase (2008-2012) minus offset credits used in that same time period.</p> <p>Industries that entered the Swiss ETS in the second trading period (2013-2020) could surrender offsets to cover up to 4.5% of their emissions. For aircraft operators, the quantitative limit was set at 1.5% of verified CO<sub>2</sub> emissions.</p>
Market Stability Provisions	<p>As of January 2020, the Swiss legislation foresees the possibility of reducing auction volumes where there is a significant increase of allowances on the market for economic reasons. In this case, unauctioned allowances will lose their validity. The Swiss ETS is not subject to the EU ETS Market Stability Reserve.</p>

## Compliance

Compliance Period	<p>One year (1 January to 31 December). Covered entities have until 30 April of the following year to surrender allowances.</p>
Monitoring, Reporting, Verification (MRV)	<p>Monitoring plans are required for every installation and for every aircraft operator (approved by a competent authority) no later than three months after the registration deadline.</p> <p><b>REPORTING FREQUENCY:</b> Annual monitoring report, based on self-reported information (by 31 March).</p> <p><b>VERIFICATION:</b> The Federal Office for the Environment may order third-party verification of the monitoring reports from installations and can take random samples to ensure consistency.</p> <p>Aircraft operators must have their monitoring reports verified by an accredited third-party verifier.</p>
Enforcement	<p>The penalty for failing to surrender sufficient allowances is set at CHF 125/tCO<sub>2</sub> (USD 133.14/tCO<sub>2</sub>). In addition to the fine, entities must surrender the missing allowances in the following year.</p>

## Linking

Links with other systems	<p>Switzerland concluded negotiations with the EU on linking the Swiss ETS to the EU ETS in 2015 and signed the concluded agreement in 2017. Following legislative approval and ratification in 2019, the link entered into force on 1 January 2020. Prior to that, revisions were made to align with the EU ETS legislative framework.</p> <p>In March 2019, the Swiss Parliament approved legal changes to the 'CO<sub>2</sub> Act,' the core framework of Swiss climate legislation. In November 2019, the Federal Council made the necessary amendments to the 'CO<sub>2</sub> Ordinance' which specifies regulations and implementation; these amendments expanded ETS coverage to civil aviation and fossil-thermal power plants. Under the link, 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 at the Swiss Emissions Trading Register in order to participate.</p>
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## Other Information

Institutions involved	Federal Office for the Environment (FOEN)
Evaluation / ETS review	<p>The 'CO2 Act' (main ETS legislation) and 'CO2 Ordinance' (secondary ETS legislation) have been revised to align with the new 2030 climate policy framework and are to be implemented by 2022.</p> <p>Transitional revisions to both documents came into effect on 1 January 2021 in order to ensure continuity on Swiss climate policy and extend the ETS (for an unlimited period).</p> <p>Next steps towards the implementation of the new legislative framework by 2022 are:</p> <ul style="list-style-type: none"> <li>• Public consultation for the "full" revision of the 'CO2 Ordinance' in spring 2021;</li> <li>• A referendum in Q3 2021 on the "full" revision of the 'Federal Act on the Reduction of CO2 Emissions,' ('CO2 Act') (adopted by Parliament in 2020).</li> </ul>
Revenue	<p>Since beginning of programme: EUR 39.8 million (USD 45.3 million)*</p> <p>Collected in 2019: EUR 7.3 million (USD 8.3 million)*</p> <p>* Since linking with the EU ETS in 2020, Switzerland reports allowance prices and auction revenues in euros.</p> <p>Revenues from auctioning allowances are fed into the federal government budget.</p>
Implementing Legislation	<p><a href="#">Federal Act on the Reduction of CO2 Emissions (CO2 Act)</a>  <a href="#">Ordinance on the Reduction of CO2 Emissions (CO2 Ordinance)</a>  <a href="#">CO2 Ordinance – Explanatory report</a></p>

## United Kingdom

### General Information

<p>Summary</p>	<p><b>Status:</b> ETS in force</p> <p><b>Jurisdictions:</b> United Kingdom</p> <p>In December 2020, the United Kingdom (UK) government confirmed that a UK Emissions Trading Scheme (UK ETS) would be in place from January 2021. Many design elements of the new system mirror those in Phase 4 of the EU ETS, in which the UK had participated since 2005. The UK ETS covers energy-intensive industries, the power sector, and aviation within the UK and European Economic Area (EEA), together making up about one third of the UK's GHG emissions. The scheme's cap is 5% below the UK's notional share of the EU ETS cap (i.e., the EUAs that would have been available to the UK government for allocation) and will decline by 4.2 Mt per year initially. Provisions to ensure market stability include a Supply Adjustment Mechanism (SAM), a Cost Containment Mechanism (CCM), and – quite distinct from the EU ETS – a transitional Allowance Reserve Price of GBP 22 (USD 28.21). Moreover, in the first years, triggers for the UK ETS CCM will be lower than those of the equivalent EU ETS provisions, so as to allow for a smooth transition. To safeguard competitiveness and minimize the risk of carbon leakage, a share of allowances will be freely allocated to Emissions Intensive Trade Exposed (EITE) sectors using an approach similar to Phase 4 of the EU ETS. The UK government remains open to the possibility of linking the UK ETS to other systems, but no decision has been made on the preferred linking partners. The first trading phase of the UK ETS will run until 2030. The entire scheme is due to be reviewed in 2023 and 2028, with ongoing reforms and developments of specific elements in the meantime.</p>																		
<p>Year in Review</p>	<p>The UK formally exited the EU on 1 January 2020 and the transition period ended on 31 December 2020. The UK no longer participates in the EU ETS, but the covered entities in the country have to surrender allowances under the EU ETS by 30 April 2021 for their 2020 compliance obligations. On 1 January 2021, the UK ETS was launched to ensure the continued contribution of a carbon price to the UK's decarbonization efforts. These efforts, described in more detail in the country's recently announced NDC, include a GHG emission reduction goal of 68% below 1990 levels by 2030 as well as a legislated net-zero emissions target by 2050.</p> <p>In June 2020, the UK government completed a consultation process on "<a href="#">The Future of UK Carbon Pricing</a>" and published an accompanying impact assessment. In November 2020, draft legislation was introduced for the UK ETS; however, the <a href="#">official decision</a> to establish an ETS rather than a carbon tax was not taken until December 2020, after which the draft legislation was made into a statutory instrument.</p>																		
<p>Overall GHG emissions (excluding LULUCF)</p>	<p><b>Emissions:</b> 461.7 MtCO<sub>2e</sub> (2018)</p>																		
<p>Overall GHG emissions by sector (in MtCO<sub>2</sub>)</p>	<table border="1"> <thead> <tr> <th>Sector Name</th> <th>MtCO<sub>2e</sub></th> </tr> </thead> <tbody> <tr> <td>Transport (124.4)</td> <td>124.4</td> </tr> <tr> <td>Energy (104.9)</td> <td>104.9</td> </tr> <tr> <td>Business (79)</td> <td>79.0</td> </tr> <tr> <td>Residential (69.1)</td> <td>69.1</td> </tr> <tr> <td>Agriculture (45.4)</td> <td>45.4</td> </tr> <tr> <td>Waste (20.7)</td> <td>20.7</td> </tr> <tr> <td>Industrial Processes (10.2)</td> <td>10.2</td> </tr> <tr> <td>Public Sector Buildings (8)</td> <td>8.0</td> </tr> </tbody> </table>	Sector Name	MtCO <sub>2e</sub>	Transport (124.4)	124.4	Energy (104.9)	104.9	Business (79)	79.0	Residential (69.1)	69.1	Agriculture (45.4)	45.4	Waste (20.7)	20.7	Industrial Processes (10.2)	10.2	Public Sector Buildings (8)	8.0
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<p>GHG reduction target</p>	<p><b>By 2030:</b> 68% reduction from 1990 GHG levels (updated NDC)</p> <p><b>By 2050:</b> Net-zero GHG emissions (2019 amendment to the Climate Change Act 2008)</p>																		

Carbon Price	<i>Current Allowance Price (per t/CO<sub>2</sub>e):</i> No information available yet.
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## ETS Size

Covered emissions	0.31 (verified emissions of the regulated entities under the EU ETS are used as an approximation)
GHGs covered	CO <sub>2</sub> , N <sub>2</sub> O, PFCs
Sectors and thresholds	<p><b>POWER SECTOR &amp; INDUSTRY:</b> The ETS applies to a specified list of activities of installations in the power and industry sector. This includes activities involving combustion of fuels in installations with a total rated thermal input exceeding 20MW, 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 Isle of Ireland's Single Electricity Market.</p> <p>In addition to the power sector's participation in the UK ETS, the UK's Carbon Price Support (CPS) policy imposes a minimum carbon price of GBP 18/tCO<sub>2</sub> (USD 23.08) for power generators using fossil fuels. The CPS will continue to support the decarbonization of the power sector and will stay in place at least until unabated coal-fired power generation is phased out. The government has committed to end the use of unabated coal by 2024.</p> <p><b>Small Emitter and Hospital Opt-Out Scheme:</b> Hospitals and small emitters with emissions lower than 25,000 tCO<sub>2</sub>e 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.</p> <p><b>Ultra-Small Emitter Exemption:</b> For stationary installations emitting less than 2,500 tCO<sub>2</sub>e per year, an ultra-small emitter exemption is in place. These installations are exempt from participation in the ETS, except for a requirement to monitor emissions and notify the regulator if emissions exceed the threshold.</p> <p><b>AVIATION:</b> Emissions are included from flights within the UK and flights from the UK to and from Gibraltar or to a country within the EEA. Exemptions are made for aircraft operators with less than 243 flights per calendar year for three consecutive four-month periods or total annual emissions of less than 10,000 tonnes of CO<sub>2</sub>.</p>
Point of regulation	Downstream
Number of entities	~1,000 installations in the UK were subject to the EU ETS in Phase 3 and are now covered under the UK ETS.
Cap	<p><b>FIRST ALLOCATION PERIOD (2021-2025):</b> 736.0 MtCO<sub>2</sub>e, to be adjusted to reflect the hospital and small emitter opt-outs.</p> <p><b>SECOND ALLOCATION PERIOD (2026-2030):</b> 630.1 MtCO<sub>2</sub>e, to be adjusted to reflect the hospital and small emitter opt-outs.</p> <p>The cap was set at 5% below the UK's notional share of the EU ETS cap for Phase 4 of the EU ETS. The annual cap for 2021 is 155.7 MtCO<sub>2</sub>e and will decline by 4.2 MtCO<sub>2</sub>e each year, which is equivalent to a reduction of 2.7% in the first year. Allowances for the New Entrants Reserve (NER) are part of the overall cap.</p> <p>The government indicated that it will consult on the cap's trajectory within 9 months of the national Climate Change Committee's advice on a cost-effective pathway to net-zero emissions. This advice, published in December 2020, included a recommended level of emissions from covered sectors of 106 MtCO<sub>2</sub>e in 2023, decreasing to 61 MtCO<sub>2</sub>e in 2030.</p>

## Phases & Allocation

Trading periods	First trading period: 2021-2030
Allocation	<p><b>AUCTIONING:</b> Auctioning is the primary means of allowance allocation under the UK ETS. Auctions have a GBP 22 (USD 28.21) transitional Auction Reserve Price, which will be in place until a SAM (if implemented – see “Market Stability Provisions” section) becomes operational. Auctions clear even when not all allowances are sold. Unsold allowances are carried over to the next four auctions, up to 125% of those originally intended for sale at that auction. If all four subsequent auctions have reached the 125% limit, the remaining unsold allowances are transferred into a reserve in the Market Stability Mechanism Account.</p> <p><b>FREE ALLOCATION:</b> A limited number of allowances 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 to be used initially are those of the EU ETS during Phase 4. Historical activity levels are also based on data collected under the EU ETS. These parallels will likely result in comparable levels of free allocations for an installation in the UK ETS as it would have received had the UK participated in Phase 4 of the EU ETS.</p> <p>The maximum number of allowances allocated for free (industry cap) is initially set at the UK’s notional share of the EU ETS industry cap for Phase 4, which is ~58 million allowances for 2021 (~37% of the UK ETS cap) and will decline by 1.6 million allowances per year. A review of the free allocation rules is planned to be carried out in 2021.</p> <p><b>NER:</b> A reserve of free allowances is set aside for installations that become eligible for participation within the first trading period and for covered installations that significantly increase their activity level. In line with the EU ETS Phase 4 approach, free allowance amounts are adjusted when activity levels of an installation increase or decrease by more than 15%. The number of free allowances for new entrants is determined based on their activity in the first year of operation, industry benchmark, and CLEF.</p>

## Flexibility

Banking and borrowing	<p>Banking of allowances is permitted, and allowances remain valid indefinitely.</p> <p>Limited and implicit borrowing is allowed, i.e., using allowances allocated for free in the current year for compliance in the previous year. Covered entities are not allowed to use allowances left over from their participation in the EU ETS for compliance with the UK ETS.</p>
Offsets and credits	<p>The use of offsets for compliance is not permitted at this time, although the UK government has indicated it is open to reviewing this as the scheme evolves, especially in deciding on how to implement obligations under the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) alongside the ETS for aviation.</p>
Market Stability Provisions	<p><b>SUPPLY ADJUSTMENT MECHANISM (SAM):</b> A Supply Adjustment Mechanism based on the EU ETS Market Stability Reserve (MSR) may be implemented after the launch of the UK ETS. If the UK government decides to implement a SAM along these lines, it will hold a separate consultation on the design of the mechanism. Given that a SAM similar to the MSR would require a measure of the allowance surplus in the UK ETS (analogous to the Total Number of Allowances in Circulation in the EU ETS), a SAM cannot be operational until mid-2022 at the earliest. To reduce the risks at the early stages of the UK ETS and ensure minimum price continuity, the UK government has put in place a transitional Auction Reserve Price (see “Allocation” and “Transitional Auction Reserve Price (ARP)” sections).</p> <p><b>COST CONTAINMENT MECHANISM (CCM):</b></p>



The UK ETS has a Cost Containment Mechanism to avoid spikes in allowance prices by auctioning additional allowances. If the CCM is triggered, regulators can decide on whether and how to intervene. Additional allowances from within the cap can be introduced from three possible sources: the reserve in the Market Stability Mechanism Account; future auctions; or the auctioning of up to 25% of remaining allowances in the NER. The CCM is similar to the measures described in paragraph 29a of the EU ETS Directive.

**Triggers:** In the first two years of the UK ETS, the CCM has lower price and time triggers than the equivalent EU ETS provisions, to ensure its reactivity. In the first year, the CCM is triggered if, for three consecutive months, the ETS carbon price is two times the average allowance price in effect in the UK in the two preceding years. In the second year, the trigger is increased to two and a half times the carbon price for three months. The CCM will revert to the EU ETS price triggers in the third year. This means it would be triggered if, for six consecutive months, the allowance price is more than three times the average market price of allowances during the two preceding years.

**TRANSITIONAL AUCTION RESERVE PRICE (ARP):**

To ensure a minimum level of ambition in the transition from the EU ETS to the UK ETS, a transitional Auction Reserve Price of GBP 22 (USD 28.21) is in place. The transitional ARP will be kept under review and the government will consult on withdrawing it as the system matures or if a SAM becomes operational. An ARP would not be implemented in a UK ETS fully linked to the EU ETS, as price convergence would be expected between the two markets.

## Compliance

Compliance Period	One year (1 January to 31 December). Covered entities have until 30 April of the following year to surrender allowances. These provisions are the same as under the EU ETS.
Monitoring, Reporting, Verification (MRV)	<p>The UK ETS has adopted the EU ETS approach to MRV, with some changes.</p> <p><b>REPORTING FREQUENCY:</b> Annual self-reporting</p> <p><b>VERIFICATION:</b> Verification by independent accredited verifiers is required before 31 March each year.</p> <p><b>FRAMEWORK:</b> 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.</p>
Enforcement	Regulated entities must pay an excess emissions penalty for each tonne of CO <sub>2</sub> emitted without surrendering a permit. This penalty is equal to GBP 100/tCO <sub>2</sub> e (USD 128.21) initially, but is adjusted for inflation over time. The names of non-compliant operators are published.

## Linking

Links with other systems	No link with another system is currently in place. 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.”
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## Other Information

Institutions involved	UK Department for Business, Energy & Industrial Strategy HM Treasury
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	<p>UK Department for Transport Scottish Government Welsh Government Northern Ireland Executive Environment Agency UK Scottish Environment Protection Agency Natural Resources Body for Wales Northern Ireland Environment Agency Offshore Petroleum Regulator for Environment and Decommissioning</p>
<p>Evaluation / ETS review</p>	<p>The first trading period (2021-2030) includes two mandatory whole-system reviews. The first review must be carried out by the end of 2023 and the second by the end of 2028. A report will be published on the conclusions of each review round. Changes to the ETS design following the reviews should be implemented by 2026 and 2031, respectively.</p> <p>In addition to the whole-system reviews, the government will conduct targeted reviews of inter alia free allocation for stationary installations and aviation and changes required to align with CORSIA.</p>
<p>Revenue</p>	<p>No information available yet.</p> <p>The UK government is exploring the possibility of establishing a Fund for Industrial Decarbonisation, to which UK ETS auction revenues would contribute.</p>
<p>Implementing Legislation</p>	<p><a href="#">The Greenhouse Gas Emissions Trading Scheme Order 2020</a> <a href="#">The Climate Change Act 2008 (2050 Target Amendment) Order 2019</a></p>

## USA - California Cap-and-Trade Program

### General Information

Summary	<p><b>Status:</b> ETS in force</p> <p><b>Jurisdictions:</b> California</p> <p>California's Cap-and-Trade Program began operation in 2012, with the opening of its tracking system for allocation, auction distribution, and trading of compliance instruments. The first compliance obligations started in January 2013. California has been part of the Western Climate Initiative since 2007 and formally linked its system with Québec's in January 2014.</p> <p>The California program, which is implemented by the California Air Resources Board (CARB), covers sources responsible for approximately 80% of the state's GHG emissions. Key amendments to the system took effect in 2021, following the passage of legislation clarifying the role of the program after 2020 (Assembly Bill [AB] 398) and regulatory amendments adopted by CARB. Among the major changes to the system that started in 2021 are the addition of a price ceiling, the inclusion of two allowance price containment reserve tiers below the price ceiling, reductions in the use of offset credits (especially for credits generated from projects which do not provide direct environmental benefits in the state), and a steeper allowance cap decline to 2030.</p>																
Year in Review	<p>In January 2020, CARB approved the membership of the Compliance Offsets Protocol Task Force, which is required by AB 398 to advise CARB on approving new protocols for the purpose of increasing offset projects with direct environmental benefits in the state of California while prioritizing disadvantaged communities, Native American or tribal lands, and rural and agricultural regions. AB 398 defines direct environmental benefits in the state as offsets that reduce or avoid emissions in California or pollutants that adversely affect the state's waterways.</p> <p>In 2020, CARB released an application form that project sponsors may submit if they wish to seek a determination that these projects provide direct environmental benefits in the state. CARB also began making determinations about the direct environmental benefits of offsets. Starting in 2021, no more than half of the offset credits that an entity surrenders for compliance can come from projects that do not provide direct environmental benefits in the state (see "Offsets and Credits" section for more details).</p>																
Overall GHG emissions (excluding LULUCF)	<p><b>Emissions:</b> 425.3 MtCO<sub>2e</sub> (2018)</p>																
Overall GHG emissions by sector (in MtCO <sub>2</sub> )	<table border="1"> <thead> <tr> <th>Sector Name</th> <th>MtCO<sub>2e</sub></th> </tr> </thead> <tbody> <tr> <td>Electricity Generation (in state) (38.6)</td> <td>38.6</td> </tr> <tr> <td>Electricity Generation (imports) (24.6)</td> <td>24.6</td> </tr> <tr> <td>Transportation (173.8)</td> <td>173.8</td> </tr> <tr> <td>Industrial (101.3)</td> <td>101.3</td> </tr> <tr> <td>Commercial (23.9)</td> <td>23.9</td> </tr> <tr> <td>Residential (30.5)</td> <td>30.5</td> </tr> <tr> <td>Agriculture &amp; Forestry (32.6)</td> <td>32.6</td> </tr> </tbody> </table>	Sector Name	MtCO <sub>2e</sub>	Electricity Generation (in state) (38.6)	38.6	Electricity Generation (imports) (24.6)	24.6	Transportation (173.8)	173.8	Industrial (101.3)	101.3	Commercial (23.9)	23.9	Residential (30.5)	30.5	Agriculture & Forestry (32.6)	32.6
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GHG reduction target	<p><b>By 2020:</b> Return to 1990 GHG levels (AB 32)</p> <p><b>By 2030:</b> 40% reduction from 1990 GHG levels (AB 398)</p> <p><b>By 2045:</b> Achieve carbon neutrality (Executive Order B-55-18)</p>																
Carbon Price	<p><i>Current Allowance Price (per t/CO<sub>2e</sub>):</i> USD 17.04 (average auction settlement price in 2020; updated prices available <a href="#">here</a>)</p>																

## ETS Size

Covered emissions	0.75
GHGs covered	CO <sub>2</sub> , CH <sub>4</sub> , N <sub>2</sub> O, SF <sub>6</sub> , HFCs, PFCs, NF <sub>3</sub> , and other fluorinated GHGs.
Sectors and thresholds	<p><b>FIRST COMPLIANCE PERIOD (2013-2014):</b> Covered sectors include 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<sub>2</sub> suppliers.</p> <p><b>SINCE THE SECOND COMPLIANCE PERIOD:</b> 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 liquid petroleum gas in California, and suppliers of liquefied natural gas.</p> <p><b>INCLUSION THRESHOLDS:</b> Facilities <math>\geq 25,000</math> tCO<sub>2</sub>e/data year. Electricity providers that import 25,000 tCO<sub>2</sub>e per year or more from specified sources of electricity (those with known emissions factors) are considered to be above the threshold. All imported electricity from unspecified sources (those without known emissions factors) is considered to be above the threshold, and a default value is applied as an emissions factor.</p>
Point of regulation	Mixed
Number of entities	<p>~500 entities*</p> <p>*Approximately 330 registered covered/opt-in entities. These entities represent approximately 500 registered emitting sources/facilities.</p>
Cap	<p><b>FIRST COMPLIANCE PERIOD (2013-2014):</b> The system started in 2013 with a cap of 162.8 MtCO<sub>2</sub>e, declining to 159.7 MtCO<sub>2</sub>e in 2014.</p> <p><b>SECOND COMPLIANCE PERIOD (2015-2017):</b> With the program expanding to include fuel distribution, the cap rose to 394.5 MtCO<sub>2</sub>e in 2015. The cap decline factor averaged 3.1% per year in the second compliance period (2015-2017), reaching 370.4 MtCO<sub>2</sub>e.</p> <p><b>THIRD COMPLIANCE PERIOD (2018-2020):</b> The cap in the third compliance period started at 358.3 MtCO<sub>2</sub>e and declined at an average annual rate of 3.3% to 334.2 MtCO<sub>2</sub>e in 2020.</p> <p><b>FOURTH COMPLIANCE PERIOD (2021-2023) AND BEYOND:</b> During the period 2021-2030, the cap declines by about 13.4 MtCO<sub>2</sub>e each year, averaging about 4% per year and reaching 200.5 MtCO<sub>2</sub>e in 2030.</p> <p>The Cap-and-Trade Regulation sets a formula for declining caps after 2030 through 2050.</p>

## Phases & Allocation

Trading periods	<p>The California Cap-and-Trade Program is structured around compliance periods (see “Compliance” section). A cap trajectory has been set through 2030, with a formula for the declining annual caps through 2050 (see “Cap” section).</p> <p>Allowances are both allocated and auctioned, with each allowance associated with a specific calendar year vintage. Some allowances with a vintage three years in the future are offered at each auction and may be traded, but these future vintage allowances may not be used for compliance until the compliance date for the vintage year.</p>
Allocation	Allowances are distributed via free allocation, free allocation with consignment, and auction.

**FREE ALLOCATION:**

**Industrial facilities:** 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 tiers of “low”, “medium”, and “high” based on levels of emissions intensity and trade exposure. The Cap-and-Trade Regulation as adopted in 2011 set assistance factors of 100% for the first compliance period regardless of leakage risk. 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 compliance period. 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 compliance period. Amendments to the Cap-and-Trade Regulation in 2013 delayed these assistance factor declines by one compliance period, and AB 398 (adopted in 2017) set all assistance factors to 100% for 2021-2030, citing continued vulnerability to carbon leakage. In adjusting these factors pursuant to AB 398, CARB also set all assistance factors in the same manner for the 2018-2020 period.

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, beginning in 2018, waste-to-energy facilities.

**CONSIGNMENT:**

**Electrical distribution utilities and natural gas suppliers:** Receive free allocation on behalf of their ratepayers. All natural gas and electrical utilities must use the allowance value for ratepayer benefit and for 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 electrical utilities can choose to consign freely allocated allowances to auction or use them for their own compliance needs.

**AUCTIONING:** In 2020, about 58% of total California-issued vintage 2020 allowances were made available through auction, which included allowances owned by CARB (about 32%) and allowances consigned to auction by utilities (about 26%).

Unsold allowances in past auctions are removed from circulation and will gradually be released for sale at auction after two consecutive auctions are held in which the sale 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 those provisions.

**Flexibility**

Banking and borrowing	<p>Banking is allowed but is subject to the general holding limit on allowances to which all entities in the system are held. The holding limit varies based on the year’s cap. Emitting entities may also be eligible for a limited exemption from the holding limit based on their emissions levels to meet annual compliance obligations or obligations at the end of a three-year compliance period.</p> <p>Borrowing from future vintage allowances is not allowed.</p>
Offsets and credits	<p><b>QUANTITATIVE LIMIT:</b> For compliance obligations related to 2013-2020 emissions, entities are held to a limit of meeting up to 8% of their obligations for a compliance period through offsets. Starting with their 2021 emissions, entities are subject to new limits that were established by AB 398. The share of offsets that can be used to fulfil the compliance obligation will decrease to 4% per year for 2021-2025 emissions and will increase to 6% starting with 2026 emissions.</p>

**QUALITATIVE LIMIT:** Currently, six domestic offset types are accepted as compliance units originating from projects carried out according to six compliance offset protocols:

- US Forest Projects
- Urban Forest Projects
- Livestock Projects (methane management)
- Ozone-Depleting Substances Projects
- Mine Methane Capture Projects
- Rice Cultivation Projects.

In addition to setting new quantitative limits on the use of offsets, AB 398 set new limits on the types of units that can fulfil compliance obligations. Starting with 2021 compliance obligations, no more than one half of any entity’s offset usage limit can come from offsets that do not provide direct environmental benefits in the state of California (DEBS). Projects located within California are 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 waters flowing through California. Recent regulatory amendments specify the criteria that will be used for determining DEBS.

Offset credits issued by jurisdictions linked with California (e.g., Québec) are eligible to be used to satisfy a California entity’s compliance obligation, subject to the quantitative usage limit.

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

Market Stability Provisions

**AUCTION RESERVE PRICE:** USD 17.71 per allowance in 2021. The auction reserve price, the minimum price at which allowances are available at auction, increases annually by 5% plus inflation, as measured by the Consumer Price Index.

**RESERVE:** Allowances from each annual cap were placed in an Allowance Price Containment Reserve (APCR) (1% from the 2013-2014 compliance period; 4% from the 2015-2017 compliance period; and 7% from the 2018-2020 compliance period). Until the end of 2020, these allowances populated three price tiers in equal quantities. AB 398 replaced the three tiers with a new structure of two tiers and a price ceiling starting in 2021. AB 398 also directed where remaining allowances from the earlier APCR would be distributed. Specifically, two-thirds of those allowances are spread evenly across the two new price tiers. The remaining one-third (which had been spread evenly across the original three price tiers), plus unsold allowances that have been transferred into the APCR (about 37 million to date), are placed in the price ceiling reserve. In addition, the Cap-and-Trade Regulation also sets aside portions of annual allowance caps for the two lower price tiers from 2021-2030.

Although no reserve sale has been held to date, CARB will offer a reserve sale when auction settlement prices from the preceding quarter are at least 60% of the lowest price tier. CARB will also offer a reserve sale just before the compliance obligation deadline, if requested by at least one covered entity.

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 metric tonne for metric tonne basis. Sales at the price ceiling will only be conducted if no allowances remain at the two lower tiers.

In 2021, the two cost containment reserve tiers and the price ceiling are set at USD 41.40, USD 53.20, and USD 65.00, respectively. Tier prices increase by 5% plus inflation (as measured by the Consumer Price Index).

## Compliance

Compliance Period	<p>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 1 November (or the first business day thereafter). Compliance instruments equal to all remaining emissions must be surrendered by 1 November (or the first business day thereafter) of the year following the last year of a compliance period.</p> <p><b>FIRST COMPLIANCE PERIOD:</b> 2013-2014</p> <p><b>SUBSEQUENT COMPLIANCE PERIODS:</b> Three calendar years (2015-2017, 2018-2020, and so forth)</p>
Monitoring, Reporting, Verification (MRV)	<p><b>REPORTING FREQUENCY:</b> Annually</p> <p><b>VERIFICATION:</b> Emission data reports and their underlying data require independent third-party verification annually for all entities covered by the program.</p> <p><b>FRAMEWORK:</b> Reporting is required for most emitters at or above 10,000 tCO<sub>2</sub>e per year. They must implement internal audits, quality assurance, and control systems for the reporting program and the data reported.</p>
Enforcement	<p>A covered entity that fails to surrender sufficient compliance instruments to cover its verified GHG emissions on either an annual surrender deadline or at the end of a compliance period is automatically assessed as an untimely surrender obligation, requiring it to surrender each missing compliance instrument as well as three additional compliance instruments for each compliance instrument it failed to surrender.</p> <p>Failure to meet the untimely surrender obligation as described above would subject the entity to substantial financial penalties for its noncompliance pursuant to California Health and Safety Code Section 38580.</p> <p>Separate and substantial penalties apply to mis- or non-reporting under the Regulation for the Mandatory Reporting of Greenhouse Gas Emissions.</p>

## Linking

Links with other systems	<p>California linked with Québec's ETS on 1 January 2014. The two extended their joint market by linking with Ontario on 1 January 2018 until the termination of Ontario's system in mid-2018.</p>
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## Other Information

Institutions involved	<p>California Air Resources Board</p>
Evaluation / ETS review	<p>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 different programs in the state's portfolio approach to climate mitigation.</p>
Revenue	<p><b>SINCE BEGINNING OF PROGRAM:</b> USD 14.24 billion</p> <p><b>COLLECTED IN 2020:</b> USD 1.70 billion*</p> <p>*Does not include revenue from auctioning of consigned allowances.</p>

**REVENUE FROM AUCTION OF CALIFORNIA-OWNED ALLOWANCES:** Most of California's revenue goes to the Greenhouse Gas Reduction Fund, of which at least 35% must benefit disadvantaged and low-income communities. The fund also invests the proceeds in projects that reduce GHG emissions.

**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 emissions reductions

Implementing Legislation

[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](#)



## USA - Massachusetts Limits on Emissions from Electricity Generators

### General Information

Summary	<p><b>Status:</b> ETS in force</p> <p><b>Jurisdictions:</b> Massachusetts</p> <p>The Massachusetts Limits on Emissions from Electricity Generators began operating in 2018 and covers CO<sub>2</sub> emissions from the power sector. It complements RGGI to help ensure that Massachusetts achieves its mandatory mitigation targets.</p> <p>In 2016, a ruling by the Massachusetts Supreme Court established that the Massachusetts government would need to take additional action to guarantee it meets the state's climate targets—a 45% reduction by 2030 and an 80% reduction by 2050 (compared to 1990). The regulation establishing this system, '310 CMR 7.74,' is one of the responses to this ruling. The regulation is intended to ensure that emission reductions associated with other clean energy programs occur in Massachusetts. In 2020, the Massachusetts Executive Office of Energy and Environmental Affairs signed a determination of statewide emissions limits for 2050, establishing a 2050 statewide net zero GHG emissions limit.</p> <p>The 'Massachusetts Limits on Emissions from Electricity Generators' system exists in parallel to, but does not directly interact with, RGGI. The electricity generators in Massachusetts have to comply with both RGGI and the Massachusetts program. A 2016 court decision required Massachusetts to establish a statewide cap-and-trade program to control emissions located specifically in Massachusetts. Massachusetts electricity generators must hold and surrender allowances for both programs.</p>																
Year in Review	<p>2020 saw a reduction of the share of allowances distributed through free allocation from 75% to 50%. The remainder, after an adjustment to account for banked allowances, were distributed via auctions. The system will increase to full auctioning by 2021.</p> <p>In March 2021, Massachusetts finalized a new climate law legally binding the Commonwealth to achieve net zero emissions by 2050. The law also establishes interim emissions reduction goals every five years, including achieving emissions reductions of 50% by 2030 and of 75% by 2040 (based on 1990 carbon emissions levels). The Massachusetts ETS will be revised to align with these targets.</p>																
Overall GHG emissions (excluding LULUCF)	<p><b>Emissions:</b> 72.9 MtCO<sub>2</sub>e (2017)</p>																
Overall GHG emissions by sector (in MtCO <sub>2</sub> )	<table border="1"> <thead> <tr> <th>Sector Name</th> <th>MtCO<sub>2</sub>e</th> </tr> </thead> <tbody> <tr> <td>Transportation (30.5)</td> <td>30.5</td> </tr> <tr> <td>Electricity (13.6)</td> <td>13.6</td> </tr> <tr> <td>Industrial Processes (3.8)</td> <td>3.8</td> </tr> <tr> <td>Buildings (23.3)</td> <td>23.3</td> </tr> <tr> <td>Oil and gas (0.8)</td> <td>0.8</td> </tr> <tr> <td>Waste (0.7)</td> <td>0.7</td> </tr> <tr> <td>Agriculture (0.2)</td> <td>0.2</td> </tr> </tbody> </table>	Sector Name	MtCO <sub>2</sub> e	Transportation (30.5)	30.5	Electricity (13.6)	13.6	Industrial Processes (3.8)	3.8	Buildings (23.3)	23.3	Oil and gas (0.8)	0.8	Waste (0.7)	0.7	Agriculture (0.2)	0.2
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GHG reduction target	<p><b>BY 2050:</b> 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 (Letter of Determination of Statewide Emissions Limit for 2050)</p>																
Carbon Price	<p><i>Current Allowance Price (per t/CO<sub>2</sub>e):</i> USD 7.00 (average auction price for 2020)</p>																

## ETS Size

Covered emissions	0.11
GHGs covered	CO2
Sectors and thresholds	Large electricity generators subject to RGGI ( $\geq 25$ MWe).
Point of regulation	Downstream
Number of entities	23 (2020)
Cap	<p>The cap declines annually by 223,876 tCO<sub>2</sub>e per year until it reaches a cap of 1.8 MtCO<sub>2</sub>e by 2050.</p> <p><b>ANNUAL CAPS</b>                      2019: 8.7 MtCO<sub>2</sub>e                      2020: 8.5 MtCO<sub>2</sub>e                      2021: 8.3 MtCO<sub>2</sub>e</p>

## Phases & Allocation

Trading periods	The system has an annual compliance deadline of 1 March for the prior year's emissions.
Allocation	<p><b>AUCTIONING:</b> From 2019 onwards, allowances were partially auctioned, with 25% auctioned in 2019, 50% in 2020, and 100% from 2021 onwards. At least one auction is held each year. The first auction took place in December 2018, the second one in December 2019, the third one in September 2020, and the fourth auction in December 2020. Auction results are included in market monitoring reports posted on the program web page.</p> <p><b>FREE ALLOCATION:</b> Before 2021, non-auctioned allowances were freely allocated through grandparenting based on historical (2013-2015) generation.</p>

## Flexibility

Banking and borrowing	<p>Banking is allowed, but restrictions apply to guarantee that emissions in any year cannot exceed the emission limit of the prior year. This is done by adjusting the number of auctioned allowances downward to compensate for banked allowances.</p> <p>Borrowing is not allowed, but the possibility of emergency deferred compliance exists.</p>
Offsets and credits	No information available yet.
Market Stability Provisions	<b>AUCTION RESERVE PRICE:</b> The auctions have a reserve price of USD 0.50 per allowance.

## Compliance

Compliance Period	One year
Monitoring, Reporting, Verification (MRV)	<b>REPORTING FREQUENCY:</b> Regulated entities are required to submit emission reports (by 1 February) and compliance certification reports (by 1 March) indicating emissions and the holding of sufficient allowances, respectively.

	<p><b>VERIFICATION:</b> 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 the Massachusetts Department of Environmental Protection (MassDEP) may choose to conduct audits.</p>
Enforcement	<p>If the MassDEP establishes 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 regulated entity must submit three allowances for each metric tonne of noncompliance.</p>

## Linking

Links with other systems	No information available yet.
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## Other Information

Institutions involved	<p>The Executive Office of Energy and Environmental Affairs</p> <p>Massachusetts Department of Environmental Protection</p>
Evaluation / ETS review	<p>The first program review will be in 2021, with a review every 10 years thereafter.</p>
Revenue	<p>Since beginning of program: USD 27.17 million</p> <p>Collected in 2020: USD 15.78 million</p> <p>Auction proceeds are paid to a segregated account and are used to further reduce GHG emissions (e.g., clean energy and vehicle electrification projects) as well as for adaption programs and for projects targeting communities adversely impacted by air pollution.</p>
Implementing Legislation	<p><a href="#">Electricity Generator Emissions Limits (310 CMR 7.74)</a></p>

## USA - Regional Greenhouse Gas Initiative (RGGI)

### General Information

<p>Summary</p>	<p><b>Status:</b> ETS in force</p> <p><b>Jurisdictions:</b> Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island, Vermont, Virginia</p> <p>The Regional Greenhouse Gas Initiative (RGGI) is the first mandatory GHG ETS in the United States and covers emissions from the power sector. The system started operating in 2009 with 10 states (Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island, and Vermont). Its 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<sub>2</sub> budget trading programs. New Jersey began participation in RGGI again in 2020 and Virginia began participation in 2021. Currently, Pennsylvania is looking into RGGI participation in 2022.</p> <p>RGGI has gone through two review processes to date, which resulted in updating of the Model Rule and enshrined tighter caps and adjustments to system design. Between 2021 and 2030, the RGGI cap will reduce by 30% compared to 2020. Furthermore, an emissions containment reserve (ECR) started operating in 2021. The ECR is an automatic adjustment mechanism that will adjust the cap downward in the face of lower-than-expected costs.</p>												
<p>Year in Review</p>	<p>Upon finalization of the '2017 Model Rule,' the proposed post-2020 cap-and-trade regulations were adopted by each RGGI state according to its own regulatory processes over the course of 2019 and 2020.</p> <p>Virginia began participation in RGGI as of January 2021 after final legislation for establishing an ETS and participating in RGGI was adopted in February 2020. The state had started regulatory processes to participate in RGGI in 2018 and adopted final regulations in April 2019. However, provisions added to the 2019 Budget Act by the Republican legislative majority prevented Virginia from joining RGGI in 2020. After legislative majorities shifted following the November 2019 elections, cap-and-trade legislation was introduced by the new Democratic majority in 2020.</p> <p>Pennsylvania is also in the process of establishing a power sector ETS and possibly participating in the RGGI program. In January 2020, Pennsylvania released a first draft proposal followed by a final ETS proposal in September 2020. A final proposal could be presented later in 2021, while the earliest start date for Pennsylvania's ETS and its linkage to RGGI would be 2022 (see Pennsylvania factsheet).</p>												
<p>Overall GHG emissions (excluding LULUCF)</p>	<p><b>Emissions:</b> 564.3 MtCO<sub>2e</sub> (2017*)</p> <p>*GHG emissions reported here are based on energy-related emissions data only and retrieved from the International Energy Agency (IEA). Energy-related CO<sub>2</sub> emissions refer to emissions released at the location where fossil fuels are consumed.</p>												
<p>Overall GHG emissions by sector (in MtCO<sub>2</sub>)</p>	<table border="1"> <thead> <tr> <th>Sector Name</th> <th>MtCO<sub>2e</sub></th> </tr> </thead> <tbody> <tr> <td>Electric power (104.1)</td> <td>104.1</td> </tr> <tr> <td>Transportation (275.9)</td> <td>275.9</td> </tr> <tr> <td>Industrial processes (39.8)</td> <td>39.8</td> </tr> <tr> <td>Residential (84.7)</td> <td>84.7</td> </tr> <tr> <td>Commercial (59.7)</td> <td>59.7</td> </tr> </tbody> </table>	Sector Name	MtCO <sub>2e</sub>	Electric power (104.1)	104.1	Transportation (275.9)	275.9	Industrial processes (39.8)	39.8	Residential (84.7)	84.7	Commercial (59.7)	59.7
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Commercial (59.7)	59.7												
<p>GHG reduction target</p>	<p><b>BY 2030:</b> By adopting the '2017 Model Rule,' RGGI states have committed to implement a reduction of 30% of power sector emissions compared to the 2020 CO<sub>2</sub> emissions cap (2017 Model Rule)</p>												

Note: The participating states have their own emission targets; economy-wide targets are not defined at the level of RGGI.

Carbon Price	<i>Current Allowance Price (per t/CO<sub>2</sub>e):</i> USD 7.06 (average price in 2020; updated prices available <a href="#">here</a> )
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## ETS Size

Covered emissions	0.10
GHGs covered	CO <sub>2</sub>
Sectors and thresholds	Fossil Fuel Electric Generating Units  <b>INCLUSION THRESHOLDS:</b> Capacity equal to or greater than 25 MW.
Point of regulation	Downstream (at installation level)
Number of entities	203 sources (November 2020)
Cap	<p>The RGGI cap was 188 million short tons CO<sub>2</sub> per year in the 2009-2011 period. It was 165 million short tons CO<sub>2</sub> per year for the 2012-2014 period (nine states participating), with a 2.5% annual reduction factor from 2015 through 2018, totaling a 10% reduction between 2015 and 2018. However, by 2012, verified emissions under RGGI were more than 40% below the cap. The states thus tightened the cap to 91 million short tons in 2014. The revised regulations extended the 2.5% annual reduction factor through 2020. Also, the RGGI states had adjusted the caps between 2014 and 2020 to account for banked CO<sub>2</sub> allowances accumulated in the first and second control periods.</p> <p>The resulting 2020 cap was 74.3 million short tons/67.4 MtCO<sub>2</sub> including the 18 million short tons/16.3 MtCO<sub>2</sub> cap of 2020 RGGI entrant New Jersey.</p> <p>The 2021 unadjusted cap is 119.8 million short tons/108.9 MtCO<sub>2</sub> including the 27.2 million short tons/24.7 MtCO<sub>2</sub> cap of new RGGI entrant Virginia. Following 2017 Model Rule amendments, a third adjustment of banked allowances was made on March 15 2021 for the five-year period 2021-2025 based on the size of the banked CO<sub>2</sub> allowances. The adjustment will reduce the current 2021 cap of 119.77 million short tons CO<sub>2</sub> (108.65 MtCO<sub>2</sub>) by 19.09 million short tons CO<sub>2</sub> (17.31 MtCO<sub>2</sub>) annually, amounting to a total reduction of 95.45 million short tons CO<sub>2</sub> (86.59 MtCO<sub>2</sub>) over the five-year period and resulting in a 2025 cap of 86.06 million short tons CO<sub>2</sub> (78.07 MtCO<sub>2</sub>). The reduction factor between 2021 and 2030 as set out in the '2017 Model Rule' is about 3% of the 2020 cap (2.275 million short tons), resulting in a 2030 regional cap of 86.9 million short tons/70.0 MtCO<sub>2</sub>.</p>

## Phases & Allocation

Trading periods	<p>RGGI is structured around “control” (or compliance) periods. A cap trajectory until 2030 has been set (see “Cap” section).</p> <p><b>FIRST CONTROL PERIOD:</b> 2009-2011  <b>SECOND CONTROL PERIOD:</b> 2012-2014  <b>THIRD CONTROL PERIOD:</b> 2015-2017  <b>FOURTH CONTROL PERIOD:</b> 2018-2020  <b>FIFTH CONTROL PERIOD:</b> 2021-2023</p> <p>Since the third control period, RGGI operates with interim control periods (see “Compliance Period” section).</p>
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Allocation	CO2 allowances issued by each RGGI state are distributed through quarterly regional CO2 allowance auctions. Auctions are open to all parties with financial security, with a maximum bid of 25% of auctioned allowances per quarterly auction.
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## Flexibility

Banking and borrowing	<p>Banking of allowances is allowed without restrictions, but regulations include adjustments to the cap to address the aggregate bank. This means that the amount of allowances available for auctions in future years is reduced by the amount of allowances not used for compliance in previous control periods (see also “Cap” section).</p> <p>Borrowing is not allowed.</p>
Offsets and credits	<p><b>QUANTITATIVE LIMIT:</b> 3.3% of an entity’s liability may be covered with offsets. This share will remain the same between 2021 and 2030.</p> <p><b>QUALITATIVE LIMIT:</b> Currently, the program allows offset allowances from three offset types located in RGGI states:</p> <ol style="list-style-type: none"> <li>(1) landfill methane capture and destruction;</li> <li>(2) sequestration of carbon due to reforestation, improved forest management, or avoided conversion;</li> <li>(3) avoidance of methane emissions from agricultural manure management operations.</li> </ol> <p>Some states have discontinued specific offset protocols, but all states accept offset allowances issued by any participating state. To date, only one offset project (on landfill methane capture and destruction) has been approved under RGGI.</p>
Market Stability Provisions	<p><b>AUCTION PRICE FLOOR:</b> USD 2.38 per short ton in 2021, increasing by 2.5% per year (to reflect inflation).</p> <p><b>RESERVES:</b> Since 2014, RGGI has operated with a cost containment reserve (CCR), consisting of a quantity of allowances in addition to the cap which are held in reserve and only released to the market when certain trigger prices are reached. Beginning in 2021, allowances provided within the CCR will be equal to 10% of the regional cap.</p> <p>Trigger price: USD 13.00 in 2021 (increasing by 7% annually compared to the previous year thereafter; having increased at 2.5% annually starting from USD 10 between 2017 and 2020).</p> <p>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 2021, the trigger price is set at USD 6, increasing by 7% compared to the previous year thereafter. Maine and New Hampshire are not participating in the ECR.</p>

## Compliance

Compliance Period	<p>Three years</p> <p>Compliance is evaluated at the end of each three-year control period. From the third control period, regulated entities must surrender allowances corresponding to 50% of their verified emissions in each of the first two years of a control period. They must cover 100% of the remaining allowances at the end of the three-year control period.</p>
Monitoring, Reporting, Verification (MRV)	<b>REPORTING FREQUENCY:</b> Quarterly

	<p><b>VERIFICATION:</b> Emission data reports and their underlying data are required to undergo periodic quality assurance and quality control procedures in accordance with US EPA regulations.</p> <p><b>FRAMEWORK:</b> Emissions data for emitters are recorded in the United States Environmental Protection Agency's (US EPA) Clean Air Markets Division database in accordance with state CO2 Budget Trading Program regulations and US EPA regulations. Provisions are based on the US EPA monitoring provisions. Data are then automatically transferred to the electronic platform of the RGGI CO2 Allowance Tracking System (RGGI COATS), which is publicly available.</p>
Enforcement	In case of excess emissions (i.e., if entities are found to not surrender all required allowances), allowances for 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 the entity is located.

## Linking

Links with other systems	No information available yet.
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## Other Information

Institutions involved	<p>Statutory and/or regulatory authority of each RGGI state. Environmental and energy agencies for each state participate.</p> <p>RGGI Inc. (non-profit cooperative supporting RGGI's development and implementation)</p>
Evaluation / ETS review	The RGGI participating states periodically review the ETS program in order 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 next program review is scheduled to begin in 2021.
Revenue	<p><b>Since beginning of program:</b> USD 3.8 billion</p> <p><b>Collected in 2020:</b> USD 416.3 million</p> <p>Revenues from the quarterly auctions are returned to the RGGI states and have been primarily invested in the following consumer benefit programs: energy efficiency, renewable energy, direct energy bill assistance, and other GHG reduction programs.</p>
Implementing Legislation	<p><a href="#">2017 RGGI Model Rule</a></p> <p><a href="#">2017 RGGI Model Rule Updates (Summary)</a></p> <p><a href="#">RGGI States' Statutes &amp; Regulations</a></p> <p><a href="#">RGGI Program design</a></p>

## Colombia

### General Information

<p>Summary</p>	<p><b>Status:</b> ETS under development</p> <p><b>Jurisdictions:</b> Colombia</p> <p>In 2018, Colombia adopted a law for climate change management, which outlines provisions for the establishment of a 'National Program of Greenhouse Gas Tradable Emission Quotas' (Programa Nacional de Cupos Transables de Emisión de Gases de Efecto Invernadero [PNCTE]).</p> <p>The law outlines the basic provisions for the PNCTE. 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. Noncompliance is to be punishable by a fine up to two times the auction price. Auction revenues will be directed to the National Environmental Fund and will be used for GHG reductions and mitigation projects, as well as to manage the information needed for the implementation of the law. The bill also includes crediting provisions: voluntary actions of non-regulated entities that generate GHG emissions reductions or removals could be issued allowances if they are verified, certified, registered in the National Emission Reductions Registry (Registro nacional de reducción de emisiones de GEI—Renare), and deemed eligible for the program.</p> <p>Further regulations required to operationalize the PNCTE are yet to be finalized. With support from the Partnership for Market Readiness, Colombia now has the main inputs to inform the technical design of the ETS. These inputs are currently under internal revision. Public discussions on the policy will then follow, as well as the development of the system infrastructure, such as an emissions reporting program. The final regulations for the ETS are expected to be concluded, and a pilot phase expected to start between 2023 and 2024.</p> <p>The PNCTE will complement other mitigation instruments, such as the country's existing USD 5 carbon tax and its offsetting program, both of which have been in place since 2017. The 2018 Climate Change Law states that the government may recognize carbon tax payments as part of the compliance obligation of regulated entities under the PNCTE.</p>										
<p>Year in Review</p>	<p>No information available yet.</p>										
<p>Overall GHG emissions (excluding LULUCF)</p>	<p><b>Emissions:</b> 150.6 MtCO<sub>2e</sub> (2014)</p> <p>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 category "3B Land," but includes the categories "3A Livestock" and "3C Aggregate sources and non-CO<sub>2</sub> emissions sources on land.</p>										
<p>Overall GHG emissions by sector (in MtCO<sub>2</sub>)</p>	<table border="1"> <thead> <tr> <th>Sector Name</th> <th>MtCO<sub>2e</sub></th> </tr> </thead> <tbody> <tr> <td>Energy (82.5)</td> <td>82.5</td> </tr> <tr> <td>Industrial Processes (10.5)</td> <td>10.5</td> </tr> <tr> <td>Agriculture, Forestry, and Other Land Use (43.2)</td> <td>43.2</td> </tr> <tr> <td>Waste (14.4)</td> <td>14.4</td> </tr> </tbody> </table>	Sector Name	MtCO <sub>2e</sub>	Energy (82.5)	82.5	Industrial Processes (10.5)	10.5	Agriculture, Forestry, and Other Land Use (43.2)	43.2	Waste (14.4)	14.4
Sector Name	MtCO <sub>2e</sub>										
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Industrial Processes (10.5)	10.5										
Agriculture, Forestry, and Other Land Use (43.2)	43.2										
Waste (14.4)	14.4										
<p>GHG reduction target</p>	<p><b>BY 2022:</b> Accumulated reduction of GHG emissions of 36 MtCO<sub>2e</sub>, with respect to the national reference scenario, between 2018 and 2022 (aspirational, National Development Plan 2018-2022)</p> <p><b>BY 2023:</b> Determine a carbon budget for the 2020-2030 period (updated NDC)</p>										



	<b>BY 2030:</b> Reduce GHG emissions by 51% compared to BAU emissions by 2030. Reduce black carbon emissions by 40% compared to 2014 (updated NDC)
Carbon Price	<i>Current Allowance Price (per t/CO2e):</i> No information available yet.

## ETS Size

Covered emissions	No information available yet.
GHGs covered	No information available yet.
Sectors and thresholds	No information available yet.
Point of regulation	No information available yet.
Number of entities	No information available yet.
Cap	No information available yet.

## Phases & Allocation

Trading periods	No information available yet.
Allocation	No information available yet.

## Flexibility

Banking and borrowing	No information available yet.
Offsets and credits	No information available yet.
Market Stability Provisions	No information available yet.

## Compliance

Compliance Period	No information available yet.
Monitoring, Reporting, Verification (MRV)	No information available yet.
Enforcement	No information available yet.

## Linking

Links with other systems	No information available yet.
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## Other Information

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Institutions involved	Ministry of Environment and Sustainable Development; Department of National Planning; Ministry of Mines and Energy; Ministry of Finance; National Climate Change System
Evaluation / ETS review	No information available yet.
Revenue	No information available yet.
Implementing Legislation	<a href="#">Ley 1931 de 2018</a>

## Indonesia

### General Information

<p>Summary</p>	<p><b>Status:</b> ETS under development</p> <p><b>Jurisdictions:</b> Indonesia</p> <p>In 2017, Indonesia passed the 'Government Regulation on Environmental Economic Instruments' that provides a basis for ETS implementation. This regulation sets a mandate for an emissions and/or waste permit trading system to be implemented by 2024 (within seven years from its passage).</p> <p>In 2018, Indonesia completed a study outlining the emissions profiles and marginal abatement cost curves of the power and industry sectors, in addition to completing the design and governance framework of an MRV system. The MRV guidelines for the power sector were released in mid-2018. Following this, an online GHG reporting platform for electricity generators and a pilot MRV program for electricity generators in the Java-Madura-Bali grid (covering ~70% of Indonesia's electricity demand) were launched in late 2018. The Ministry of Industry has also developed an online GHG emissions reporting system for industries in Indonesia. Pilot MRV programs are being conducted in the cement and fertilizer sectors.</p> <p>A study completed in late 2018 examined four market-based instrument options: an ETS for the power and industry sectors; energy efficiency certificates for industry; a cap-and-tax system; and a carbon offset mechanism. Based on the study and stakeholder consultations, an ETS scenario was selected for further development.</p> <p>A presidential regulation that will provide a national framework for carbon pricing instruments, including an ETS, is reaching an advanced stage, to be decided in early 2021.</p> <p>In March of 2021 the Indonesian Minister of Energy and Mineral Resources announced the launch of a voluntary emissions trading trial for the power sector, which is set to run from March to August 2021. Eighty coal-fired power plants will participate, of which 59 are owned by the state electricity company PLN. The voluntary program is considered a pilot and is focused on familiarizing stakeholders with the development of a national ETS, ETS compliance procedures, and offset mechanisms.</p> <p>The overall cap for the pilot will be intensity-based, with different intensity benchmarks for three subgroups: generators with a capacity between 100 and 400 MWh, with a capacity of over 400 MWh, and generators (with a capacity between 100 and 400 MWh) that are located directly next to a coal mine. Benchmarks are based on the weighted average of GHG emissions intensity of power generators in each participant subgroup in 2019. Participants can trade allowance units as well as offset credits from renewable energy generation. The voluntary program is set to continue, with yearly trading periods and reviews, until the implementation of a national ETS.</p>										
<p>Year in Review</p>	<p>No information available yet.</p>										
<p>Overall GHG emissions (excluding LULUCF)</p>	<p><b>Emissions:</b> 1,457 MtCO<sub>2e</sub> (2016)</p>										
<p>Overall GHG emissions by sector (in MtCO<sub>2</sub>)</p>	<table border="1"> <thead> <tr> <th>Sector Name</th> <th>MtCO<sub>2e</sub></th> </tr> </thead> <tbody> <tr> <td>Energy (538)</td> <td>538</td> </tr> <tr> <td>Industrial processes (55)</td> <td>55</td> </tr> <tr> <td>AFOLU (including peat fire) (752)</td> <td>752</td> </tr> <tr> <td>Waste (112)</td> <td>112</td> </tr> </tbody> </table>	Sector Name	MtCO <sub>2e</sub>	Energy (538)	538	Industrial processes (55)	55	AFOLU (including peat fire) (752)	752	Waste (112)	112
Sector Name	MtCO <sub>2e</sub>										
Energy (538)	538										
Industrial processes (55)	55										
AFOLU (including peat fire) (752)	752										
Waste (112)	112										
<p>GHG reduction target</p>	<p><b>BY 2030:</b> 29% below BAU by 2030 incl. LULUCF (unconditional NDC); up to 41% below BAU by 2030 incl. LULUCF (NDC conditional on international support)</p>										

Carbon Price	<i>Current Allowance Price (per t/CO<sub>2</sub>e)</i> : No information available yet.
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## ETS Size

Covered emissions	No information available yet.
GHGs covered	No information available yet.
Sectors and thresholds	No information available yet.
Point of regulation	No information available yet.
Number of entities	No information available yet.
Cap	No information available yet.

## Phases & Allocation

Trading periods	No information available yet.
Allocation	No information available yet.

## Flexibility

Banking and borrowing	No information available yet.
Offsets and credits	No information available yet.
Market Stability Provisions	No information available yet.

## Compliance

Compliance Period	No information available yet.
Monitoring, Reporting, Verification (MRV)	No information available yet.
Enforcement	No information available yet.

## Linking

Links with other systems	No information available yet.
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## Other Information

Institutions involved	Coordinating Ministry for Economic Affairs; Coordinating Ministry for Maritime and Investment Affairs; Ministry of Environment and Forestry;
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	Ministry of Energy and Mineral Resources; Ministry of Industry; Ministry of Finance; Environment Fund Agency; National Development Planning Agency; PMR Indonesia Secretariat; UNDP Indonesia.
Evaluation / ETS review	No information available yet.
Revenue	No information available yet.
Implementing Legislation	<a href="#">GR 46/2017 on Government Regulation on Environmental Economic Instruments</a> <a href="#">Act No. 32/2009 on Environmental Conservation and Management</a>

## Montenegro

### General Information

Summary	<p><b>Status:</b> ETS under development</p> <p><b>Jurisdictions:</b> Montenegro</p> <p>In December 2019, Montenegro adopted the ‘Law on Protection from the Negative Impacts of Climate Change,’ which entered into force in January 2020. 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 sets the legal basis for a national ETS for the industry and power sectors.</p> <p>A bylaw specific to the ETS, the ‘Decree on activities for which a GHG permit is issued,’ was adopted in February 2020. The regulation determines sectoral coverage and inclusion thresholds, rules governing trade of permits, allocation rules for auctions, benchmarking and grandfathering, and a market stabilization reserve. It further includes provisions for banking allowances, a minimum reserve price of EUR 24/tonne (USD 27.41/tonne), and a linear reduction factor that would reduce the emissions cap by 1.5% year-on-year between 2020–2030. Revenue from auction proceeds would go to the Environmental Protection Fund to finance climate innovation, renewable energy, and environmental protection.</p> <p>Montenegro has been an EU candidate country since 2010 and is required to bring its environmental and climate change policy in line with the EU as part of accession talks under Chapter 27 that began in late 2018. The national ETS would ensure that Montenegro has the climate policy infrastructure in place to take part in the EU ETS should it become a member country of the European Union.</p>										
Year in Review	No information available yet.										
Overall GHG emissions (excluding LULUCF)	<b>Emissions:</b> 3.5 MtCO <sub>2</sub> e MtCO <sub>2</sub> e (2015)										
Overall GHG emissions by sector (in MtCO <sub>2</sub> )	<table border="1"> <thead> <tr> <th>Sector Name</th> <th>MtCO<sub>2</sub>e</th> </tr> </thead> <tbody> <tr> <td>Energy (2.5)</td> <td>2.5</td> </tr> <tr> <td>Industrial Processes (0.4)</td> <td>0.4</td> </tr> <tr> <td>Agriculture (0.4)</td> <td>0.4</td> </tr> <tr> <td>Waste (0.2)</td> <td>0.2</td> </tr> </tbody> </table>	Sector Name	MtCO <sub>2</sub> e	Energy (2.5)	2.5	Industrial Processes (0.4)	0.4	Agriculture (0.4)	0.4	Waste (0.2)	0.2
Sector Name	MtCO <sub>2</sub> e										
Energy (2.5)	2.5										
Industrial Processes (0.4)	0.4										
Agriculture (0.4)	0.4										
Waste (0.2)	0.2										
GHG reduction target	<b>BY 2030:</b> 30% GHG emissions reduction below 1990 levels (NDC)										
Carbon Price	<i>Current Allowance Price (per t/CO<sub>2</sub>e):</i> No information available yet.										

### ETS Size

Covered emissions	No information available yet.
GHGs covered	No information available yet.
Sectors and thresholds	No information available yet.
Point of regulation	No information available yet.
Number of entities	No information available yet.

Cap	No information available yet.
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## Phases & Allocation

Trading periods	No information available yet.
Allocation	No information available yet.

## Flexibility

Banking and borrowing	No information available yet.
Offsets and credits	No information available yet.
Market Stability Provisions	No information available yet.

## Compliance

Compliance Period	No information available yet.
Monitoring, Reporting, Verification (MRV)	No information available yet.
Enforcement	No information available yet.

## Linking

Links with other systems	As part of EU accession talks, Montenegro has opened chapter 27 of the acquis in December 2018 and continues to align with the EU's legislative framework on climate change; notably by adopting legislation on the EU ETS, the EU ETS Directive 2003/87/EC, subsequent amendments and secondary legislation such as on allocation rules, MRVA, auctioning and the Union Registry.
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## Other Information

Institutions involved	The Ministry of Sustainable Development and Tourism
Evaluation / ETS review	No information available yet.
Revenue	No information available yet.
Implementing Legislation	<a href="#">Decree on activities for which a GHG permit is issued (2020)</a> <a href="#">Law on Protection from the Negative Impacts of Climate Change (2019)</a>

## Russian Federation - Sakhalin

### General Information

Summary	<p><b>Status:</b> ETS under development</p> <p><b>Jurisdictions:</b> Sakhalin</p> <p>In January 2021, the Russian Ministry of Economic Development in cooperation with the government of the Russian region of Sakhalin approved the 'Roadmap for the implementation of an experiment to establish special regulation of greenhouse gas emissions in the Sakhalin Region' to regulate GHG emissions in the region. Among other measures, the roadmap foresees a pilot carbon trading system. The overall aim of the roadmap is to ensure that Sakhalin achieves carbon neutrality by 2025.</p> <p>The roadmap foresees the creation of a regional inventory of GHG emissions and removals by August 2021, which will clarify the economic activities primarily responsible for emissions in the region. By April 2022, an information system—including a carbon registry—is planned to start operating in test mode. The first transfers of carbon units between the participants of the pilot could take place as early as July 2022.</p> <p>Sakhalin is regarded as a testing ground for identifying GHG regulation measures that can be extended to other Russian regions. Measures proposed by the roadmap still need formal legal approval from the State Duma, Russia's lower house of parliament, which is expected in June-July 2021.</p> <p>During the past decade, the Russian government has put in place legal elements for the development of an MRV system in the country. An MRV 'Concept' was approved by order of the Government No. 716-r in 2015, and methodological guidelines for corporate- and regional-level MRV were adopted by the Ministry of Natural Resources and Ecology. According to the Concept on MRV, the target group for monitoring and reporting is "large industrial and energy organizations and companies with direct GHG emissions of more than 150,000 tCO<sub>2</sub>e/year, including organizations of aviation and railway transport, carrying out passenger and cargo transportation." Currently, Russian regions are urged to voluntarily develop regional inventories of GHG emissions and removals.</p>												
Year in Review	No information available yet.												
Overall GHG emissions (excluding LULUCF)	<b>Emissions:</b> 2220.1 MtCO <sub>2</sub> e (2018)												
Overall GHG emissions by sector (in MtCO <sub>2</sub> )	<table border="1"> <thead> <tr> <th>Sector Name</th> <th>MtCO<sub>2</sub>e</th> </tr> </thead> <tbody> <tr> <td>Energy (excluding transport) (1,498.5)</td> <td>1498.5</td> </tr> <tr> <td>Transport (254.1)</td> <td>254.1</td> </tr> <tr> <td>Industrial Processes (243.1)</td> <td>243.1</td> </tr> <tr> <td>Agriculture (126.7)</td> <td>126.7</td> </tr> <tr> <td>Waste (97.7)</td> <td>97.7</td> </tr> </tbody> </table>	Sector Name	MtCO <sub>2</sub> e	Energy (excluding transport) (1,498.5)	1498.5	Transport (254.1)	254.1	Industrial Processes (243.1)	243.1	Agriculture (126.7)	126.7	Waste (97.7)	97.7
Sector Name	MtCO <sub>2</sub> e												
Energy (excluding transport) (1,498.5)	1498.5												
Transport (254.1)	254.1												
Industrial Processes (243.1)	243.1												
Agriculture (126.7)	126.7												
Waste (97.7)	97.7												
GHG reduction target	<b>BY 2030:</b> GHG emissions will not exceed 70% of 1990 GHG levels, including LULUCF (updated Russian NDC)												
Carbon Price	<i>Current Allowance Price (per t/CO<sub>2</sub>e):</i> No information available yet.												

### ETS Size

Covered emissions	No information available yet.
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GHGs covered	No information available yet.
Sectors and thresholds	No information available yet.
Point of regulation	No information available yet.
Number of entities	No information available yet.
Cap	No information available yet.

## Phases & Allocation

Trading periods	No information available yet.
Allocation	No information available yet.

## Flexibility

Banking and borrowing	No information available yet.
Offsets and credits	No information available yet.
Market Stability Provisions	No information available yet.

## Compliance

Compliance Period	No information available yet.
Monitoring, Reporting, Verification (MRV)	No information available yet.
Enforcement	No information available yet.

## Linking

Links with other systems	No information available yet.
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## Other Information

Institutions involved	Ministry of Economic Development Government of Sakhalin Region Other interested federal ministries
Evaluation / ETS review	No information available yet.
Revenue	No information available yet.
Implementing Legislation	<a href="#">Roadmap for the implementation of an experiment to establish special regulation of greenhouse gas emissions in the Sakhalin Region</a>

## Ukraine

### General Information

Summary	<p><b>Status:</b> ETS under development</p> <p><b>Jurisdictions:</b> Ukraine</p> <p>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 Annex XXX to the agreement, which outlines steps for the implementation of a national ETS, including:</p> <ul style="list-style-type: none"> <li>· adopting national legislation and designating competent authority(ies);</li> <li>· establishing a system for identifying relevant installations and greenhouse gases;</li> <li>· developing a national allocation plan to distribute allowances;</li> <li>· establishing a system for issuing allowances to be traded domestically among installations in Ukraine; and</li> <li>· establishing MRV and enforcement systems, as well as public consultations procedures.</li> </ul> <p>The country has developed the main elements of the national MRV system to provide a solid basis for the upcoming ETS. In 2019, Ukraine adopted a framework law on MRV. The MRV law entered into force in 2020 and applies to installations from the start of 2021. By 31 March 2022, covered installations must submit the first monitoring reports for 2021. 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 January 2021, the ETS launch could take place as early as in 2025. Ukraine is working on its ETS plans with the assistance of the PMR and the German Corporation for International Cooperation (GIZ).</p>												
Year in Review	No information available yet.												
Overall GHG emissions (excluding LULUCF)	<b>Emissions:</b> 339.2 MtCO <sub>2e</sub> (2018)												
Overall GHG emissions by sector (in MtCO <sub>2</sub> )	<table border="1"> <thead> <tr> <th>Sector Name</th> <th>MtCO<sub>2e</sub></th> </tr> </thead> <tbody> <tr> <td>Energy (excl. transport) (191.3)</td> <td>191.3</td> </tr> <tr> <td>Transport (35)</td> <td>35.0</td> </tr> <tr> <td>Industrial Processes (56.5)</td> <td>56.5</td> </tr> <tr> <td>Agriculture (44.2)</td> <td>44.2</td> </tr> <tr> <td>Waste (12.2)</td> <td>12.2</td> </tr> </tbody> </table>	Sector Name	MtCO <sub>2e</sub>	Energy (excl. transport) (191.3)	191.3	Transport (35)	35.0	Industrial Processes (56.5)	56.5	Agriculture (44.2)	44.2	Waste (12.2)	12.2
Sector Name	MtCO <sub>2e</sub>												
Energy (excl. transport) (191.3)	191.3												
Transport (35)	35.0												
Industrial Processes (56.5)	56.5												
Agriculture (44.2)	44.2												
Waste (12.2)	12.2												
GHG reduction target	<p><b>BY 2030:</b> GHG emissions will not exceed 60% of 1990 GHG levels, including LULUCF (NDC)</p> <p><b>BY 2035:</b> 20% GHG emissions reduction from final energy consumption from 2010 levels (Energy Strategy 2035)</p> <p><b>BY 2050:</b> GHG emissions from energy and industrial processes will not exceed 31%-34% of 1990 GHG levels (Low Emission Development Strategy 2050)</p>												
Carbon Price	<i>Current Allowance Price (per t/CO<sub>2e</sub>):</i> No information available yet.												

### ETS Size

Covered emissions	No information available yet.
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GHGs covered	No information available yet.
Sectors and thresholds	No information available yet.
Point of regulation	No information available yet.
Number of entities	No information available yet.
Cap	No information available yet.

## Phases & Allocation

Trading periods	No information available yet.
Allocation	No information available yet.

## Flexibility

Banking and borrowing	No information available yet.
Offsets and credits	No information available yet.
Market Stability Provisions	No information available yet.

## Compliance

Compliance Period	No information available yet.
Monitoring, Reporting, Verification (MRV)	<p><b>REPORTING FREQUENCY:</b> Reporting is required annually for: fuel combustion in installations over 20 MW; oil refining; and 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. Aside from CO<sub>2</sub>, reporting is also required for N<sub>2</sub>O emissions from nitric acid production.</p> <p><b>VERIFICATION:</b> Emissions data reports and their underlying data require accredited third-party verification by an accredited auditor.</p> <p><b>FRAMEWORK:</b> Law on the principles of monitoring, reporting, and verification of GHG emissions.</p>
Enforcement	No information available yet.

## Linking

Links with other systems	No information available yet.
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## Other Information

Institutions involved	Ministry Environmental Protection and Natural Resources of Ukraine;
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	Cabinet of Ministers of Ukraine
Evaluation / ETS review	No information available yet.
Revenue	No information available yet.
Implementing Legislation	<a href="#">Law on the principles of monitoring, reporting and verification of greenhouse gas emissions</a>

## USA - Pennsylvania

### General Information

<p>Summary</p>	<p><b>Status:</b> ETS under development</p> <p><b>Jurisdictions:</b> Pennsylvania</p> <p>In October 2019, Pennsylvania’s Governor Tom Wolf signed an executive order directing the Pennsylvania Department of Environmental Protection (DEP) to develop and present to the Environmental Quality Board (EQB) a proposal for an ETS covering CO2 emissions from the electric power sector and its linkage to the Regional Greenhouse Gas Initiative (RGGI).</p> <p>According to the executive order, 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.</p> <p>In January 2020, the DEP released a first draft proposal for a power sector ETS covering CO2 emissions. An update to the proposal in April 2020 proposed an emissions cap of 78 MtCO2 for 2022 that would decrease annually by 3% to 58.1 MtCO2 in 2030. In September 2020, the DEP released and presented to the EQB a draft ETS regulation based on the draft proposal. As Pennsylvania aims to join RGGI, for which one precondition is to align ETS program design accordingly, the DEP-proposed regulation is largely consistent with the system design features of the RGGI Model Rule. This includes the implementation of an emissions containment reserve and a cost containment reserve, as well as quarterly auctions to allocate allowances. It includes additional features such as a waste-coal set-aside account, a set-aside provision for 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.</p> <p>The draft regulation went through public consultation between November 2020 and January 2021. A final regulation was approved by the Pennsylvania Department of Environmental Protection’s (DEP) Environmental Quality Board (EQB) in July 2021. The earliest start date for Pennsylvania’s ETS and for it to join RGGI would be 2022.</p> <p>Joining RGGI would require negotiations between Pennsylvania and the current RGGI member states to adjust the program’s emissions cap. With Pennsylvania joining RGGI, the initiative’s carbon market would increase significantly, as Pennsylvania’s share of emissions in the 2022 RGGI cap would amount to 40.2%.</p> <p>Other major emission reduction efforts currently under development in Pennsylvania include:</p> <ul style="list-style-type: none"> <li>• a memorandum of understanding (MOU) between Pennsylvania and six other states to develop an action plan for the buildout of regional CO2 transport infrastructure to enable large-scale carbon management; and</li> <li>• a rulemaking which would establish a requirement for automobile manufacturers to offer zero emissions vehicles (ZEVs) as a percentage of their fleet.</li> </ul>														
<p>Year in Review</p>	<p>No information available yet.</p>														
<p>Overall GHG emissions (excluding LULUCF)</p>	<p><b>Emissions:</b> 262.7 MtCO<sub>2e</sub> (2017)</p>														
<p>Overall GHG emissions by sector (in MtCO<sub>2</sub>)</p>	<table border="1"> <thead> <tr> <th>Sector Name</th> <th>MtCO<sub>2e</sub></th> </tr> </thead> <tbody> <tr> <td>Energy (75.2)</td> <td>75.2</td> </tr> <tr> <td>Industrial Processes (81.4)</td> <td>81.4</td> </tr> <tr> <td>Transportation (64.3)</td> <td>64.3</td> </tr> <tr> <td>Residential (18.5)</td> <td>18.5</td> </tr> <tr> <td>Commercial (10.9)</td> <td>10.9</td> </tr> <tr> <td>Agriculture (8.2)</td> <td>8.2</td> </tr> </tbody> </table>	Sector Name	MtCO <sub>2e</sub>	Energy (75.2)	75.2	Industrial Processes (81.4)	81.4	Transportation (64.3)	64.3	Residential (18.5)	18.5	Commercial (10.9)	10.9	Agriculture (8.2)	8.2
Sector Name	MtCO <sub>2e</sub>														
Energy (75.2)	75.2														
Industrial Processes (81.4)	81.4														
Transportation (64.3)	64.3														
Residential (18.5)	18.5														
Commercial (10.9)	10.9														
Agriculture (8.2)	8.2														

	Sector Name	MtCO <sub>2</sub> e
	Waste Management (4.3)	4.3
GHG reduction target	<b>BY 2025:</b> 26% below 2005 levels (Executive Order 2019-1) <b>BY 2050:</b> 80% below 2005 levels (Executive Order 2019-1)	
Carbon Price	<i>Current Allowance Price (per t/CO<sub>2</sub>e):</i> No information available yet.	

## ETS Size

Covered emissions	No information available yet.
GHGs covered	No information available yet.
Sectors and thresholds	No information available yet.
Point of regulation	No information available yet.
Number of entities	No information available yet.
Cap	No information available yet.

## Phases & Allocation

Trading periods	No information available yet.
Allocation	No information available yet.

## Flexibility

Banking and borrowing	No information available yet.
Offsets and credits	No information available yet.
Market Stability Provisions	No information available yet.

## Compliance

Compliance Period	No information available yet.
Monitoring, Reporting, Verification (MRV)	No information available yet.
Enforcement	No information available yet.

## Linking

Links with other systems	No information available yet.
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### Other Information

Institutions involved	<a href="#">Pennsylvania Department of Environmental Protection (DEP)</a>
Evaluation / ETS review	No information available yet.
Revenue	No information available yet.
Implementing Legislation	<a href="#">Executive Order 2019-07</a> <a href="#">Draft CO2 Budget Trading Program</a>

## USA - Transportation and Climate Initiative Program (TCI-P)

### General Information

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#### Summary

**Status:** ETS under development

**Jurisdictions:** Connecticut, Massachusetts, Rhode Island, Washington D.C.

The Transportation and Climate Initiative (TCI) is a regional collaboration of northeastern and mid-Atlantic US jurisdictions pursuing a goal of reducing GHG emissions from the transportation sector and minimizing the transportation system's reliance on high-carbon fuels. In December 2018, a subset of the participating TCI jurisdictions announced the future design of a regional low-carbon transportation policy proposal, which aims to establish a carbon pricing mechanism in the form of a cap-and-invest program. The announcement of such a program is the result of several years of consultations and negotiations amongst TCI members.

Over the course of 2019, TCI jurisdictions engaged in expert and public stakeholder consultations, as well as technical, environmental, and economic analyses of the benefits and costs of a regional transportation carbon pricing mechanism. As a result of this design process, in October 2019 the jurisdictions released a draft framework outlining basic design features of the regional transportation sector cap-and-invest program. In December 2019, the jurisdictions released a draft memorandum of understanding (MOU) consistent with the design features from the draft framework and announced modeling results for different cap reduction factors.

The final MOU, along with an 'Elements of Program Design' document, was released in December 2020 and is largely based on the draft MOU. As of February 2021, Massachusetts, Connecticut, Rhode Island, and Washington D.C. have signed the final MOU and will participate in the established cap-and-invest program, the Transportation and Climate Initiative Program (TCI-P). The TCI-P will consist of individual programs adopted and implemented under the independent legal authority of each signatory jurisdiction. The program implementation schedule of the final MOU foresees that the first three-year compliance period will begin in January 2023, with emissions reporting beginning in 2022.

According to the MOU, the program will cap CO<sub>2</sub> emissions from the combustion of gasoline and on-road diesel fuel in the participating states. Compliance obligations fall upstream, to firms that supply the covered fuels within these states. The four signatory jurisdictions of the TCI-P MOU will start with a cap of 42.1 MtCO<sub>2</sub> in 2023 that would decline by 30% by 2032. The cap will be equal to the sum of the four TCI-P jurisdictions' CO<sub>2</sub> emissions budgets (Connecticut: 13.5 MtCO<sub>2</sub>; Massachusetts: 24.5 MtCO<sub>2</sub>; Rhode Island: 3.3 MtCO<sub>2</sub>; Washington D.C.: 0.9 MtCO<sub>2</sub>).

The program intends to auction nearly 100% of its allowances, with revenues being returned to TCI-P jurisdictions. Each state can invest the revenue as determined appropriate to achieve TCI program goals; however, at least 35% of revenues generated are to be invested in equitable, less-polluting, and more resilient transportation. Each signatory jurisdiction will establish a representative Equity Advisory Body, specifically designated to ensure that the program impacts are effective and just, and that both the policies and flow of investment are transparent.

The program will also implement a minimum reserve price and include a Cost Containment Reserve (CCR) with a trigger price of USD 12 in 2023 and an Emissions Containment Reserve (ECR) with a trigger price of USD 6.50 in 2023. Banking of allowances will be allowed without restrictions and a limited use of offsets will be permitted.

In addition, the MOU introduced three-year compliance periods and interim compliance obligations, as well as a program evaluation three years after program launch (and regularly thereafter). An administrative organization to provide administrative support and technical assistance will be established. Further program design features such as specifications on eligible offset projects and the price level for the minimum reserve price are yet to be decided upon.



	<p>A draft Model Rule was released on 1 March and is based on the MOU. Its provisions are similar to the program features of RGGI. The draft Model Rule will now go through a public comment period until 1 April 2021.</p> <p>As next steps, the TCI-P jurisdictions will: provide for public review and input; develop a model rule; and conduct rulemaking processes over the course of 2021 to adopt regulations on the state level and start implementing the program by the 2022 reporting year.</p> <p>A joint statement released by 12 jurisdictions (Delaware, Maryland, New Jersey, New York, North Carolina, Pennsylvania, Vermont, Virginia, and the four MOU jurisdictions) reiterates their commitment to collaborating with one another on the further development of the program. Other states will also have the opportunity to join the TCI-P in the future.</p>												
Year in Review	No information available yet.												
Overall GHG emissions (excluding LULUCF)	<p><b>Emissions:</b> 110 MtCO<sub>2</sub>e (2017*)</p> <p>*GHG emissions reported here are based on energy related emissions data only and retrieved from the IEA. Energy-related CO<sub>2</sub> emissions refer to emissions released at the location where fossil fuels are consumed</p>												
Overall GHG emissions by sector (in MtCO <sub>2</sub> )	<table border="1"> <thead> <tr> <th>Sector Name</th> <th>MtCO<sub>2</sub>e</th> </tr> </thead> <tbody> <tr> <td>Electric Power (19.3)</td> <td>19.3</td> </tr> <tr> <td>Transportation (50.9)</td> <td>50.9</td> </tr> <tr> <td>Industrial processes (5.5)</td> <td>5.5</td> </tr> <tr> <td>Residential (21.3)</td> <td>21.3</td> </tr> <tr> <td>Commercial (13.1)</td> <td>13.1</td> </tr> </tbody> </table>	Sector Name	MtCO <sub>2</sub> e	Electric Power (19.3)	19.3	Transportation (50.9)	50.9	Industrial processes (5.5)	5.5	Residential (21.3)	21.3	Commercial (13.1)	13.1
Sector Name	MtCO <sub>2</sub> e												
Electric Power (19.3)	19.3												
Transportation (50.9)	50.9												
Industrial processes (5.5)	5.5												
Residential (21.3)	21.3												
Commercial (13.1)	13.1												
GHG reduction target	No information available yet.												
Carbon Price	<i>Current Allowance Price (per t/CO<sub>2</sub>e):</i> No information available yet.												

## ETS Size

Covered emissions	No information available yet.
GHGs covered	No information available yet.
Sectors and thresholds	No information available yet.
Point of regulation	No information available yet.
Number of entities	No information available yet.
Cap	No information available yet.

## Phases & Allocation

Trading periods	No information available yet.
Allocation	No information available yet.

## Flexibility

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Banking and borrowing	No information available yet.
Offsets and credits	No information available yet.
Market Stability Provisions	No information available yet.

## Compliance

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Compliance Period	No information available yet.
Monitoring, Reporting, Verification (MRV)	No information available yet.
Enforcement	No information available yet.

## Linking

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Links with other systems	No information available yet.
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## Other Information

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Institutions involved	No information available yet.
Evaluation / ETS review	No information available yet.
Revenue	No information available yet.
Implementing Legislation	<a href="#">Final Memorandum of Understanding Elements of Program Design</a>

## USA - Washington

### General Information

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#### Summary

**Status:** ETS under development

**Jurisdictions:** Washington

The State of Washington continues to pursue carbon pricing policies through its legislature and executive agencies.

In December 2020, Governor Jay Inslee introduced the 'Climate Commitment Act,' a bill proposing to create a comprehensive climate program across Washington. Amongst other measures, the bill would establish an economy-wide limit on GHG emissions. It would also authorize the Department of Ecology to administer a cap-and-trade program that ensures industries comply through the sale, tracking, and accounting of emissions allowances.

In January of 2021, Washington state legislators sponsored 'the Climate Commitment Act' bill, building on Governor Inslee's climate program. Titled SB-5126, the bill is modeled on the Western Climate Initiative (WCI) and directs the Department of Ecology to administer an economy-wide cap-and-trade program by January 2023. The bill aligns with Washington's statutory emissions limits of 50 million tonnes of CO<sub>2</sub>e in 2030, 27 million tonnes of CO<sub>2</sub>e in 2040, and 5 million tonnes of CO<sub>2</sub>e in 2050.

The program would cover transportation fuel suppliers, in-state power generators, and stationary facilities that emit equal to or more than 25,000 tCO<sub>2</sub>e per year as well as electricity importers and natural gas suppliers whose electricity consumption corresponds to more than 25,000 tCO<sub>2</sub>e per year. Uncovered entities that wish to participate in the program could do so by registering as an opt-in entity or as a general participant.

The Department of Ecology would adopt annual allowance budgets for the program on a calendar year basis. Allowances would be distributed through a combination of auctions and free allocation. A maximum of four auctions would take place annually in addition to any necessary reserve auctions. In the program's first compliance period, emissions-intensive trade-exposed (EITE) entities would receive 90% of their allowances for free in 2023, declining by five percentage points annually to 75% in 2026. The Department of Ecology would have to adopt EITE allocation rules for the second compliance period by July 2024. Some power generators will receive free allocation during the first compliance period; however, these allowances must be consigned to auction for the benefit of ratepayers. Natural gas utilities would receive full free allocation during the course of the cap-and-trade program; however, these allowances must also be consigned to auction.

The bill also outlines market stability measures, specifically an emissions containment reserve (ECR), an auction floor price with a schedule for the floor price to increase by a predetermined amount each year, and an allowance containment reserve. Only covered and opt-in entities will be able to participate in the auction of allowances from the allowance containment reserve.

The bill also includes provisions for offset protocols. Offset projects must be located in the US or in a jurisdiction with which the Department of Ecology has entered into a linking agreement; result in GHG reductions or removals; and be certified by a recognized registry. The bill also enables the Department of Ecology to pursue links with other jurisdictions that have established an allowance-based GHG reduction programs.

Additionally, SB 5126 states that the Department of Ecology would have to:

- complete an evaluation of the program's performance by December 2035 to ensure the program is on track to achieve 2040 emissions reductions; and
- complete another evaluation by December 2045 to ensure the program is on track to achieve 2050 emission reductions.

Finally, the bill asserts that proceeds from the sale of emissions allowances would be directed to a new climate investment account. The funds from the account would be

	<p>put towards clean transportation, natural climate resilience solutions, clean energy transition, and assistance and emissions reduction projects. An environmental justice and equity advisory panel would recommend plans and funding proposals for programs to be funded by the climate investment account. Funding proposals would need to undergo an environmental justice analysis to ensure they are being directed towards eliminating environmental harm as well as economic and health disparities for vulnerable populations.</p> <p>The bill is being deliberated in the Washington Senate Committee on Environment, Energy, and Technology. The legislative session for 2021 ends on 25 April.</p> <p>Carbon pricing policies, including a proposed cap-and-trade program, have repeatedly come before the legislature, and failed in two state referenda. Laws establishing steep emissions reduction targets successfully passed in the 2019 session, but no carbon pricing measures were approved. The most recent cap-and-trade program proposal, Senate Bill 5981, would have established a cap-and-trade program modeled after WCI. The Senate bill and other carbon pricing measures were debated in the 2020 legislative session but did not pass the legislature.</p> <p>The ‘Clean Air Rule’ (CAR)—a baseline-and-credit system that reduces emissions from industrial sources, petroleum fuel producers and importers, and natural gas distributors—was suspended by legal challenges before it could be implemented in 2020.</p>																
Year in Review	In April 2021, the Washington state legislature passed an amended version of SB-5126 to establish a cap-and-trade program covering industry, energy, and fuel suppliers starting 1 January 2023. Lawmakers included a provision in the bill making its implementation contingent on the passage of a separate transportation-spending package, but Washington Governor Jay Inslee vetoed this section when he signed the bill, which means the program can go ahead without the transportation-funding package. It is unlikely the legislature will override the veto.																
Overall GHG emissions (excluding LULUCF)	<b>Emissions:</b> 99.6 MtCO <sub>2e</sub> (2018)																
Overall GHG emissions by sector (in MtCO <sub>2</sub> )	<table border="1"> <thead> <tr> <th>Sector Name</th> <th>MtCO<sub>2e</sub></th> </tr> </thead> <tbody> <tr> <td>Electricity (16.2)</td> <td>16.2</td> </tr> <tr> <td>Residential, Commercial, Industrial (RCI) Fuels (23.3)</td> <td>23.3</td> </tr> <tr> <td>Transport (44.7)</td> <td>44.7</td> </tr> <tr> <td>Fossil Fuel Industry (0.8)</td> <td>0.8</td> </tr> <tr> <td>Industrial Processes (5.4)</td> <td>5.4</td> </tr> <tr> <td>Waste Management (2.4)</td> <td>2.4</td> </tr> <tr> <td>Agriculture (6.7)</td> <td>6.7</td> </tr> </tbody> </table>	Sector Name	MtCO <sub>2e</sub>	Electricity (16.2)	16.2	Residential, Commercial, Industrial (RCI) Fuels (23.3)	23.3	Transport (44.7)	44.7	Fossil Fuel Industry (0.8)	0.8	Industrial Processes (5.4)	5.4	Waste Management (2.4)	2.4	Agriculture (6.7)	6.7
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Industrial Processes (5.4)	5.4																
Waste Management (2.4)	2.4																
Agriculture (6.7)	6.7																
GHG reduction target	<p><b>BY 2035:</b> 45% reduction from 1990 GHG levels (RCW 70A.45.020)</p> <p><b>BY 2040:</b> 70% reduction from 1990 GHG levels (RCW 70A.45.020)</p> <p><b>BY 2050:</b> reduction of total GHG emissions to 95% below 1990 levels and achievement of net-zero emissions (RCW 70A.45.020)</p>																
Carbon Price	<i>Current Allowance Price (per t/CO<sub>2e</sub>):</i> No information available yet.																

## ETS Size

Covered emissions	No information available yet.
GHGs covered	No information available yet.
Sectors and thresholds	No information available yet.
Point of regulation	No information available yet.
Number of entities	No information available yet.

Cap	No information available yet.
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## Phases & Allocation

Trading periods	No information available yet.
Allocation	No information available yet.

## Flexibility

Banking and borrowing	No information available yet.
Offsets and credits	No information available yet.
Market Stability Provisions	No information available yet.

## Compliance

Compliance Period	No information available yet.
Monitoring, Reporting, Verification (MRV)	No information available yet.
Enforcement	No information available yet.

## Linking

Links with other systems	No information available yet.
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## Other Information

Institutions involved	Washington Department of Ecology Office of Governor Jay Inslee
Evaluation / ETS review	No information available yet.
Revenue	No information available yet.
Implementing Legislation	<a href="#">Governor Inslee's Climate Commitment Act</a> <a href="#">Senate Bill 5126 (SB 5126)</a> <a href="#">Senate Bill 5981 (SB 5981)</a> <a href="#">Clean Air Rule</a>

## Vietnam

### General Information

Summary	<p><b>Status:</b> ETS under development</p> <p><b>Jurisdictions:</b> Vietnam</p> <p>In November 2020, Vietnam's National Assembly adopted the revised Law on Environmental Protection, which establishes a mandate for the Ministry of Natural Resources and Environment (MONRE) and for the Ministry of Finance (MOF) to design a domestic emissions trading scheme and a crediting mechanism. The framework legislation gives MONRE a legal mandate to establish an emissions trading scheme, set a cap, and determine the method of allowance allocation, and allows for the inclusion of domestic and international offsets. The Law on Environmental Protection will enter into force on 1 January 2022. MOF and MONRE are considering a timeline for ETS implementation; a pilot system is expected to start by 2025 and to become fully operational by 2027.</p> <p>Policy developments have been guided by Vietnam's 'Green Growth Strategy' (2012), which sets the objective of a low-carbon economy and cites the use of market-based instruments as an avenue to achieving the strategy. In line with the strategy, 'National Appropriate Mitigation Actions' (NAMAs) are being implemented in the agriculture, forestry, waste, industry (steel, cement, chemical), and power sectors. With the support of the PMR, Vietnam has also been developing policy proposals for carbon pricing and market-based instruments in the country, in addition to developing MRV and accreditation systems. These actions are intended to underpin the further development of the national ETS.</p>										
Year in Review	No information available yet.										
Overall GHG emissions (excluding LULUCF)	<b>Emissions:</b> 321.5 MtCO <sub>2e</sub> (2014)										
Overall GHG emissions by sector (in MtCO <sub>2</sub> )	<table border="1"> <thead> <tr> <th>Sector Name</th> <th>MtCO<sub>2e</sub></th> </tr> </thead> <tbody> <tr> <td>Energy (171.6)</td> <td>171.6</td> </tr> <tr> <td>Industrial Processes (38.6)</td> <td>38.6</td> </tr> <tr> <td>Agriculture (89.8)</td> <td>89.8</td> </tr> <tr> <td>Waste (21.5)</td> <td>21.5</td> </tr> </tbody> </table>	Sector Name	MtCO <sub>2e</sub>	Energy (171.6)	171.6	Industrial Processes (38.6)	38.6	Agriculture (89.8)	89.8	Waste (21.5)	21.5
Sector Name	MtCO <sub>2e</sub>										
Energy (171.6)	171.6										
Industrial Processes (38.6)	38.6										
Agriculture (89.8)	89.8										
Waste (21.5)	21.5										
GHG reduction target	<b>BY 2030:</b> 9% below BAU and 20% reduction in 2010 emission intensity levels (unconditional NDC). 17% below BAU and 30% reduction in 2010 emission intensity levels (conditional NDC).										
Carbon Price	<i>Current Allowance Price (per t/CO<sub>2e</sub>):</i> No information available yet.										

### ETS Size

Covered emissions	No information available yet.
GHGs covered	No information available yet.
Sectors and thresholds	No information available yet.
Point of regulation	No information available yet.
Number of entities	No information available yet.

Cap	No information available yet.
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## Phases & Allocation

Trading periods	No information available yet.
Allocation	No information available yet.

## Flexibility

Banking and borrowing	No information available yet.
Offsets and credits	No information available yet.
Market Stability Provisions	No information available yet.

## Compliance

Compliance Period	No information available yet.
Monitoring, Reporting, Verification (MRV)	No information available yet.
Enforcement	No information available yet.

## Linking

Links with other systems	No information available yet.
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## Other Information

Institutions involved	Ministry of Natural Resources and Environment of Vietnam Ministry of Finance
Evaluation / ETS review	No information available yet.
Revenue	No information available yet.
Implementing Legislation	No information available yet.

## Brazil

### General Information

<p>Summary</p>	<p><b>Status:</b> ETS under consideration</p> <p><b>Jurisdictions:</b> Brazil</p> <p>Brazil's National Climate Change Policy, enacted in December 2009, aims to promote the development of a Brazilian market for emissions reductions, as well as other goals.</p> <p>As part of its activities under the PMR, the Brazilian government carried out studies on the possible implementation of market instruments to meet Brazil's mitigation targets and reduce overall mitigation costs. This included the development of design options, economic and regulatory impact assessments, as well as an analysis of potential interactions between carbon pricing instruments and existing policies. The country is currently considering adhering to the Partnership for Market Implementation.</p> <p>In addition, the Ministry of Economy is strengthening the understanding of carbon pricing instruments among stakeholders through engagement, communication, and consultation. The Market Readiness Project team in Brazil, for example, engaged in talks with representatives of the private sector that support the carbon pricing agenda in Brazil, as well as representatives from civil society organizations. Work in this area also continues through other international cooperation activities, such as through the Climate Change Policies Program (PoMuC) with the German Corporation for International Cooperation (GIZ).</p> <p>Since 2013, a group of leading companies has been participating in a voluntary ETS simulation to gain experience and develop proposals for an ETS in Brazil. The ETS simulation is coordinated by the Centro de Estudos em Sustentabilidade da Fundação Getulio Vargas. In 2020, trading was undertaken using the CarbonSim simulation platform.</p> <p>RenovaBio, the National Policy for Biofuels, was approved in 2017 (Federal Law 13.576), establishing mandatory goals for the purchase of biofuels by fuel distributors. To achieve the targets, distributors must purchase specified volumes of certificates (CBIO), which represent emissions reductions related to the substitution of fossil fuels by biofuels. Trades in CBIOs began in June 2020, and public consultations are ongoing both on annual GHG reduction goals under the program as well as other design features.</p>										
<p>Year in Review</p>	<p>No information available yet.</p>										
<p>Overall GHG emissions (excluding LULUCF)</p>	<p><b>Emissions:</b> 1,036.3 MtCO<sub>2e</sub> MtCO<sub>2e</sub> (2015)</p>										
<p>Overall GHG emissions by sector (in MtCO<sub>2</sub>)</p>	<table border="1"> <thead> <tr> <th>Sector Name</th> <th>MtCO<sub>2e</sub></th> </tr> </thead> <tbody> <tr> <td>Energy (449.4)</td> <td>449.4</td> </tr> <tr> <td>Industrial processes (95.3)</td> <td>95.3</td> </tr> <tr> <td>Agriculture (428.9)</td> <td>428.9</td> </tr> <tr> <td>Waste (62.7)</td> <td>62.7</td> </tr> </tbody> </table>	Sector Name	MtCO <sub>2e</sub>	Energy (449.4)	449.4	Industrial processes (95.3)	95.3	Agriculture (428.9)	428.9	Waste (62.7)	62.7
Sector Name	MtCO <sub>2e</sub>										
Energy (449.4)	449.4										
Industrial processes (95.3)	95.3										
Agriculture (428.9)	428.9										
Waste (62.7)	62.7										
<p>GHG reduction target</p>	<p><b>By 2025:</b> 37% reduction from 2005 GHG levels (updated NDC)</p> <p><b>By 2030:</b> 43% reduction from 2005 GHG levels (updated NDC)</p>										
<p>Carbon Price</p>	<p><i>Current Allowance Price (per t/CO<sub>2e</sub>):</i> No information available yet.</p>										



## ETS Size

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Covered emissions	No information available yet.
GHGs covered	No information available yet.
Sectors and thresholds	No information available yet.
Point of regulation	No information available yet.
Number of entities	No information available yet.
Cap	No information available yet.

## Phases & Allocation

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Trading periods	No information available yet.
Allocation	No information available yet.

## Flexibility

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Banking and borrowing	No information available yet.
Offsets and credits	No information available yet.
Market Stability Provisions	No information available yet.

## Compliance

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Compliance Period	No information available yet.
Monitoring, Reporting, Verification (MRV)	No information available yet.
Enforcement	No information available yet.

## Linking

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Links with other systems	No information available yet.
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## Other Information

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Institutions involved	Ministry of Environment; Ministry of Economy (previously Ministry of Finance); Ministry of Mines and Energy Ministry of Science, Technology and Innovation
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Evaluation / ETS review	No information available yet.
Revenue	No information available yet.
Implementing Legislation	No information available yet.

# Chile

## General Information

<p>Summary</p>	<p><b>Status:</b> ETS under consideration</p> <p><b>Jurisdictions:</b> Chile</p> <p>Since 2013, Chile has been conducting a series of studies and discussions on the design and implementation of carbon pricing instruments in the country.</p> <p>The tax reform of 2014 introduced green taxes for some mobile and stationary emission sources. In this context, a carbon tax has been in place in Chile since 2017; the tax was reformed in February 2020. In its updated form, the rate of USD 5 per tCO<sub>2</sub> applies to stationary emission sources that emit more than 25,000 tCO<sub>2</sub> and/or 100 tonnes of particulate matter due to combustion processes per year. The same reform contemplates the possibility for the regulated entities to offset part or all of their emissions subject to the tax with mitigation projects that reduce the same emissions, subject to that mitigation being additional, measurable, verifiable, and permanent. The Chilean government is currently working on developing the offset regulation, which is to be presented to the Council of Ministers of Sustainable Development in 2021. Offsets, their threshold limits, and their transactions are expected to be operational in 2023.</p> <p>The Chilean Ministry of Environment is leading the development of a 'Framework Law on Climate Change.' The draft underwent a public consultation process and high-level approval by the Council of Ministers for Sustainability in 2019 and was sent for Congress approval in January of 2020. In August 2020, it was unanimously approved in general terms by the Senate and is currently being discussed in particular terms by the same chamber. The draft bill sets a carbon neutrality goal by 2050, alongside a detailed governance framework to reach it.</p> <p>Also, the draft Framework Law defines a system in which the Ministry of Environment would establish GHG emissions limits to individual or groups of emitting sources (in tCO<sub>2</sub>eq/yr). The surplus in the fulfilment of the emission limits would be certified as an emission reduction by the Ministry of the Environment, and regulated entities would in turn be able to sell this surplus. The specific design of the system of GHG emissions limits is not yet defined, and could be implemented either as an ETS or as a tradable performance standard. The law also would allow regulated entities to implement mitigation projects and use the certified reductions to either achieve the standard or transfer those reductions to third parties. A dedicated registry would track the projects and the transfers.</p> <p>In 2020, an Interministerial Task Force on Article 6 was created. This Task Force is composed of the Ministry of Environment, Ministry of Foreign Affairs, Ministry of Finance, Ministry of Energy, and Ministry of Agriculture. It aims to coordinate the work related to the development of a national policy on the use of Article 6 and international collaboration on this subject.</p> <p>Chile is set to continue its cooperation with the World Bank. In the context of the transition period from the Partnership for Market Readiness (PMR) to the Partnership for Market Implementation (PMI), work is expected to focus on a roadmap for implementing the changes to the carbon tax, as well as on deepening the understanding of the role of carbon pricing in carbon neutrality, including the development of the system contained in the draft climate change law. Chile also joined the Warehouse Initiative of the World Bank with the aim of developing a GHG mitigation portfolio of energy projects, and is engaging in activities as part of the Climate Market Club, an initiative which supports countries in the development of Article 6 pilots to share lessons from a practical experience.</p>
<p>Year in Review</p>	<p>No information available yet.</p>
<p>Overall GHG emissions (excluding LULUCF)</p>	<p><b>Emissions:</b> 112.3 MtCO<sub>2</sub>e (2018)</p>

Overall GHG emissions by sector (in MtCO <sub>2</sub> )	Sector Name	MtCO <sub>2</sub> e
	Energy (87)	87.0
	Industrial Processes (6.6)	6.6
	Agriculture (11.8)	11.8
	Waste (7)	7.0
GHG reduction target	<p><b>BY 2025:</b> Peak GHG emissions (updated NDC)</p> <p><b>BY 2030:</b> GHG emissions level of 95 MtCO<sub>2</sub>e. Reduction of at least 25% of total emissions of black carbon, as compared to 2016. Carbon budget 1.100 MtCO<sub>2</sub>e between 2020 and 2030 (updated NDC)</p>	
Carbon Price	<p><i>Current Allowance Price (per t/CO<sub>2</sub>e):</i> No information available yet.</p>	

## ETS Size

Covered emissions	No information available yet.
GHGs covered	No information available yet.
Sectors and thresholds	No information available yet.
Point of regulation	No information available yet.
Number of entities	No information available yet.
Cap	No information available yet.

## Phases & Allocation

Trading periods	No information available yet.
Allocation	No information available yet.

## Flexibility

Banking and borrowing	No information available yet.
Offsets and credits	No information available yet.
Market Stability Provisions	No information available yet.

## Compliance

Compliance Period	No information available yet.
Monitoring, Reporting, Verification (MRV)	<p>The current GHG MRV system serves primarily the implementation of the carbon tax. Current regulations determine that operators of boilers and turbines of 50 MW or more of thermal capacity are required to monitor and report emissions through government-approved methodologies. Participation thresholds have been changed by the approved tax reform. With these changes, the carbon tax will apply to entities that emit more than 25,000 tCO<sub>2</sub> and/or 100 tonnes of particulate matter due to combustion processes per year</p>

	<p>from 2023 onwards. Current methodologies are expected to be updated in the future to incorporate all possible regulated fixed sources.</p> <p>The Chilean 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 unified various reporting needs and aims to improve the quality of the information provided. This new system, developed with support from the PMR, is considered as a basis for Chile to advance to the development of a Unified GHG Report, which will help evaluate Chile's National Climate Policy.</p> <p>Also, a National Mitigation Actions Registry (Registro Nacional de Acciones de Mitigación-RENAMI) is being developed. This registry will allow the implementation of the offset scheme approved in the carbon tax reform and would constitute a key element for other instruments under consideration, such as the scheme proposed in Framework Law on Climate Change or Article 6 of the Paris Agreement.</p> <p><b>VERIFICATION:</b> Verification procedures are administered by the Superintendence of the Environment under the Ministry of the Environment (no third-party verification is currently used).</p>
Enforcement	No information available yet.

## Linking

Links with other systems	No information available yet.
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## Other Information

Institutions involved	Ministry of Energy; Ministry of Environment; Ministry of Finance; Ministry of Foreign Affairs; Ministry of Agriculture; Inter-Ministerial Committee on Climate Change; PMR Chile (Precio al Carbono Chile)
Evaluation / ETS review	No information available yet.
Revenue	No information available yet.
Implementing Legislation	No information available yet.

## Japan

### General Information

<p>Summary</p>	<p><b>Status:</b> ETS under consideration</p> <p><b>Jurisdictions:</b> Japan</p> <p>In March 2017, the Global Environment Committee of the Central Environment Council of Japan formulated the country's 'Long-term Low-Carbon Vision.' The document refers to carbon pricing as essential to decarbonizing society. Based on this discussion, in March 2018, an expert committee on carbon pricing released a study assessing how carbon pricing could help Japan achieve long-term, substantial emissions reductions, as well as address economic and social issues. In June 2018, a deliberative council—the Subcommittee on Utilization of Carbon Pricing, Global Environmental Subcommittee, Central Environment Council—was established to consider how carbon pricing can encourage Japan to make the transition to a decarbonized society and to achieve economic growth. Both industry groups and academic experts participated in the Council. In August 2019, the subcommittee published an interim summary report of the discussion and is scheduled to resume activities beginning early 2021. Discussions on the shape of a future carbon pricing mechanism, in addition to the existing 2012 carbon tax levied on fossil fuels such as petroleum, natural gas, and coal, are still ongoing within the Ministry of Environment and with various stakeholders. In December 2020, Prime Minister Yoshihide Suga instructed the Minister of the Environment and the Minister of Economy, Trade, and Industry to consider a carbon pricing proposal.</p> <p>In parallel, Japan operates the Advanced Technologies Promotion Subsidy Scheme with Emission Reduction Targets (ASSET) Program, which functions as a voluntary cap-and-trade program. To receive an ASSET subsidy, entities establish a reduction target based on historical emissions and propose new technologies to reach these targets. Entities that implement such technologies and achieve their target are granted the ASSET subsidy. Entities unable to meet their target on their own are permitted to purchase either credits from other participating entities, or so-called 'J-Credits.' The government administers the voluntary J-Credit Scheme, where energy saving, renewable energy, and domestic forest management mitigation activities are verified as tradable J-Credits.</p> <p>Japan is also implementing the Joint Crediting Mechanism (JCM), a bilateral offset crediting mechanism to incentivize low-carbon technologies, in 17 JCM partner countries (Mongolia, Bangladesh, Kenya, Ethiopia, Indonesia, Vietnam, Lao PDR, Cambodia, Maldives, Palau, Costa Rica, Mexico, Chile, Saudi Arabia, Myanmar, Thailand, and the Philippines).</p> <p>In October 2020, Prime Minister Suga pledged to reduce GHG emissions in Japan to net zero by 2050.</p>												
<p>Year in Review</p>	<p>No information available yet.</p>												
<p>Overall GHG emissions (excluding LULUCF)</p>	<p><b>Emissions:</b> 1,240.4 MtCO<sub>2</sub>e (2018)</p>												
<p>Overall GHG emissions by sector (in MtCO<sub>2</sub>)</p>	<table border="1"> <thead> <tr> <th>Sector Name</th> <th>MtCO<sub>2</sub>e</th> </tr> </thead> <tbody> <tr> <td>Energy (1,085.7)</td> <td>1085.7</td> </tr> <tr> <td>Industrial Processes &amp; Product Use (100.1)</td> <td>100.1</td> </tr> <tr> <td>Agriculture (33.3)</td> <td>33.3</td> </tr> <tr> <td>Waste (19.3)</td> <td>19.3</td> </tr> <tr> <td>Indirect CO<sub>2</sub> (2.1)</td> <td>2.1</td> </tr> </tbody> </table>	Sector Name	MtCO <sub>2</sub> e	Energy (1,085.7)	1085.7	Industrial Processes & Product Use (100.1)	100.1	Agriculture (33.3)	33.3	Waste (19.3)	19.3	Indirect CO <sub>2</sub> (2.1)	2.1
Sector Name	MtCO <sub>2</sub> e												
Energy (1,085.7)	1085.7												
Industrial Processes & Product Use (100.1)	100.1												
Agriculture (33.3)	33.3												
Waste (19.3)	19.3												
Indirect CO <sub>2</sub> (2.1)	2.1												
<p>GHG reduction target</p>	<p><b>BY 2030:</b> 26% reduction from FY2013 GHG levels (NDC)</p> <p><b>BY 2050:</b> Climate net neutrality (October 2020 pledge)</p>												

Carbon Price	<i>Current Allowance Price (per t/CO<sub>2</sub>e)</i> : No information available yet.
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## ETS Size

Covered emissions	No information available yet.
GHGs covered	No information available yet.
Sectors and thresholds	No information available yet.
Point of regulation	No information available yet.
Number of entities	No information available yet.
Cap	No information available yet.

## Phases & Allocation

Trading periods	No information available yet.
Allocation	No information available yet.

## Flexibility

Banking and borrowing	No information available yet.
Offsets and credits	No information available yet.
Market Stability Provisions	No information available yet.

## Compliance

Compliance Period	No information available yet.
Monitoring, Reporting, Verification (MRV)	No information available yet.
Enforcement	No information available yet.

## Linking

Links with other systems	No information available yet.
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## Other Information

Institutions involved	Ministry of the Environment, which manages the Subcommittee on Utilization of Carbon Pricing; Global Environmental Subcommittee;
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	Central Environment Council
Evaluation / ETS review	No information available yet.
Revenue	No information available yet.
Implementing Legislation	No information available yet.



## Pakistan

### General Information

<p>Summary</p>	<p><b>Status:</b> ETS under consideration</p> <p><b>Jurisdictions:</b> Pakistan</p> <p>Pakistan is considering market-based climate policy instruments, including an ETS, to tap into low-cost abatement opportunities and leverage low-carbon investments.</p> <p>The ‘Pakistan Climate Change Act, 2017’ 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 Pakistani Ministry of Climate Change, in cooperation with the United Nations Framework Convention on Climate Change secretariat and the Institute for Global Environmental Strategies, published a study on carbon pricing underlining the potential for emissions trading in Pakistan in the power and industry sectors.</p> <p>Following the outcomes of the study, Pakistan launched the National Committee on Establishment of Carbon Markets in December 2019. The committee is 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. Among other objectives, it will review existing carbon market designs, deliberate with national stakeholders, draft reports, and coordinate information-sharing and capacity-building activities.</p> <p>The ongoing work is focused on developing recommendations for the government on the development of a domestic ETS and of credit-based trading mechanisms linked to international carbon markets, which would enable Pakistan to supply offsets to partner countries. Provisions are being drafted for domestic instruments under Article 6, and work is underway on preparing MRV regulations for an ETS. Moreover, Pakistan is developing a carbon pricing communication strategy.</p>										
<p>Year in Review</p>	<p>No information available yet.</p>										
<p>Overall GHG emissions (excluding LULUCF)</p>	<p><b>Emissions:</b> 397.5 MtCO<sub>2</sub>e (2015)</p>										
<p>Overall GHG emissions by sector (in MtCO<sub>2</sub>)</p>	<table border="1"> <thead> <tr> <th>Sector Name</th> <th>MtCO<sub>2</sub>e</th> </tr> </thead> <tbody> <tr> <td>Energy (186)</td> <td>186.0</td> </tr> <tr> <td>Agriculture (174.3)</td> <td>174.3</td> </tr> <tr> <td>Industrial Processes (22)</td> <td>22.0</td> </tr> <tr> <td>Waste (15.5)</td> <td>15.5</td> </tr> </tbody> </table>	Sector Name	MtCO <sub>2</sub> e	Energy (186)	186.0	Agriculture (174.3)	174.3	Industrial Processes (22)	22.0	Waste (15.5)	15.5
Sector Name	MtCO <sub>2</sub> e										
Energy (186)	186.0										
Agriculture (174.3)	174.3										
Industrial Processes (22)	22.0										
Waste (15.5)	15.5										
<p>GHG reduction target</p>	<p><b>BY 2030:</b> 20% below BAU including LULUCF (NDC conditional on international support)</p>										
<p>Carbon Price</p>	<p><i>Current Allowance Price (per t/CO<sub>2</sub>e):</i> No information available yet.</p>										

### ETS Size

<p>Covered emissions</p>	<p>No information available yet.</p>
<p>GHGs covered</p>	<p>No information available yet.</p>

Sectors and thresholds	No information available yet.
Point of regulation	No information available yet.
Number of entities	No information available yet.
Cap	No information available yet.

## Phases & Allocation

Trading periods	No information available yet.
Allocation	No information available yet.

## Flexibility

Banking and borrowing	No information available yet.
Offsets and credits	No information available yet.
Market Stability Provisions	No information available yet.

## Compliance

Compliance Period	No information available yet.
Monitoring, Reporting, Verification (MRV)	No information available yet.
Enforcement	No information available yet.

## Linking

Links with other systems	No information available yet.
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## Other Information

Institutions involved	Ministry of Climate Change Pakistan Climate Change Council Pakistan Climate Change Authority National Committee on Establishment of Carbon Markets
Evaluation / ETS review	No information available yet.
Revenue	No information available yet.
Implementing Legislation	<a href="#">Pakistan Climate Change Act 2017</a>

## Philippines

### General Information

Summary	<p><b>Status:</b> ETS under consideration</p> <p><b>Jurisdictions:</b> Philippines</p> <p>In early 2020, the Committee on Climate Change of the Philippine House of Representatives conditionally approved the 'Low Carbon Economy Act' House Bill (HB) No. 2184, which includes provisions for a domestic cap-and-trade system. A technical working group has since been established to review the bill, which will be reconsidered based on the group's input. The bill would establish a cap-and-trade system for the industrial and commercial sectors, administered by the Philippine Department of Environment and Natural Resources (DENR) and the Department of Trade and Industry.</p> <p>Under the proposed legislation, the cap-and-trade system would cover a variety of GHGs, including carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, and any other gas determined by the DENR to contribute to global warming. The DENR would determine key details regarding setting annual emissions reduction targets, setting a cap, distributing allowances, monitoring, and enforcement. The bill would also establish a 'Climate Reinvestment Fund' to be used by the DENR to exclusively address global warming. The bill does not specify a timeline to have the system in place.</p>										
Year in Review	No information available yet.										
Overall GHG emissions (excluding LULUCF)	<b>Emissions:</b> 229 MtCO <sub>2</sub> e (2017)										
Overall GHG emissions by sector (in MtCO <sub>2</sub> )	<table border="1"> <thead> <tr> <th>Sector Name</th> <th>MtCO<sub>2</sub>e</th> </tr> </thead> <tbody> <tr> <td>Agriculture (63)</td> <td>63</td> </tr> <tr> <td>Energy (133)</td> <td>133</td> </tr> <tr> <td>Industrial Processes (12)</td> <td>12</td> </tr> <tr> <td>Waste (20)</td> <td>20</td> </tr> </tbody> </table>	Sector Name	MtCO <sub>2</sub> e	Agriculture (63)	63	Energy (133)	133	Industrial Processes (12)	12	Waste (20)	20
Sector Name	MtCO <sub>2</sub> e										
Agriculture (63)	63										
Energy (133)	133										
Industrial Processes (12)	12										
Waste (20)	20										
GHG reduction target	<b>BY 2030:</b> Conditional pledge to keep 2030 emissions 70% below BAU levels (INDC, NDC to be submitted in 2020/2021)										
Carbon Price	<i>Current Allowance Price (per t/CO<sub>2</sub>e):</i> No information available yet.										

### ETS Size

Covered emissions	No information available yet.
GHGs covered	No information available yet.
Sectors and thresholds	No information available yet.
Point of regulation	No information available yet.
Number of entities	No information available yet.
Cap	No information available yet.

## Phases & Allocation

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Trading periods	No information available yet.
Allocation	No information available yet.

## Flexibility

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Banking and borrowing	No information available yet.
Offsets and credits	No information available yet.
Market Stability Provisions	No information available yet.

## Compliance

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Compliance Period	No information available yet.
Monitoring, Reporting, Verification (MRV)	No information available yet.
Enforcement	No information available yet.

## Linking

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Links with other systems	No information available yet.
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## Other Information

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Institutions involved	Department of Environment and Natural Resources Department of Trade and Industry House of Representatives Committee on Climate Change
Evaluation / ETS review	No information available yet.
Revenue	No information available yet.
Implementing Legislation	No information available yet.

## Taiwan, China

### General Information

<p>Summary</p>	<p><b>Status:</b> ETS under consideration</p> <p><b>Jurisdictions:</b> Taiwan</p> <p>In July 2015, Taiwan, China enacted the ‘Greenhouse Gas Reduction and Management Act’ (the Act) which legislates a 50% emissions reduction target for 2050 compared to 2005 GHG levels. The Act also mandates the setting of regulatory mitigation goals in stages. In this context, the Act stipulates that the Taiwanese Environmental Protection Administration (TEPA) will implement a domestic cap-and-trade scheme by considering the UNFCCC and its agreements, or relevant decisions by international conventions. This is further referred to in the ‘Climate Change Action Guideline 2017.’</p> <p>The Act also mandated TEPA to develop the ‘GHG Reduction Action Plan,’ which outlines details on how to implement the mitigation policies. It includes five-year regulatory goals for both national and sectoral GHG emissions, as well as implementation strategies in the form of eight policy packages. Published in March 2018, the plan proposes to implement a cap-and-trade system, calculate baseline emissions, and set up regulations—albeit without a precise timeline. On this basis, the central industry competent authorities of the six major sectors (energy, manufacturing, transportation, residential and commercial, agriculture, and environment) approved the ‘GHG Emissions Control Action Programs’ in October 2018.</p> <p>A series of subsidiary regulations have been formulated. Mandatory emissions reporting for entities with annual emissions above 25,000 tCO<sub>2</sub>e from certain sectors has been ongoing since 2014. Subsidiary regulations also include the ‘2018 Regulations Governing GHG Offset Program Management,’ which provide an opportunity for enterprises to acquire carbon offset credits.</p> <p>TEPA is in the process of revising the Act. A carbon fee, carbon tax, and ETS are all under consideration. Regulatory discussions are pending on whether the carbon fee will be implemented first, as well as on how it could be transitioned to the ETS in the future and/or co-exist as a complementary mechanism.</p>										
<p>Year in Review</p>	<p>No information available yet.</p>										
<p>Overall GHG emissions (excluding LULUCF)</p>	<p><b>Emissions:</b> 293.1 MtCO<sub>2</sub>e (2016)</p>										
<p>Overall GHG emissions by sector (in MtCO<sub>2</sub>)</p>	<table border="1"> <thead> <tr> <th>Sector Name</th> <th>MtCO<sub>2</sub>e</th> </tr> </thead> <tbody> <tr> <td>Industrial Processes (21.7)</td> <td>21.7</td> </tr> <tr> <td>Agriculture (2.7)</td> <td>2.7</td> </tr> <tr> <td>Waste (4)</td> <td>4.0</td> </tr> <tr> <td>Energy (264.7)</td> <td>264.7</td> </tr> </tbody> </table>	Sector Name	MtCO <sub>2</sub> e	Industrial Processes (21.7)	21.7	Agriculture (2.7)	2.7	Waste (4)	4.0	Energy (264.7)	264.7
Sector Name	MtCO <sub>2</sub> e										
Industrial Processes (21.7)	21.7										
Agriculture (2.7)	2.7										
Waste (4)	4.0										
Energy (264.7)	264.7										
<p>GHG reduction target</p>	<p><b>BY 2020:</b> 2% below 2005 GHG levels (TEPA)  <b>BY 2025:</b> 10% below 2005 GHG levels (TEPA)  <b>BY 2030:</b> 20% reduction from BAU levels (TEPA)  <b>BY 2050:</b> 50% below 2005 GHG levels (the Act)</p>										
<p>Carbon Price</p>	<p><i>Current Allowance Price (per t/CO<sub>2</sub>e):</i> No information available yet.</p>										

## ETS Size

Covered emissions	No information available yet.
GHGs covered	No information available yet.
Sectors and thresholds	No information available yet.
Point of regulation	No information available yet.
Number of entities	No information available yet.
Cap	No information available yet.

## Phases & Allocation

Trading periods	No information available yet.
Allocation	No information available yet.

## Flexibility

Banking and borrowing	No information available yet.
Offsets and credits	The Act stipulates that the use of offset credits should give priority to domestic efforts.
Market Stability Provisions	No information available yet.

## Compliance

Compliance Period	No information available yet.
Monitoring, Reporting, Verification (MRV)	<p><b>REPORTING FREQUENCY:</b> Annual reporting of GHGs (CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, SF<sub>6</sub>, NF<sub>3</sub>, PFCs, HFCs, and NF<sub>3</sub>) for entities from certain sectors (power, steel, petrochemical, cement, and manufacturing of semiconductors and flat panel displays) with annual emissions greater than 25,000 tCO<sub>2</sub>e. Currently, 293 entities are under the mandatory reporting scheme.</p> <p><b>VERIFICATION:</b> Third-party verification is required.</p> <p><b>FRAMEWORK:</b> GHG reporting under the 'Air Pollution Control Act' has been possible on a voluntary basis since 2004 and became mandatory in 2014. Since 2016, GHG reporting and the inventory program is mandatory under the 'GHG Accounting and Registration Regulations,' which are authorized by the Act.</p>
Enforcement	No information available yet.

## Linking

Links with other systems	No information available yet.
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## Other Information

Institutions involved	<a href="#">Taiwanese Environmental Protection Administration (TEPA)</a>
Evaluation / ETS review	No information available yet.
Revenue	No information available yet.
Implementing Legislation	<a href="#">Greenhouse Gas Reduction and Management Act (2015)</a> <a href="#">Climate Change Action Guidelines</a> <a href="#">2015 GHG Inventory (Executive Summary)</a>

## Thailand

### General Information

<p>Summary</p>	<p><b>Status:</b> ETS under consideration</p> <p><b>Jurisdictions:</b></p> <p>The ‘12th National Economic and Social Development Plan (2017-2021)’ of Thailand calls for several climate change mitigation measures, including the development of a domestic carbon market. The ‘National Climate Change Master Plan (2015-2050)’ also refers to carbon markets as a potential mechanism to reduce GHG emissions in the private sector. Most recently, the ‘National Reform Plan (2018)’ mandates the Thai government to develop an economic instrument, such as a cap-and-trade system, to incentivize the private sector to reduce emissions. The specific instrument will be considered as part of the policy and legislative process following the formulation of the framework ‘Climate Change Act,’ which is expected to be proposed for Cabinet consideration in 2021.</p> <p>Since 2013, Thailand Greenhouse Gas Management Organization (Public Organization) (TGO) has developed an MRV system and basic trading infrastructures under the Thailand Voluntary Emissions Trading Scheme (Thailand V-ETS). The first three-year pilot phase (2015-2017) of this voluntary pilot program aimed at: testing the MRV system for four GHG-intensive industrial sectors (cement, pulp and paper, iron and steel, and petrochemical); setting a cap for facilities’ direct and energy-related indirect emissions; and testing allocation methods by granting allowances to covered facilities. The second pilot phase (2018-2020) further tested the MRV system, the registry and trading platform, with five additional industrial sectors (petroleum refinery, glass, plastic, food and feed, and ceramics). Like in the previous phase, allocation was tested, with allowances granted to each sector according to their GHG reporting and target-setting results. Trading was also practiced on the demonstration-version of the trading platform.</p> <p>In 2020, MRV was developed for another three sectors (beverage and sugar, textiles, and flat glass) and additional sector-specific guidelines were developed and improved. Furthermore, many capacity-building and outreach activities were held, to introduce the ETS concept to various stakeholders.</p> <p>In 2021, TGO—in collaboration with its partner the Eastern Economic Corridor Initiative (Department of Industrial Promotion, Industrial Estate Authority of Thailand)—is developing a strategic plan for ETS implementation in Thailand’s Eastern Economic Corridor region. Under this plan, a pilot ETS will be implemented, including key ETS features and a trading platform.</p> <p>In addition, under the Thailand PMR Program, TGO has conducted a study on the appropriate formulation of legislation for a mandatory ETS. In 2020, TGO submitted a proposal for the draft ‘greenhouse gas reporting law for designated factories and buildings’ for consideration at the policy level.</p>												
<p>Year in Review</p>	<p>No information available yet.</p>												
<p>Overall GHG emissions (excluding LULUCF)</p>	<p><b>Emissions:</b> 392.27 MtCO<sub>2</sub>e (2016)</p>												
<p>Overall GHG emissions by sector (in MtCO<sub>2</sub>)</p>	<table border="1"> <thead> <tr> <th>Sector Name</th> <th>MtCO<sub>2</sub>e</th> </tr> </thead> <tbody> <tr> <td>Energy (excl. transportation) (197.8)</td> <td>197.8</td> </tr> <tr> <td>Transport (69.1)</td> <td>69.1</td> </tr> <tr> <td>Industrial Processes (45.6)</td> <td>45.6</td> </tr> <tr> <td>Agriculture (63.9)</td> <td>63.9</td> </tr> <tr> <td>Waste (12.6)</td> <td>12.6</td> </tr> </tbody> </table>	Sector Name	MtCO <sub>2</sub> e	Energy (excl. transportation) (197.8)	197.8	Transport (69.1)	69.1	Industrial Processes (45.6)	45.6	Agriculture (63.9)	63.9	Waste (12.6)	12.6
Sector Name	MtCO <sub>2</sub> e												
Energy (excl. transportation) (197.8)	197.8												
Transport (69.1)	69.1												
Industrial Processes (45.6)	45.6												
Agriculture (63.9)	63.9												
Waste (12.6)	12.6												
<p>GHG reduction target</p>	<p><b>BY 2030:</b> 20% reduction compared to BAU (unconditional NDC); 25% reduction compared to BAU contingent on adequate and enhanced support (conditional NDC)</p>												
<p>Carbon Price</p>	<p><i>Current Allowance Price (per t/CO<sub>2</sub>e):</i> No information available yet.</p>												



## ETS Size

Covered emissions	No information available yet.
GHGs covered	No information available yet.
Sectors and thresholds	No information available yet.
Point of regulation	No information available yet.
Number of entities	No information available yet.
Cap	No information available yet.

## Phases & Allocation

Trading periods	No information available yet.
Allocation	No information available yet.

## Flexibility

Banking and borrowing	No information available yet.
Offsets and credits	No information available yet.
Market Stability Provisions	No information available yet.

## Compliance

Compliance Period	No information available yet.
Monitoring, Reporting, Verification (MRV)	No information available yet.
Enforcement	No information available yet.

## Linking

Links with other systems	No information available yet.
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## Other Information

Institutions involved	Thailand Greenhouse Gas Management Organization (Public Organization)
Evaluation / ETS review	No information available yet.

Revenue	No information available yet.
Implementing Legislation	<a href="#">12th National Economic and Social Development Plan (2017-2021)</a> <a href="#">National Reform Plan</a>

## Turkey

### General Information

<p>Summary</p>	<p><b>Status:</b> ETS under consideration</p> <p><b>Jurisdictions:</b> Turkey</p> <p>In April 2012, Turkey adopted a new regulatory framework for a comprehensive, mandatory MRV system. Monitoring started in 2015 and reporting (of 2015 emissions) began in 2016.</p> <p>Since 2012, Turkey has:</p> <ul style="list-style-type: none"> <li>• been studying the possible use of carbon pricing instruments to help achieve its mitigation targets; and</li> <li>• worked with the PMR to enhance the MRV regulation through pilot studies in the energy, cement, and refinery sectors.</li> </ul> <p>A synthesis report outlining carbon market policy options for Turkey was submitted to the Climate Change and Air Management Coordination Board in November 2018. The PMR First Phase Closure Meeting was held at the end of 2018 and the PMR Second Phase officially began in February 2019.</p> <p>With additional funding under the PMR Second Phase, Turkey has developed draft legislation as well as improved technical and institutional capacity to prepare the groundwork for piloting a suitable carbon pricing policy. By the end of 2020, the country had held a series of workshops, conducted technical analyses, and organized stakeholder meetings which culminated in:</p> <ol style="list-style-type: none"> <li>(1) the final draft legal and institutional framework for a pilot ETS, published in December 2020;</li> <li>(2) the identification of the emission cap and development of the national allocation plan;</li> <li>(3) the development of Turk-SIM, an ETS simulation with gamification features;</li> <li>(4) the development of a transaction registry for the pilot ETS; and</li> <li>(5) the assessment of Article 6 and options for Turkey.</li> </ol> <p>Following the formal end of the PMR Second Phase in February 2020, Turkey is currently considering its participation in the Partnership for Market Implementation (PMI), the successor to PMR. Turkey is also a candidate to EU accession and thereby aims to complete the environmental obligations of the EU accession (including the EU ETS directive).</p>												
<p>Year in Review</p>	<p>No information available yet.</p>												
<p>Overall GHG emissions (excluding LULUCF)</p>	<p><b>Emissions:</b> 520.9 MtCO<sub>2e</sub> (2018)</p>												
<p>Overall GHG emissions by sector (in MtCO<sub>2</sub>)</p>	<table border="1"> <thead> <tr> <th>Sector Name</th> <th>MtCO<sub>2e</sub></th> </tr> </thead> <tbody> <tr> <td>Energy (excluding transport) (288.6)</td> <td>288.6</td> </tr> <tr> <td>Transport (84.5)</td> <td>84.5</td> </tr> <tr> <td>Industrial processes (65.2)</td> <td>65.2</td> </tr> <tr> <td>Agriculture (64.9)</td> <td>64.9</td> </tr> <tr> <td>Waste (17.8)</td> <td>17.8</td> </tr> </tbody> </table>	Sector Name	MtCO <sub>2e</sub>	Energy (excluding transport) (288.6)	288.6	Transport (84.5)	84.5	Industrial processes (65.2)	65.2	Agriculture (64.9)	64.9	Waste (17.8)	17.8
Sector Name	MtCO <sub>2e</sub>												
Energy (excluding transport) (288.6)	288.6												
Transport (84.5)	84.5												
Industrial processes (65.2)	65.2												
Agriculture (64.9)	64.9												
Waste (17.8)	17.8												
<p>GHG reduction target</p>	<p><b>BY 2030:</b> Up to 21% reduction from the BAU scenario (INDC)</p>												
<p>Carbon Price</p>	<p><i>Current Allowance Price (per t/CO<sub>2e</sub>):</i> No information available yet.</p>												

## ETS Size

Covered emissions	No information available yet.
GHGs covered	No information available yet.
Sectors and thresholds	No information available yet.
Point of regulation	No information available yet.
Number of entities	No information available yet.
Cap	No information available yet.

## Phases & Allocation

Trading periods	No information available yet.
Allocation	No information available yet.

## Flexibility

Banking and borrowing	No information available yet.
Offsets and credits	No information available yet.
Market Stability Provisions	No information available yet.

## Compliance

Compliance Period	No information available yet.
Monitoring, Reporting, Verification (MRV)	<p>The Turkish MRV legislation establishes an installation-level system for CO<sub>2</sub> emissions for ~800 entities. Sector coverage includes the energy sector (total rated thermal input &gt;20MW) and industry sectors (coke production, metals, cement, glass, ceramic products, insulation materials, pulp and paper, and chemicals over specified threshold sizes/production levels).</p> <p><b>MONITORING AND REPORTING:</b> Entities had until October 2014 to submit their first monitoring plans. Since then, entities have also submitted monitoring plans and verified emissions reports for 2015-2019 to the Ministry of Environment and Urbanization.</p> <p><b>VERIFICATION:</b> Monitoring plans, emission data reports, and their underlying data require independent third-party verification annually for all entities. Verifiers were accredited by the Turkish Accreditation Organization by 2018.</p> <p><b>OTHER:</b> Entities that fail to comply with the Turkish MRV regulation are subject to sanctions under Turkish Environmental Law No. 2872.</p>
Enforcement	No information available yet.

## Linking

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Links with other systems

No information available yet.

## Other Information

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Institutions involved	Ministry of Environment and Urbanization Climate Change and Air Management Coordination Board
Evaluation / ETS review	No information available yet.
Revenue	No information available yet.
Implementing Legislation	No information available yet.

## USA - New Mexico

### General Information

Summary	<p><b>Status:</b> ETS under consideration</p> <p><b>Jurisdictions:</b> New Mexico</p> <p>New Mexico established an interagency Climate Change Task Force in January 2019 to evaluate strategies and policies to reduce GHG emissions in the state. Potential strategies include adopting a market-based program that would set emissions limits to reduce CO<sub>2</sub> and other GHG pollutants in New Mexico. Over the course of 2020, state agencies continued to evaluate options for a future market-based program that would result in the most cost-effective approach, including through cooperating with other states that already operate cap-and-trade programs.</p> <p>The second annual report of the Climate Change Task Force, released in October 2020, found that although the state made progress on curbing emissions, additional action is needed to reach New Mexico's GHG reduction targets. Future recommended objectives include adopting rules for low- and zero-emission technologies, cutting HFC emissions, and further reducing GHGs and other pollution from the oil and gas industry. The report emphasizes the importance of embedding existing emissions targets into legislative statute, rather than establishing them only through executive orders. The report also highlights that the New Mexico Environment Department and the New Mexico Department of Energy, Minerals, and Natural Resources continue to evaluate options for a comprehensive market-based program. Both departments will make coordinating with other states already implementing such programs a priority area for stakeholder engagement in 2021.</p>														
Year in Review	No information available yet.														
Overall GHG emissions (excluding LULUCF)	<b>Emissions:</b> 66.7 MtCO <sub>2e</sub> (2018)														
Overall GHG emissions by sector (in MtCO <sub>2</sub> )	<table border="1"> <thead> <tr> <th>Sector Name</th> <th>MtCO<sub>2e</sub></th> </tr> </thead> <tbody> <tr> <td>Electricity generation (12)</td> <td>12.0</td> </tr> <tr> <td>Residential/Commercial (4)</td> <td>4.0</td> </tr> <tr> <td>Transportation (14.7)</td> <td>14.7</td> </tr> <tr> <td>Oil and gas (16)</td> <td>16</td> </tr> <tr> <td>Other industry (12)</td> <td>12.0</td> </tr> <tr> <td>Agriculture (7.3)</td> <td>7.3</td> </tr> </tbody> </table>	Sector Name	MtCO <sub>2e</sub>	Electricity generation (12)	12.0	Residential/Commercial (4)	4.0	Transportation (14.7)	14.7	Oil and gas (16)	16	Other industry (12)	12.0	Agriculture (7.3)	7.3
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Oil and gas (16)	16														
Other industry (12)	12.0														
Agriculture (7.3)	7.3														
GHG reduction target	<b>BY 2030:</b> At least 45% from 2005 GHG levels (Executive Order 2019-003)														
Carbon Price	<i>Current Allowance Price (per t/CO<sub>2e</sub>):</i> No information available yet.														

### ETS Size

Covered emissions	No information available yet.
GHGs covered	No information available yet.
Sectors and thresholds	No information available yet.
Point of regulation	No information available yet.

Number of entities	No information available yet.
Cap	No information available yet.

## Phases & Allocation

Trading periods	No information available yet.
Allocation	No information available yet.

## Flexibility

Banking and borrowing	No information available yet.
Offsets and credits	No information available yet.
Market Stability Provisions	No information available yet.

## Compliance

Compliance Period	No information available yet.
Monitoring, Reporting, Verification (MRV)	No information available yet.
Enforcement	No information available yet.

## Linking

Links with other systems	No information available yet.
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## Other Information

Institutions involved	New Mexico Climate Change Task Force New Mexico Energy, Minerals and Natural Resources Department New Mexico Environment Department
Evaluation / ETS review	No information available yet.
Revenue	No information available yet.
Implementing Legislation	No information available yet.

## USA - New York City

### General Information

<p>Summary</p>	<p><b>Status:</b> ETS under consideration</p> <p><b>Jurisdictions:</b> New York City</p> <p>As part of a local law that sets emissions-intensity limits for most large buildings starting in 2024, the New York City (NYC) Mayor’s Office of Sustainability (MOS) is required to study the feasibility of a citywide trading program and release its findings in early 2021.</p> <p>Local Law 97, one part of the ‘Climate Mobilization Act of 2019,’ requires most buildings over 25,000 square feet (2,323 square meters) to meet annual emissions-intensity limits based on occupancy type. If the owner of a covered building exceeds their specified limit, they will be liable for a civil penalty equal to USD 268 per tonne of emissions exceeding their cap. Buildings in which more than 35% of the dwelling units are rent regulated have an alternate compliance pathway under the law, which includes implementing a list of prescriptive energy conservation measures.</p> <p>Local Law 97 also requires the study of a potential citywide trading program. The law specifies that this feasibility study “include methods to ensure equitable investment in environmental justice communities that preserve a minimum level of benefits for all covered buildings.” The study requires that any recommended market design demonstrate that it will not increase local air pollution and will drive additional investment towards environmental justice communities.</p> <p>In addition to assessments of carbon trading scenarios and methods to ensure equitable investment in environmental justice communities, the study will outline an implementation plan for a marketplace approach to carbon trading that consists of pricing mechanisms, carbon credit verification, and monitoring and evaluation processes.</p> <p>The trading system being studied could serve as a compliance mechanism under the existing law (LL97 of 2019). This would require adoption through legislation by City Council.</p>								
<p>Year in Review</p>	<p>No information available yet.</p>								
<p>Overall GHG emissions (excluding LULUCF)</p>	<p><b>Emissions:</b> 55.1 MtCO<sub>2</sub>e (2019)</p>								
<p>Overall GHG emissions by sector (in MtCO<sub>2</sub>)</p>	<table border="1"> <thead> <tr> <th>Sector Name</th> <th>MtCO<sub>2</sub>e</th> </tr> </thead> <tbody> <tr> <td>Stationary energy (37.3)</td> <td>37.3</td> </tr> <tr> <td>Transportation (15.6)</td> <td>15.6</td> </tr> <tr> <td>Waste (2.2)</td> <td>2.2</td> </tr> </tbody> </table>	Sector Name	MtCO <sub>2</sub> e	Stationary energy (37.3)	37.3	Transportation (15.6)	15.6	Waste (2.2)	2.2
Sector Name	MtCO <sub>2</sub> e								
Stationary energy (37.3)	37.3								
Transportation (15.6)	15.6								
Waste (2.2)	2.2								
<p>GHG reduction target</p>	<p><b>BY 2050:</b> Net zero emissions citywide (OneNYC 2050 Strategy)</p>								
<p>Carbon Price</p>	<p><i>Current Allowance Price (per t/CO<sub>2</sub>e):</i> No information available yet.</p>								

### ETS Size

<p>Covered emissions</p>	<p>No information available yet.</p>
<p>GHGs covered</p>	<p>No information available yet.</p>
<p>Sectors and thresholds</p>	<p>No information available yet.</p>



Point of regulation	No information available yet.
Number of entities	No information available yet.
Cap	No information available yet.

## Phases & Allocation

Trading periods	No information available yet.
Allocation	No information available yet.

## Flexibility

Banking and borrowing	No information available yet.
Offsets and credits	No information available yet.
Market Stability Provisions	No information available yet.

## Compliance

Compliance Period	No information available yet.
Monitoring, Reporting, Verification (MRV)	No information available yet.
Enforcement	No information available yet.

## Linking

Links with other systems	No information available yet.
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## Other Information

Institutions involved	<p>NYC Mayor's Office of Sustainability</p> <p>NYC Department of Buildings</p>
Evaluation / ETS review	No information available yet.
Revenue	No information available yet.
Implementing Legislation	<p><a href="#">Local Law 97</a></p> <p><a href="#">Climate Mobilization Act</a></p>

## USA - North Carolina

### General Information

Summary	<p><b>Status:</b> ETS under consideration</p> <p><b>Jurisdictions:</b> North Carolina</p> <p>In October 2018, North Carolina’s Governor Roy Cooper issued an executive order (EO No. 80) demanding stronger commitment within the state to address climate change and towards a transition to a clean energy economy. The underlying goal is to reduce statewide GHG emissions to 40% below 2005 levels. As directed by the EO, in September 2019, North Carolina’s Department of Environmental Quality (DEQ) released the “Clean Energy Plan” (CEP) to outline policy and action recommendations to reach the announced GHG reduction target. A core component of the CEP is to reduce electric power sector GHG emissions by 70% below 2005 levels by 2030 and attain carbon neutrality by 2050. The list of policy options to reach the GHG reduction targets has not yet been finalized.</p> <p>To assess the most cost-effective options to achieve CO2 emissions reductions in the power sector, the DEQ commissioned an academic report to evaluate policy designs for a market-based carbon reduction program, a coal phase-out, clean energy policies, and hybrid approaches. The report was delivered in March 2021.</p> <p>In July 2021, North Carolina’s Environmental Management Commission (EMC) commissioned DEQ to start a rulemaking process to establish an ETS that is consistent with the design features of the Regional Greenhouse Gas Initiative (RGGI). Aligning the system design features to those of RGGI would enable the state to join RGGI.</p> <p>The decision of the EMC to start the rulemaking process comes after environmental groups in North Carolina - the Southern Environmental Law Center on behalf of Clean Air Carolina and the North Carolina Coastal Federation - filed a petition in January 2021 asking for the development of a RGGI-aligned ETS regulation to help North Carolina attain its 2050 carbon neutrality target.</p>																
Year in Review	No information available yet.																
Overall GHG emissions (excluding LULUCF)	<b>Emissions:</b> 150.1 MtCO <sub>2</sub> e (2017)																
Overall GHG emissions by sector (in MtCO <sub>2</sub> )	<table border="1"> <thead> <tr> <th>Sector Name</th> <th>MtCO<sub>2</sub>e</th> </tr> </thead> <tbody> <tr> <td>Electricity (direct combustion and imported) (52.6)</td> <td>52.6</td> </tr> <tr> <td>Industrial Processes (18.5)</td> <td>18.5</td> </tr> <tr> <td>Residential (5.3)</td> <td>5.3</td> </tr> <tr> <td>Commercial (5.7)</td> <td>5.7</td> </tr> <tr> <td>Transportation (48.7)</td> <td>48.7</td> </tr> <tr> <td>Agriculture (10.5)</td> <td>10.5</td> </tr> <tr> <td>Waste (8.8)</td> <td>8.8</td> </tr> </tbody> </table>	Sector Name	MtCO <sub>2</sub> e	Electricity (direct combustion and imported) (52.6)	52.6	Industrial Processes (18.5)	18.5	Residential (5.3)	5.3	Commercial (5.7)	5.7	Transportation (48.7)	48.7	Agriculture (10.5)	10.5	Waste (8.8)	8.8
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Agriculture (10.5)	10.5																
Waste (8.8)	8.8																
GHG reduction target	<b>BY 2025:</b> 40% reduction compared to 2005 levels (Executive Order No. 80)																
Carbon Price	<i>Current Allowance Price (per t/CO<sub>2</sub>e):</i> No information available yet.																

### ETS Size

Covered emissions	No information available yet.
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GHGs covered	No information available yet.
Sectors and thresholds	No information available yet.
Point of regulation	No information available yet.
Number of entities	No information available yet.
Cap	No information available yet.

## Phases & Allocation

Trading periods	No information available yet.
Allocation	No information available yet.

## Flexibility

Banking and borrowing	No information available yet.
Offsets and credits	No information available yet.
Market Stability Provisions	No information available yet.

## Compliance

Compliance Period	No information available yet.
Monitoring, Reporting, Verification (MRV)	No information available yet.
Enforcement	No information available yet.

## Linking

Links with other systems	No information available yet.
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## Other Information

Institutions involved	North Carolina Department of Environmental Quality
Evaluation / ETS review	No information available yet.
Revenue	No information available yet.
Implementing Legislation	<a href="#">Executive Order No. 80</a> <a href="#">Clean Energy Plan</a>

## USA - Oregon

### General Information

<p>Summary</p>	<p><b>Status:</b> ETS under consideration</p> <p><b>Jurisdictions:</b> USA - Oregon</p> <p>Oregon has pursued a statewide cap-and-trade program through its legislature since 2019 and issued an executive order on cap-based emission reductions in 2020.</p> <p>The most recent legislative attempt, Senate Bill 1530 (SB1530), was filed during the 2020 legislative session, and built on 2019 draft legislation (House Bill 2020 [HB2020]), but with some notable changes for the industry and transport sectors.</p> <p>Both SB1530 and HB2020 failed to pass during regular legislative sessions, which prompted the state's governor to issue an executive order mandating an emissions cap and reductions for large emitters and transportation fuels, in line with the state's proposed reduction targets for 2035 and 2050. Executive Order 20-04 directs the state Environmental Quality Commission (EQC) and the Department of Environmental Quality (DEQ) to establish a sector-specific 'cap and reduce program' for large stationary sources of emissions, transportation fuels, and other fossil fuels, including natural gas. The executive order provides little detail on the potential design of the program. It would require a cap as well as emissions reductions for the covered sources that are consistent with the targets set out in previous legislation (45% below 1990 levels by 2035 and 80% by 2050). The executive order makes no reference to trading and does not distinguish whether the program would resemble a baseline-and-credit system, or an ETS.</p> <p>The DEQ submitted a preliminary report in May 2020 and a final report in June 2020, both of which focused on program options to cap and reduce emissions. The DEQ hosted a series of online technical workshops during August and September of 2020 to discuss specific program design elements, options, and implications to inform program scoping prior to the formal rulemaking process, which will occur over the course of 2021. The intended start date of the program is in 2022.</p>										
<p>Year in Review</p>	<p>No information available yet.</p>										
<p>Overall GHG emissions (excluding LULUCF)</p>	<p><b>Emissions:</b> 64 MtCO<sub>2</sub>e (2018)</p>										
<p>Overall GHG emissions by sector (in MtCO<sub>2</sub>)</p>	<table border="1"> <thead> <tr> <th>Sector Name</th> <th>MtCO<sub>2</sub>e</th> </tr> </thead> <tbody> <tr> <td>Transportation (24)</td> <td>24</td> </tr> <tr> <td>Residential and Commercial (21)</td> <td>21</td> </tr> <tr> <td>Industrial Processes (12)</td> <td>12</td> </tr> <tr> <td>Agriculture (7)</td> <td>7</td> </tr> </tbody> </table>	Sector Name	MtCO <sub>2</sub> e	Transportation (24)	24	Residential and Commercial (21)	21	Industrial Processes (12)	12	Agriculture (7)	7
Sector Name	MtCO <sub>2</sub> e										
Transportation (24)	24										
Residential and Commercial (21)	21										
Industrial Processes (12)	12										
Agriculture (7)	7										
<p>GHG reduction target</p>	<p><b>BY 2035:</b> 45% reduction from 1990 GHG levels (Executive Order 20-04 covering Oregon state agencies)</p> <p><b>BY 2050:</b> At least 80% reduction from 1990 GHG levels (Executive Order 20-04 covering Oregon state agencies)</p>										
<p>Carbon Price</p>	<p><i>Current Allowance Price (per t/CO<sub>2</sub>e):</i> No information available yet.</p>										

## ETS Size

Covered emissions	No information available yet.
GHGs covered	No information available yet.
Sectors and thresholds	No information available yet.
Point of regulation	No information available yet.
Number of entities	No information available yet.
Cap	No information available yet.

## Phases & Allocation

Trading periods	No information available yet.
Allocation	No information available yet.

## Flexibility

Banking and borrowing	No information available yet.
Offsets and credits	No information available yet.
Market Stability Provisions	No information available yet.

## Compliance

Compliance Period	No information available yet.
Monitoring, Reporting, Verification (MRV)	No information available yet.
Enforcement	No information available yet.

## Linking

Links with other systems	No information available yet.
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## Other Information

Institutions involved	Oregon Environmental Quality Commission Oregon Department of Environmental Quality
Evaluation / ETS review	No information available yet.

Revenue	No information available yet.
Implementing Legislation	<a href="#">Oregon Greenhouse Gas Initiative (SB1530)</a>  <a href="#">House Bill 2020 (HB2020)</a>  <a href="#">Executive Order 20-04</a>

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