

Canada - Nova Scotia

General Information

<p>Summary</p>	<p>Status: ETS in force</p> <p>Jurisdictions: 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 transport sectors and covers approximately 80% of GHG emissions in Nova Scotia.</p> <p>Since May 2018, Nova Scotia has been a member of the Western Climate Initiative, which provides technical support for Nova Scotia's cap-and-trade program.</p> <p>Nova Scotia is not linked to any other jurisdictions.</p>																
<p>Year in Review</p>	<p>2019 saw the first year of operation of the Nova Scotia Cap-and-Trade Program. The first allocation of allowances occurred in April 2019 with auctioning set to begin in 2020.</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>In October 2019, Nova Scotia introduced the 'Sustainable Development Goals Act,' which sets new targets to fight climate change, including 53% below 2005 levels by 2030 and net-zero emissions by 2050.</p>																
<p>Overall GHG emissions (excluding LULUCF)</p>	<p>Emissions: 15.9 MtCO₂e MtCO₂e (2017)</p>																
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<p>Overall GHG reduction target</p>	<p>BY 2020: at least 10% reduction from 1990 GHG levels</p> <p>BY 2030: 53% below 2005 levels</p>																

	BY 2050: Net-zero emissions
Carbon Price	<i>Current Allowance Price (per t/CO₂e):</i> No information available yet.

ETS Size

Emissions covered by the ETS	0.80
GHG covered	CO ₂ , CH ₄ , N ₂ O, SF ₆ , NF ₃ , HFCs, PFCs
Sectors covered and thresholds	<p>The program covers the industrial and electricity sectors, as well as fuel suppliers (upstream coverage of transport and heating).</p> <p>INCLUSION THRESHOLDS: For the industrial and electricity sectors, facilities generating $\geq 50,000$ tCO₂e/year. Electricity importers responsible for $>10,000$ tCO₂e/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 $\geq 10,000$ tCO₂e/year.</p> <p>No provisions for voluntary (“opt-in”) participation.</p>
Point of regulation	Mixed
Number of liable entities	<p>~26 entities (December 2019)</p> <p>No information available yet.</p>
Cap	<p>FIRST COMPLIANCE PERIOD (2019-2022): 2019: 13.68 MtCO₂e; 2020: 12.72 MtCO₂e 2021: 12.26 MtCO₂e; 2022: 12.14 MtCO₂e</p>

Phases & Allocation

Trading period	Nova Scotia’s cap-and-trade program is structured around compliance periods; trading periods are not defined separately. The first compliance period is 2019–2022.
Allocation	<p>FREE ALLOCATION, OUTPUT-BASED</p> <p>BENCHMARKS: <i>Industrial Facilities:</i> Facilities will receive allowances based on production intensity benchmarks based on production intensity benchmarks determined using data from the period 2014–2016. At the beginning of the year, 75% of the eligible emissions allowances are distributed to participating entities. The remaining 25% will be provided in the following year together with production-level adjustments after the submission of a verified emissions report.</p> <p>The benchmark is based on historical facility emissions intensity, an assistant factor that varies between 1 (100%) for cement and 0.9 (90%) for pulp and paper and natural gas processing (the only defined industries).</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% less allowances based on the output in 2022 compared to in 2019.</p> <p>Fuel Suppliers and Electricity Importers: Receive 80% of free allocation based on verified GHG reports for previous year’s emissions.</p> <p>Nova Scotia Power Inc.: The utility will be allocated allowances based on a reduction from BAU projections; ~6.3 million allowances will be freely allocated to Nova Scotia Power Inc. in 2019. In 2020, ~5.5 million allowances will be allocated, declining to just over five million in 2022.</p>

AUCTIONING: The province will hold auctions two to four times per calendar year, starting in 2020. Minimum price: CAD 20 (USD 15.07) for auctions held in 2020; each subsequent year: minimum price will increase by 5% plus inflation.

Auctioning in Nova Scotia has two particularities:

(1) The option for regulated entities to consign allowances to auction: 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 emission allowances offered for sale by the province. 100% of the revenue from allowances sold on consignment is returned to the participants.

(2) The purchase of limits to secure market functioning: secure market functioning, bidders will be 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.

Purchasing Limits (for the 2019-2022 compliance period):

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

Flexibility

Banking and borrowing	Nova Scotia’s cap-and-trade program does not include banking and 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 is being completed in 2020 to consider this option and explore offset potential in the province’s carbon market.
Market Stability Provisions	<p>Reserve: In the first year of the compliance period (2019), the government will place 3% of allowances available under the yearly caps into a reserve. These emission allowances may be used for:</p> <p>(1) Cost containment: Offer 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 a calendar year. The initial price will be CAD 50 (USD 38.05) in 2020, rising annually by 5% plus inflation.</p> <p>(2) New entrants: Accommodate new participants in the cap-and-trade program whose GHG emissions are not currently accounted for and that qualify for free allocation.</p> <p>(3) Reserve for adjustments in output-based free allocation: Adjust to variability in year-to-year commitments to free allowances (allowances from reserve can be used as a buffer for allocation-amount uncertainty: if projections are not accurate, commitments for free allowances according to allocation rules can be fulfilled by using allowances from the reserve).</p>

Compliance

Compliance Period	Four years (2019-2022) (see “Phases and Allocation” above)
Monitoring, Reporting, Verification (MRV)	In Nova Scotia, MRV is referred to as “Quantification, Reporting, and Verification.”

	<p>REPORTING FREQUENCY: Annually. Report for 2018 to be submitted by 1 June 2019; verification by 1 September 2019. Starting in 2020, report and verification must be submitted by 1 May of each year for the previous calendar year (1 May 2020 for 2019, 1 May 2021 for 2020, 1 May 2022 for 2021, 1 May 2023 for 2022).</p> <p>VERIFICATION: Reports must be verified by an accredited third-party organization.</p> <p>FRAMEWORK: 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 who do not surrender enough allowances at the end of the compliance period will pay three times the latest auction settlement price per allowance they are short.</p> <p>Administrative penalties for violations of other cap-and-trade regulations will be determined in further regulations.</p> <p>All revenue from administrative penalties 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 will be published. Nova Scotia also has to report annually to Environment and Climate Change Canada as part of the 'Pan-Canadian Framework on Clean Growth and Climate Change.'
Revenue	<p>No information available yet.</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> <p>Estimated revenue for 2020: CAD 24 million (USD 18.1 million), increasing to CAD 28 million (USD 21.1 million) in 2023.</p>
Implementing Legislation	<p>Nova Scotia's Cap and Trade Program Regulatory Framework</p> <p>Cap-and-Trade Program Regulations, Section 112Q of the Environment Act</p> <p>Quantification, Reporting, and Verification of Greenhouse Gas Emissions Regulations</p> <p>Standards for Quantification, Reporting, and Verification of Greenhouse Gas Emissions</p> <p>Sustainable Development Goals Act</p> <p>Environment Act</p>

Canada - Québec Cap-and-Trade System

General Information

Summary	<p>Status: ETS in force</p> <p>Jurisdictions: Québec</p> <p>Québec's cap-and-trade system for GHG emissions was introduced in 2012. The program's enforceable compliance obligation began on 1 January 2013. Compliance periods are three years long (two years for the initial period). Québec has been a member of the Western Climate Initiative since 2008 and formally linked its system with California on 1 January 2014 and with Ontario on 1 January 2018 (until this system's termination in mid-2018). The system covers fossil fuel combustion and industrial emissions in power, buildings, transport, and industry.</p>														
Year in Review	<p>One of the focuses of regulatory work on ETS in Québec in 2019 was a proposed reform to free allocation from 2024-2030. The plan would gradually reduce free allocation and auction a portion of those allowances setting aside the revenue on a per-facility basis to support investments in projects to reduce emissions. This proposed reform is expected to be introduced via regulation in 2020.</p> <p>During COP 25 in Madrid in December 2019, the Gouvernement du Québec and the Government of the Republic of Chile signed a declaration of collaboration announcing their intention to collaborate on carbon markets, energy transition, and other means to address climate change.</p>														
Overall GHG emissions (excluding LULUCF)	Emissions: 78.7 MtCO _{2e} (2017)														
Overall GHG emissions by sector	<table border="1"> <thead> <tr> <th>Sector Name</th> <th>MtCO_{2e}</th> </tr> </thead> <tbody> <tr> <td>Transportation</td> <td>34.1</td> </tr> <tr> <td>Industry</td> <td>24.0</td> </tr> <tr> <td>Buildings</td> <td>8.1</td> </tr> <tr> <td>Agriculture</td> <td>7.7</td> </tr> <tr> <td>Waste</td> <td>4.6</td> </tr> <tr> <td>Power</td> <td>0.2</td> </tr> </tbody> </table>	Sector Name	MtCO _{2e}	Transportation	34.1	Industry	24.0	Buildings	8.1	Agriculture	7.7	Waste	4.6	Power	0.2
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Overall GHG reduction target	<p>BY 2020: 20% reduction from 1990 GHG levels</p> <p>BY 2030: 37.5% reduction from 1990 GHG levels</p>														
Carbon Price	<i>Current Allowance Price (per t/CO_{2e}):</i> CAD 22.40 (USD 16.48) (updated prices available here)														

ETS Size

Emissions covered by the ETS	.82
GHG covered	CO ₂ , CH ₄ , N ₂ O, SF ₆ , HFCs, PFCs, NO ₃ , and other fluorinated GHGs
Sectors covered and thresholds	<p>FIRST COMPLIANCE PERIOD (2013-2014): Electricity, Industry.</p> <p>SECOND COMPLIANCE PERIOD (2015-2017) AND THIRD COMPLIANCE PERIOD (2018-2020): Sectors of first compliance period as well as distribution and importation</p>

	<p>of fuels used for consumption in the transport and building sectors, and in small- and medium-sized businesses.</p> <p>INCLUSION THRESHOLDS: >25,000 tCO₂e/year. As of 2016, fuel distributors that have distributed 200L or more of fuel (in 2015) are also subject to inclusion even if the combustion of their fuel resulted in the emission of less than 25,000 tCO₂e.</p> <p>VOLUNTARY EMITTERS (OPT-IN COVERED ENTITIES): Starting in 2019, emitters from capped sectors that reported emissions between 10,000 tCO₂e/year and 25,000 tCO₂e/year may voluntarily register to the cap-and-trade system as a covered entity. If their production activity is eligible, they could receive free allocation.</p>
Point of regulation	Mixed
Number of liable entities	126 (74 industrial facilities, 52 fuel distributors) (2018) No information available yet.
Cap	<p>The system started in 2013 with a cap of 23.2 Mt CO₂e. With the program expanding to include fuel distribution, the cap rose to 65.3 Mt CO₂e in 2015.</p> <p>During the 2015-2020 period, the cap annually declined by about 2.11 Mt CO₂e per year (about 3.47 percent on average annually).</p> <p>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 reduce annually by about 1.24 Mt CO₂e (about 2.47% on average annually) until 2030. This will result in a cap of 44.14 million t/CO₂e in 2030.</p>

Phases & Allocation

Trading period	<p>The Québec cap-and-trade system is structured around three-year compliance periods, except for the first period (see “Compliance” below). A cap trajectory until 2030 has been set (see “Cap”). Allowances are allocated and auctioned with calendar vintage years.</p>
Allocation	<p>Allowances are distributed via auction and free allocation.</p> <p>FREE ALLOCATION: 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). The amount of free allocation issued is generally determined based on historical emissions intensity and therefore depends on the amount of reference units produced or consumed, an assistance factor, and an annual decline rate depending on the type of emissions (e.g., fixed process, combustion, and other, mainly fugitive emissions).</p> <p>Until 2020 the assistance factors (AFs) for all EITE sectors are set at 100%. For the 2021-2023 period, AFs for industrial activities will be determined based on trade exposure and emissions intensity. These metrics will be used to group the industrial sector’s carbon leakage risk into three categories (low, medium, and high) with AFs of 90%, 95%, and 100% respectively. An AF of 60% will apply for electricity and steam production.</p> <p>The rules used to determine the amount of free allowances issued to entities that are eligible to voluntarily opt in since 2019 are in alignment with what has been established for regulated entities.</p> <p>AUCTIONING: Generally, electricity and fuel distributors have to buy 100% of their allowances. Allowances are auctioned quarterly.</p> <p>Unsold allowances in past auctions are removed and will gradually be released for sale at auction after two consecutive auctions are held in which the settlement price is higher than the minimum price.</p>

In 2019, almost 75% of allowances were allocated by auction or directed to reserves. About 25% of allowances were allocated for free. 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.

Flexibility

Banking and borrowing	<p>Banking is allowed but the emitter is subject to a general holding limit.</p> <p>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> <p>Borrowing is not allowed.</p>
Offsets and credits	<p>QUANTITATIVE LIMIT: Up to 8% of each entity’s compliance obligation.</p> <p>QUALITATIVE LIMIT: Offset credits may be generated from projects carried out according to five protocols in Québec:</p> <ol style="list-style-type: none"> (1) CH₄ destruction from covered manure storage facilities; (2) CH₄ destruction from landfill sites; (3) Destruction of ozone-depleting substances contained in insulating foam or used as refrigerant gases removed from domestic appliances in Canada; (4) CH₄ destruction from drainage systems at active coal mines; and (5) CH₄ destruction from ventilation systems of active underground coal mines. <p>Québec is currently developing an offset protocol for afforestation and reforestation projects in private lands in Québec, which will be open to public consultation at a later point. A number of new offset protocols, co-commissioned with Ontario, were also under development. With the termination of Ontario’s cap-and-trade program this work was discontinued and Québec is currently assessing its priorities in terms of which protocols to keep developing.</p> <p>Offsets credits issued by jurisdictions linked with Québec are recognized as compliance instruments.</p> <p>Québec offset credits are 100% guaranteed. In cases where offset credits issued for a project were deemed illegitimate, the Minister may require the offset promoter (developer) to replace them.</p> <p>If credit recovery is not possible, an equivalent number of credits will be retired from the Minister’s environmental integrity account. That account is filled up through a contingency reserve of 3% of issued offset credits from all offset projects.</p>
Market Stability Provisions	<p>Auction Reserve Price: CAD 16.34 (USD 12.39) for Québec and USD 16.68 for California in 2020. For joint auctions with California in 2020, 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.</p> <p>The auction reserve price, the minimum price at which allowances are available at auction, increases annually by 5% plus inflation until 2030.</p> <p>Allowance Price Containment Reserve: Reserve emission units held in the allowance price containment reserve account may be sold as “sales by mutual agreement” by the minister in three tiers at CAD 60.79, CAD 68.38, and CAD 75.97 in 2020 (USD 45.71, USD 51.41, and USD 57.87) respectively. Only covered entities in Québec are eligible to purchase allowances from the reserve, if they do not have valid compliance instruments for the current period in their general account. Reserve prices increase annually by 5% plus inflation.</p>

Compliance

Compliance Period	<p>FIRST COMPLIANCE PERIOD: 1 January 2013 - 31 December 2014.</p> <p>SUBSEQUENT COMPLIANCE PERIODS: Three calendar years as of 1 January 2015 (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>REPORTING FREQUENCY: One year. Report to be submitted by 1 June of each year.</p> <p>VERIFICATION: Emitters (and voluntary emitters) participating in ETS (higher threshold than those with regulatory reporting requirement) must send a verification report carried out by an organization accredited to ISO 14065.</p> <p>FRAMEWORK: 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 real and verified 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 2,315-385,875) and spend up to 18 months in jail in the case of a natural person, and CAD 10,000-3,000,000 (USD 7,718-2,315,252) 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 non-compliant emitter.</p>

Linking

Links with other Systems	<p>Québec linked with California'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>Ministère de l'Environnement et de la Lutte contre les changements climatiques (Ministry of the Environment and the Fight Against Climate Change);</p> <p>Direction générale de la Réglementation carbone et des données d'émission (Carbon Market Directorate)</p>
Evaluation / ETS review	<p>The regulation has been adjusted almost annually to implement changes and adjustments and, when necessary, maintain harmonization with linked jurisdictions.</p>
Revenue	<p>Since the beginning of the program: CAD 3.85 billion (USD 2.97 billion).</p> <p>Collected in 2019: CAD 968 million (USD 727.7 million).</p>

	<p>All auction revenues go to the Québec Green Fund, which is dedicated to the fight against climate change through Québec's 2013-2020 Climate Action Plan. Examples for spending include energy efficiency, electrification measures (Québec's electricity is 99.7% renewable), and public transport initiatives. The electrification of domestic transport is another example.</p>
Implementing Legislation	<p>Regulation respecting a cap-and-trade system for greenhouse gas emission allowances</p> <p>Amendments are listed and linked on the site of the Québec ministry.</p> <p>Environment Quality Act</p>

China - Beijing pilot ETS

General Information

Summary	<p>Status: ETS in force</p> <p>Jurisdictions: Beijing</p> <p>The Beijing Pilot ETS was launched in November 2013; to date, it has completed six compliance years. Beijing is one of the few Chinese pilots with ETS regulation passed by its regional congress. The ETS covers about 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 cases of consecutively high or low average prices, the government can also auction or buy back extra allowances.</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 and 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>
Year in Review	<p>Following changes in responsibility at the national level for China's ETS, 2019 saw revisions to the administration of the Beijing ETS. Specifically, the Beijing Municipal Ecology and Environments Bureau released the '2018 Carbon Emission Management and Trading Plan,' which contained updates to implementing legislation.</p> <p>As part of the revisions to the 'The carbon allowance verification methods of enterprises (units) in Beijing,' the Beijing EEP adjusted the benchmark values of different unit types of power generation enterprises (combined heat and power), increasing their stringency.</p> <p>Changes to the governance structure and implementing regulation also resulted in slight delays to allowance verification as well as allowance allocation, to varying degrees.</p>
Overall GHG emissions (excluding LULUCF)	<p>Emissions: 188.1 MtCO₂e (2012)</p>
Overall GHG emissions by sector	<p>No information available yet.</p>
Overall GHG reduction target	<p>By 2020: 20.5% reduction in carbon intensity compared to 2015 levels (13th Five Year Plan).</p>
Carbon Price	<p><i>Current Allowance Price (per t/CO₂e):</i> CNY 78.60 (USD 11.37) (average 2019 price)</p>

ETS Size

Emissions covered by the ETS	0.40
GHG covered	CO ₂
Sectors covered and thresholds	<p>Industrial and non-industrial companies and entities, including electricity providers, heating sector, cement, petrochemicals, other industrial enterprises, manufacturers, service sector, and public transport.</p> <p>INCLUSION THRESHOLDS: 5,000 tCO₂/year, considering both direct and indirect emissions.</p>

	MANDATORY REPORTING: 2,000 tce energy consumption/year.
Point of regulation	Downstream. Both direct and indirect emissions are covered.
Number of liable entities	903 (2018). In addition, 624 entities have mandatory reporting obligation but no surrender obligations. No information available yet.
Cap	~50 MtCO ₂ e (2017)

Phases & Allocation

Trading period	2013-2019* *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.
Allocation	Free Allocation: Mainly free allocation through grandparenting based on emissions or emissions intensity in the baseline years (for 2018 allowances, the baseline years are 2009-2012 for stationary sources and 2013-2016 for mobile sources). Benchmarking is used for new entrants and entities with expanded capacity, as well for the power sector. Auctioning: Beijing could set aside up to 5% of allowances for regular and irregular auctions (see Market Stability Mechanisms). To date, the trigger price for additional auctions has never been met.

Flexibility

Banking and borrowing	Banking is allowed. Borrowing is not allowed.
Offsets and credits	Quantitative Limit: Domestic project-based carbon offset credits—Chinese Certified Emission Reduction (CCER) credits—are allowed. The use of CCERs is limited to 5% of the annual allocation. Qualitative Limit: CCERs from energy conservation projects and forestry carbon sink projects are allowed, whereas credits from hydropower, HFC, PFC, N ₂ O, and SF ₆ 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). Out of the 5% limit, at least 50% must come from projects within the jurisdiction of the city of Beijing. Among the non-Beijing CCERs, priority is given to those with regional climate or pollution control cooperation agreements (e.g., Hebei and Tianjin).
Market Stability Provisions	The competent authority can auction extra allowances if the weighted average price exceeds CNY 150 (USD 21.34) 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 2.85).

Compliance

Compliance Period	One year
Monitoring, Reporting, Verification (MRV)	REPORTING FREQUENCY: Annual reporting of CO ₂ emissions.

	<p>VERIFICATION: Third-party verification is required. In addition, further validation is carried out by government-assigned experts and random checks are conducted by fourth-party verifiers. Also, special attention is given to those only with mandatory reporting obligation while their reported emissions are close to 5,000 tCO₂.</p> <p>FRAMEWORK: The Beijing Development and Reform Commission has released guidelines for monitoring and reporting for the following seven sectors: heat production and supply, thermal power generation, cement, petrochemicals, transport, other industrial enterprises, and the service sector.</p> <p>OTHER: In addition to the ETS participants, all legal entities with energy consumption of more than 2,000 tce have to report their emissions. Verification is not required.</p>
Enforcement	<p>Penalties for failing to submit emissions or verification reports on time can result in fines up to 50,000 CNY (USD 7,113). 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.</p>

Linking

Links with other Systems	No information available yet.
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Other Information

Institutions involved	<p>Beijing DRC (competent authority) - the responsibility is expected to be moved to the Beijing Ecology and Environment Bureau in the course of 2019;</p> <p>China Beijing Environment Exchange (trading platform and registry)</p>
Evaluation / ETS review	No information available yet.
Revenue	No information available yet.
Implementing Legislation	<p>Beijing Pilot ETS Implementation Plan</p> <p>Interim Measures for the Management Emissions Trading in Beijing</p>

China - Chongqing pilot ETS

General Information

Summary	<p>Status: ETS in force</p> <p>Jurisdictions: Chongqing</p> <p>Chongqing launched its pilot ETS in June 2014 and to date 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 195 enterprises covered by the system in 2018 accounted for ~50% of the city's total emissions. 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 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 (i.e., the sum of the covered entities' highest emission amount 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 had suffered from low liquidity in past years due to a relatively loose cap in its early years.</p>
Year in Review	<p>2019 saw the competition of the transition of ETS-related responsibilities in Chongqing from the Development and Reform Commission (DRC) to the Ecology and Environment Bureau (EEB).</p> <p>The 2017 allocation plan was released by the Chongqing DRC in March 2018. The plan differs from other pilots in that the Chongqing ETS allowances are allocated based on entities' self-reported demand. 2017 was the first year since the launch of the pilot where the initial cap (100.5 MtCO_{2e}) was lower than the self-declared demanded amount (103.2 MtCO_{2e}), indicating a potential allowance shortage for some companies in the market.</p>
Overall GHG emissions (excluding LULUCF)	Emissions: ~300 MtCO _{2e} MtCO _{2e} (2018)
Overall GHG emissions by sector	No information available yet.
Overall GHG reduction target	BY 2020: 19.5% reduction in carbon intensity compared to 2015 levels (13th Five-Year Plan)
Carbon Price	<i>Current Allowance Price (per t/CO_{2e}):</i> 9.74 CNY (USD 1.41) (updated prices available here)

ETS Size

Emissions covered by the ETS	0.5
GHG covered	CO ₂ , CH ₄ , N ₂ O, HFCs, PFCs, SF ₆
Sectors covered and thresholds	<p>Power, electrolytic aluminum, ferroalloys, calcium carbide, cement, caustic soda, and iron and steel.</p> <p>INCLUSION THRESHOLDS: 20,000 tCO₂/year or energy consumption 10,000 tce/year.</p>
Point of regulation	<p>Downstream.</p> <p>Both direct and indirect emissions are covered.</p>
Number of liable entities	195 (2018)

	No information available yet.
Cap	~100 MtCO ₂ e (2018) From 2013 to 2015, the annual reduction rate of the cap was 4.13% and afterwards 4.85%.

Phases & Allocation

Trading period	2013-2019* *In the short term, the existing Chinese regional carbon markets are expected to operate in 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	Free Allocation: Free allocation through grandparenting based on historic emissions (highest number in period 2008-2012). If the sum of allocation for all enterprises exceeds the cap, a reduction factor is applied. Regulated companies submit their allocation quotas on a yearly basis, forming the basis of their free allocation. Ex-post adjustments based on output data are possible.

Flexibility

Banking and borrowing	Banking is allowed. Borrowing is not allowed.
Offsets and credits	QUANTITATIVE LIMIT: Domestic project-based carbon offset credits—CCERs—are allowed up to 8% of the compliance obligation. QUALITATIVE LIMIT: Reductions have to be achieved after 2010 with the exception of carbon sink projects. Credits from hydro projects are not allowed.
Market Stability Provisions	Exchange Intervention: In case of market fluctuations, the Chongqing Carbon Emissions Exchange can take price stabilization measures. Sale and Trade Limits: Compliance entities must not sell more than 50% of their annual free allocation.

Compliance

Compliance Period	One year
Monitoring, Reporting, Verification (MRV)	REPORTING FREQUENCY: Annual reporting of GHG emissions. VERIFICATION: Third-party verification is required. FRAMEWORK: 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.
Enforcement	There are no financial penalties for noncompliance. Nonfinancial penalties may include public reporting, disqualification from the 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.

Other Information

Institutions involved

Chongqing Ecology and Environment Bureau (competent authority);
Chongqing Carbon Emissions Trading Center (trading platform and registry)

Evaluation / ETS review

No information available yet.

Revenue

No information available yet.

Implementing Legislation

[Interim Measures for Management of Emissions Trading In Chongqing](#)
[Chongqing DRC – Allowance Allocation Management Rules](#)
[Chongqing DRC – Notice about Allowances Allocation for Vintage 2017](#)

China - Fujian pilot ETS

General Information

Summary	<p>Status: ETS in force</p> <p>Jurisdictions: Fujian</p> <p>Fujian launched its ETS in September 2016; it is the eighth regional pilot ETS in China. Unlike other 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 Haixia Equity Exchange in Fujian was approved by the NDRC as one of nine trading platforms for trading Chinese Certified Emission Reductions (CCERs), demonstrating the recognition by NDRC 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>
Year in Review	<p>In early 2019, the ETS-related responsibilities in Fujian completed the transition from DRC to the Ecology and Environment Bureau, as a result of the governance restructuring across China.</p> <p>The 2018 and 2019 allocation plan was released by the Fujian Provincial Department of Ecology and Environment in June 2019. It includes the same coverage threshold and number of entities as the previous year (255). Almost 50% of the regulated entities (109) are architectural ceramics companies.</p>
Overall GHG emissions (excluding LULUCF)	Emissions: 240.0 MtCO ₂ e MtCO ₂ e (2014)
Overall GHG emissions by sector	No information available yet.
Overall GHG reduction target	BY 2020: 19.5% reduction in carbon intensity compared to 2015 levels
Carbon Price	<i>Current Allowance Price (per t/CO₂e):</i> 16.25 CNY (USD 2.35) (updated prices available here)

ETS Size

Emissions covered by the ETS	0.60
GHG covered	CO ₂
Sectors covered and thresholds	<p>Electricity, petrochemical, chemical, building materials, iron and steel, nonferrous metals, paper, aviation, and ceramics.</p> <p>INCLUSION THRESHOLDS: Energy consumption 10,000 tce/year for any year between 2013-2016.</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	Downstream. Both direct and indirect emissions are covered.
Number of liable entities	255 (2018) No information available yet.
Cap	~200 MtCO ₂ (2017)

Phases & Allocation

Trading period	2016-2019* *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.
Allocation	<p>Free Allocation: Benchmarking is applied to 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 allowance allocation. At first, entities will receive 70% of the allowances, which are calculated based on their production levels in 2018. Allocation will be adjusted ex post to reflect the actual production in 2019.</p> <p>Auctioning: Auctioning may take place where considered appropriate by the ETS authorities (see Market Stability Provisions below) and may be introduced as a method for allowance allocation over time; up to 10% of the total cap is reserved for market intervention.</p> <p>In order to increase market liquidity and price discovery, the Fujian DRC organized a discriminatory (nonuniform price) auction of 50,000 allowances in 2016. 50,000 allowances from the government reserve were auctioned, with the settlement prices ranging from CNY 26.50 (USD 4.01) to around CNY 30 (USD 4.53). To date, this is the only auction held in the province.</p>

Flexibility

Banking and borrowing	Banking is allowed. Borrowing is not allowed.
Offsets and credits	<p>QUANTITATIVE LIMIT: 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, which is increased to 10% for companies that use both FFCER and CCER credits.</p> <p>QUALITATIVE LIMIT: Eligible offsets will be restricted to those generated in Fujian province, from CO₂ or CH₄ projects. Hydropower-related credits are not eligible. FFCER projects, with three project types (afforestation, forest management, and bamboo management), need to start implementation after 16 February 2005 and the project developers need to have independent legal personality.</p>
Market Stability Provisions	Intervention, Reserves: According to the (trial) 'Implementation Rules of Emissions Trading Market Management in Fujian Province,' in case of market fluctuations (i.e., if the cumulative increase or decrease of allowance prices for 10 consecutive trading days reach a certain percentage), severe imbalances between supply and demand, or liquidity issues,

the Fujian Economic and Information Center under the guidance of the Fujian DRC—in consultation with an advisory committee—can buy or sell allowances in order to stabilize the market. 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.

Compliance

Compliance Period	One year
Monitoring, Reporting, Verification (MRV)	<p>REPORTING FREQUENCY: Annual reporting of CO2 emissions.</p> <p>VERIFICATION: Third-party verification is required. In addition, further validation is carried out by government-assigned experts and random checks are conducted by fourth-party verifiers. Special attention is also given to those only with mandatory reporting obligation while their reported emissions are close to 5,000 tCO2.</p> <p>FRAMEWORK: The Fujian DRC and the Fujian Statistical Bureau have 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.</p>
Enforcement	Penalties for failing to submit an emissions or verification report on time, providing false information, or disturbing the verification process range from CNY 10,000 (USD 1,512) to CNY 30,000 (USD 4,535). 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, with a maximum limit of CNY 30,000 (USD 4,535). 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 1,512) to CNY 30,000 (USD 4,535).

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	Implementation Plan of Emissions Trading Market Construction in Fujian Province Interim Measures for the Management of Emissions Trading in Fujian Province Fujian Provincial Department of Ecology and Environment—Allocation Plan for Vintage 2018 and 2019 (Chinese)

China - Guangdong pilot ETS

General Information

Summary	<p>Status: ETS in force</p> <p>Jurisdictions: Guangdong</p> <p>The Guangdong Pilot ETS was launched in December 2013 and is the largest of the Chinese ETS pilots. Following a scope expansion in 2016 the ETS now covers the power, cement, steel, petrochemical, papermaking, and domestic aviation sectors, accounting for more than 60% 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. Unlike other pilots, Guangdong auctions a small share of allowances.* The auctioning has been moved from mandatory (2013) to voluntary participation (since 2014) and has been held ad hoc (rather than quarterly) since 2017. Guangdong and Shenzhen are the only two Chinese pilots 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 2019, it had 87 institutional investors.</p> <p>*It was mandatory for enterprises to purchase 3% of their allowances from auctions in 2013 before receiving the remainder for free. Since 2014, the non-free allocation rate has been raised to 5% for the power sector and 3% for the remaining sectors.</p>
Year in Review	<p>The 2019 allocation plan was released by the Department of Ecology and Environment of Guangdong in November. The plan includes revisions to the allocation methodology, including expansion of benchmarking to co-generation as well as refinements to the benchmarks for the iron and steel sector. In addition, the number of allowances available for auction increased from two million tonnes in 2018 to five million tonnes in 2019.</p>
Overall GHG emissions (excluding LULUCF)	<p>Emissions: 610.5 MtCO_{2e} (2012)</p>
Overall GHG emissions by sector	<p>No information available yet.</p>
Overall GHG reduction target	<p>BY 2020: 20.5% reduction in carbon intensity compared to 2015 levels</p>
Carbon Price	<p><i>Current Allowance Price (per t/CO_{2e}):</i> CNY 23.20 (USD 3.36) (updated prices available here)</p>

ETS Size

Emissions covered by the ETS	0.60
GHG covered	CO ₂
Sectors covered and thresholds	<p>Power, iron and steel, cement, papermaking, aviation, and petrochemicals.</p> <p>INCLUSION THRESHOLDS: 20,000 tCO₂/year or energy consumption 10,000 tce/year.</p>
Point of regulation	<p>Downstream.</p> <p>Both direct and indirect emissions 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.</p>
Number of liable entities	<p>242 existing entities (2019) 37 new entrant entities (2019)</p> <p>No information available yet.</p>
Cap	<p>465 MtCO₂e (2019), among which 27 MtCO₂e are kept as government reserves for new entrants and market stability.</p>

Phases & Allocation

Trading period	<p>2013-2019*</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>Free Allocation: Mainly free allocation based on grandparenting, historical intensity, or benchmarking. Benchmarking is applied to coal- and gas-fired electricity generators (including heating, as well as combined heat and power), as well as to some industrial processes in the aviation, cement, paper, and steel sectors. Ex post adjustments based on real production data of the respective compliance year are also applied.</p> <p>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. In 2019, the government auction allowance was adjusted from two million allowances in previous years to five million allowances in 2019. Quarterly auctions were held until 2016, while in 2017 and 2018 auctions were ad hoc. No auction took place in 2018 or 2019.</p>

Flexibility

Banking and borrowing	<p>Banking is allowed. Borrowing is not allowed.</p>
Offsets and credits	<p>QUANTITATIVE LIMIT: Chinese Carbon offset credits (CCERs) are allowed. As a mechanism that encourages the public to reduce carbon emissions, Pu Hui Certified Emission Reductions (PHCER) are also allowed during 2017 and 2018. In 2018, entities are allowed to make use of 1.5 million offsets (CCER and PHCER) towards compliance obligations. The number of 2019 has not yet been announced.</p> <p>QUALITATIVE LIMIT: Of the annual compliance obligation met by offsets, at least half must be from CO₂ or CH₄ reduction projects. At least 70% of offsets need to come from within Guangdong province. Pre-CDM credits are not eligible. Credits from hydro and from most fossil fuel projects are also not eligible.</p>
Market Stability Provisions	<p>Reserves: The Guangdong province set aside 5% of all allowances 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>Auction Floor Price: Auctions under the Guangdong Pilot ETS are subject to an auction floor price. Initially in 2013, it was set at CNY 60 (USD 8.54), and then it was lowered to CNY</p>

25 (USD 3.56) and increased to CNY 40 (USD 5.69) in steps of CNY 5 (USD 0.71) with each quarterly auction. In 2015, the floor price was set at 80% of the weighted average price for allowances over the previous three months. In 2016, there was no restriction on the declared price, but a so-called policy reserve price was set as an effective price floor. In 2017, 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 are as follows: (21 June 2016–20 June 2017) were CNY 9.37 (USD 1.33), CNY 11.27 (USD 1.60), CNY 16.09 (USD 2.29), and CNY 15.15 (USD 2.16).

Offset Auctions: Guangdong also introduced auctioning for PHCERs with an auction reserve price set by the Emissions Exchange Guangzhou on behalf of offset project developers. In the latest auction (28 November 2019), the floor reserve price for one offset project was set as CNY 19.61/tonne (USD 2.79) (80% of the weighted average price for allowances over the previous three months). For the other two, it was set as CNY 24.51/tonne (USD 3.49) (100% of the weighted average price for allowances over the previous three months).

Compliance

Compliance Period	One year
Monitoring, Reporting, Verification (MRV)	<p>REPORTING FREQUENCY: Annual reporting of CO2 emissions.</p> <p>VERIFICATION: Third-party verification is required. In addition, further assessment of all validation reports was carried out by the government. On-site cross reverifications were also conducted by third parties for all compliance entities with questionable verification reports, as well for randomly selected entities. These have been shifted to fourth-party assessment and verification since the 2016 compliance period.</p> <p>FRAMEWORK: The Department of Ecology and Environment of Guangdong has released guidelines for monitoring and reporting for the compliance and reporting sectors.</p> <p>OTHER: Industrial enterprises with annual carbon emission of more than 5,000 tonnes and less than 10,000 tonnes are required to report. Verification is not required.</p>
Enforcement	Penalties for failing to submit emissions or verification reports on time range from CNY 10,000 (USD 1,423) to CNY 50,000 (USD 7,113). 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 7,113). 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	Guangdong Ecology and Environment Bureau (competent authority); Emissions Exchange Guangzhou (trading platform)
Evaluation / ETS review	No information available yet.
Revenue	Since beginning of program: CNY 804 million (USD 114 million) Collected in 2019: No revenue in 2019 (no auctions took place in 2019)

	<p>Guangdong has been exploring the establishment of a Low Carbon Development Fund that would use auctioning revenues to promote further mitigation actions, carbon finance, and low-carbon industry development. However, due to the change of competent authority, further information regarding the project has not been released.</p>
Implementing Legislation	<p>Guangdong Pilot ETS Implementation Plan Trial Measures for Emissions Trading in Guangdong</p> <p>Department of Ecology and Environment of Guangdong—Allocation Plan for Vintage 2019</p>

China - Hubei pilot ETS

General Information

<p>Summary</p>	<p>Status: ETS in force</p> <p>Jurisdictions: Hubei</p> <p>The Hubei Pilot ETS was launched in April 2014; to date, it has concluded five 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 when considering spot trading only, after Guangdong. When spot forward trading is also considered, Hubei has the largest market share as of end 2018, with its total secondary market transaction volume and value both accounting for over 60% of the sum of all pilots together. The system initially covered 138 of the most carbon-intensive companies in the province, accounting for approximately 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 and in 2017 further lowered the thresholds of all the other sectors to 10,000 tce. 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.</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. However, only allowances that were traded can be banked into later years. The transition of Hubei allowances into the National ETS will be based on rules to be defined by the national competent authority. In December 2017, Hubei was selected to lead the development of the registry for the national ETS.</p>
<p>Year in Review</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>The 2018 allocation plan was released by the Department of Ecology Environment of Hubei in July 2019. The key changes compared to the previous year's plan include a tighter allocation rule, expanding coverage to the water supply sector, and change of the allocation method of heat and cogeneration from a benchmark approach to one based on historical intensity.</p>
<p>Overall GHG emissions (excluding LULUCF)</p>	<p>Emissions: 463.1 MtCO_{2e} (2012)</p>
<p>Overall GHG emissions by sector</p>	<p>No information available yet.</p>
<p>Overall GHG reduction target</p>	<p>BY 2020: 19.5% reduction in carbon intensity compared to 2015 levels</p>
<p>Carbon Price</p>	<p><i>Current Allowance Price (per t/CO_{2e}):</i> CNY 32.05 (USD 4.64) (updated prices available here)</p>

ETS Size

<p>Emissions covered by the ETS</p>	<p>0.45</p>
<p>GHG covered</p>	<p>CO₂</p>

Sectors covered and thresholds	<p>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>INCLUSION THRESHOLDS: Annual energy consumption more than 10,000 tce in any year between 2015 and 2017.</p> <p>Until 2015: Annual energy consumption more than 60,000 tce in any year between 2010 and 2011.</p>
Point of regulation	<p>Downstream.</p> <p>Both direct and indirect emissions are covered.</p>
Number of liable entities	<p>338 (2018)</p> <p>No information available yet.</p>
Cap	<p>256 MtCO₂ (2018)</p>

Phases & Allocation

Trading period	<p>2014-2019*</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>Free Allocation: Free allocation of 2018 vintage allowances through benchmarks for power and cement (except the entities using outsourced clinker).</p> <p>Historical emissions intensity for heat, co-generation, glass and other building materials, 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 possible, especially for those sectors that use benchmarks and emissions intensity.*</p> <p>The total cap also includes a new entrants reserve, as well as a government reserve for potential market stability measures.</p> <p>Auctioning: In November 2019, through two separate auctions 5 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.</p> <p>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 3.50). Remaining allowances were made available to covered entities as well as other market participants. 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 3.48).</p> <p>*In this case, entities first receive half of the total allowance based on the previous year's actual emission data or historical emission baseline; the actual production data is then used to update allocation ex-post.</p>

Flexibility

Banking and borrowing	<p>Banking is allowed, but only for allowances that were traded at least once. Borrowing is not allowed.</p>
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Offsets and credits	<p>Quantitative Limit: The use of domestic project-based carbon offset credits (CCERs) is limited to 10% of the annual initial allocation for each entity.</p> <p>Qualitative Limit: 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.</p>
Market Stability Provisions	<p>Reserve: 8% of the total cap is kept as a government reserve for market stabilization.</p> <p>Intervention: 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.</p> <p>Exchange: The exchange limits day-to-day price fluctuations to between -10% and +10% respectively.</p>

Compliance

Compliance Period	One year
Monitoring, Reporting, Verification (MRV)	<p>REPORTING FREQUENCY: Annual reporting of CO2 emissions.</p> <p>VERIFICATION: Third-party verification is required. In addition, further validation is carried by government-assigned experts and random checks are conducted by fourth-party verifiers. Special attention is also given to those only with mandatory reporting obligation while its reported emissions are close to 26,000 tCO2.</p> <p>FRAMEWORK: The Hubei DRC has released a guiding document on monitoring and reporting that includes sector-specific guidance for the following sectors: power, glass, aluminum, calcium carbide, pulp and paper, automobile manufacturing, iron and steel, ferroalloys, ammonia, cement, and petroleum processing.</p>
Enforcement	Penalties for failing to submit an emissions or verification report on time range from CNY 10,000 (USD 1,512) to CNY 30,000 (USD 4,535). Trade participants that manipulate the market face up to CNY 150,000 (USD 22,673) 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 22,673).

Linking

Links with other Systems	No information available yet.
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Other Information

Institutions involved	Department of Ecology Environment of Hubei Province (competent authority); China Hubei Emission Exchange (trading platform and registry)
Evaluation / ETS review	No information available yet.
Revenue	<p>Since beginning of program: CNY 122.74 million (USD 17.45 million)*</p> <p>Collected in 2019: CNY 122.74 million (USD 17.45 million)</p>

	<p>*One auction of four millions allowances took place in 2014 for which information surrounding the revenue is not available. The objective of the auction was to discover the market price and enhance market liquidity, rather than as a way of allowance allocation.</p> <p>No information available yet.</p>
Implementing Legislation	<p>Hubei Pilot ETS Implementation Plan</p> <p>Interim Measures for Management of Emissions Trading in Hubei Province</p> <p>Hubei DRC – Allocation Plan for Vintage 2017</p>

China - Shanghai pilot ETS

General Information

Summary	<p>Status: ETS in force</p> <p>Jurisdictions: Shanghai</p> <p>Shanghai was the second Chinese region, after Shenzhen, to start its pilot ETS in November 2013 and has concluded five compliance years so far. 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 almost 100% compliance rate continuously since its launch. In 2016 Shanghai expanded its ETS coverage by adding the shipping sector, as well as lowering the threshold of exiting power and industries (which were included in the 2013-2015 phase) to 10,000 tCO₂/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 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, green bonds, carbon funds, carbon trusts, CCER mortgages, and allowance borrowing.</p> <p>In December 2017, Shanghai was selected to lead the development of the trading platform for the national ETS.</p>
Year in Review	<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>The 2018 allocation plan was released by the Shanghai DRC in December 2018. No significant changes were implemented compared to the allocation plan of the previous year.</p>
Overall GHG emissions (excluding LULUCF)	Emissions: 297.7 MtCO ₂ e (2012)
Overall GHG emissions by sector	No information available yet.
Overall GHG reduction target	BY 2020: 20.5% reduction in carbon intensity compared to 2015 levels. The total CO ₂ emissions to be limited within 250 million tonnes.
Carbon Price	<i>Current Allowance Price (per t/CO₂e):</i> CNY 40.46 (USD 5.86) (updated prices available here)

ETS Size

Emissions covered by the ETS	0.57
GHG covered	CO ₂
Sectors covered 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>INCLUSION THRESHOLDS:</p>

	<p>For power and industry: 20,000t CO₂/year or 10,000 tce/year; and those that already participated in the 2013-2015 phase with 10,000 tCO₂/year or 5,000 tce/year.</p> <p>For Transport: 10,000t CO₂/year or 5,000 tce/year (aviation and ports), 100,000t CO₂/year or 50,000 tce/year (shipping), considering both direct and indirect emissions.</p> <p>For Buildings: 10,000t CO₂/year or 5,000 tce/year.</p>
Point of regulation	<p>Downstream.</p> <p>Both direct and indirect emissions are covered.</p>
Number of liable entities	<p>298 (2018)</p> <p>No information available yet.</p>
Cap	158 MtCO ₂ e (2018, including both free allocation and reserve)

Phases & Allocation

Trading period	<p>Two trading periods: first period 2013-2015, second period 2016; no specific ending year.*</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>Free Allocation: Free allocation based on sector-specific benchmarks (power, heat, manufacturers); historic emissions intensity (industry, aviation, car glass, ports, shipping, and water suppliers, generally based on 2014-2016 data); or historic emissions (buildings, commercial sector, industry with complex products or considerable change in emission boundary, and airports, generally based on 2015-2017 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>Auctioning: A small share of the annual cap could be auctioned. The purpose of auctions is to provide compliance entities with additional supply to meet their compliance demand. Shanghai auctioned two million tonnes from the government reserve in November 2019, with a floor price set at 1.2 times the weighted on-exchange allowance price from 1 August 2018 to 28 November 2019—CNY 48 (USD 6.83). The auction cleared at the floor price and a total of 73,421 allowances were sold (3.7% of total auction volume). An auction of two million allowances was held in July 2018. 15% of allowances were sold, at the floor price of CNY 41.54 (USD 6.28).</p>

Flexibility

Banking and borrowing	<p>Banking is allowed both within and across compliance periods, with some restrictions for the latter. For banked allowances from the first trading period (2013-2015), only one-third can be used per year between 2016 and 2018 by compliance entities; allowances are fully bankable for institutional investors, with some restrictions for OTC deals.</p> <p>Borrowing is not allowed.</p>
Offsets and credits	<p>QUANTITATIVE LIMIT: Domestic project-based carbon offset credits—CCERs—are allowed. Since 2016 the use of CCER credits is limited to 1% of the annual allocation. Between 2013 and 2015 the limit was 5%.</p> <p>QUALITATIVE LIMIT: Credits for reductions that were realized before January 2013 cannot be used for compliance. Credits from hydro projects are not allowed.</p>

Market Stability Provisions	<p>Exchange: Depending on transaction types, if prices vary more than 10% or 30% in one day, the Shanghai Environment and Energy Exchange can take price stabilization measures such as temporarily suspending trading or imposing holding limits.</p> <p>Reserve: In addition, a small share of annual cap could be kept in a reserve for auctioning before the end of the annual compliance cycle as a market stability measure (see “Auctions” section).</p>
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Compliance

Compliance Period	One year
Monitoring, Reporting, Verification (MRV)	<p>REPORTING FREQUENCY: Annual reporting of CO2 emissions.</p> <p>VERIFICATION: Third-party verification is required. Besides this, the government also conducts quality checks.</p> <p>FRAMEWORK: The Shanghai DRC has released monitoring and reporting 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 1,512) to CNY 50,000 (USD 7,558).</p> <p>Between CNY 50,000 (USD 7,558) and CNY 100,000 (USD 15,115) can be imposed for noncompliance, besides surrendering the adequate amount of allowances. Further sanctions may also be imposed, such as entry into the credit record of the company, publication on the internet, cancelation of ability to access special funds for energy conservation, and emissions reduction measures.</p>

Linking

Links with other Systems	No information available yet.
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Other Information

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	<p>Since beginning of programm: CNY 18.17 million (USD 2.63 million) Collected in 2019: CNY 3.52 million (USD 0.50 million)</p> <p>The revenues are submitted to the general municipality budget.</p>
Implementing Legislation	<p>Shanghai Pilot ETS Implementation Plan</p> <p>Trial Measures for Management of Emissions Trading in Shanghai</p> <p>Shanghai DRC - Allocation Plan for Vintage 2018</p> <p>Shanghai DRC - Allocation Plan for Vintage 2017</p>

China - Shenzhen pilot ETS

General Information

<p>Summary</p>	<p>Status: ETS in force</p> <p>Jurisdictions: Shenzhen</p> <p>The Shenzhen Pilot ETS, which began in June 2013, 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 794 entities (2017). A unique feature of the Shenzhen Pilot ETS is its legal basis. While 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 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 in Shenzhen market on a voluntary basis as of June 2016.*</p> <p>*In June 2017, the companies from Baotou completed the first compliance. No further information is available on the subsequent compliance years.</p>
<p>Year in Review</p>	<p>In early 2019, the ETS-related responsibilities in Shenzhen completed the transition from DRC to the Ecology and Environment Bureau (EEB), as a result of the governance restructuring across China.</p> <p>Shenzhen is one of the most active regional markets in China, despite its relatively small size compared to other pilots. As of 25 July 2018, its accumulated transaction amount reached CNY 1.091 billion (USD 0.165 billion), with total volume of 35.7 million tonnes, which makes it the first pilot in China to reach CNY 1 billion (USD 0.151 billion). Shenzhen's allocation plans for 2017 and 2018 have not been made publicly available.</p>
<p>Overall GHG emissions (excluding LULUCF)</p>	<p>Emissions: 83.45 MtCO_{2e} (2010)</p>
<p>Overall GHG emissions by sector</p>	<p>No information available yet.</p>
<p>Overall GHG reduction target</p>	<p>BY 2020: 45% reduction in carbon intensity compared to 2005</p> <p>BY 2022: Shenzhen has pledged to peak its GHG emissions by 2022, as one of the first group of cities in China to endorse such a peak year target</p>
<p>Carbon Price</p>	<p><i>Current Allowance Price (per t/CO_{2e}):</i> CNY 13.70 (USD 1.98) (updated prices available here)</p>

ETS Size

<p>Emissions covered by the ETS</p>	<p>0.40</p>
<p>GHG covered</p>	<p>CO₂</p>

Sectors covered and thresholds	Power, water, gas, manufacturing sectors, buildings, port and subway sectors, public buses, and other non-transport sectors. INCLUSION THRESHOLDS: Annual emissions of 3,000 tCO ₂ e/year for enterprises; large public buildings and 10,000m ² for government buildings.
Point of regulation	Downstream. Both direct and indirect emissions are covered.
Number of liable entities	794 (2017) No information available yet.
Cap	31.45 MtCO ₂ (excluding buildings, 2015)

Phases & Allocation

Trading period	2013-2019* *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	Free Allocation: Allowances are largely distributed for free. Benchmarking is applied to the water, power, and gas sectors based on sectoral historical emissions intensity. Grandparenting is applied to port and subway sectors, public buses, and other non-transport sectors based on the entity's historical emissions intensity. Allowance allocation is adjusted ex post based on output data. Although the 'Interim Measure for the Administration of Carbon Emission Trading of Shenzhen' states that at least 3% of allowances should be auctioned, this has not been implemented. So far, only one auction took place (in June 2014) in order to increase market supply.

Flexibility

Banking and borrowing	Banking is allowed. Borrowing is not allowed. Unlike other pilots, Shenzhen releases its annual allowances before the compliance date of the previous vintage but does not allow them to be used for the purpose for previous vintage compliance.
Offsets and credits	QUANTITATIVE LIMIT: Domestic project-based carbon offset credits (CCERs) are allowed. The use of CCER credits is limited to 10% of the annual compliance obligation. QUALITATIVE LIMIT: Credits from hydro projects are not eligible and additional geographic restrictions apply to the use of certain CCERs.
Market Stability Provisions	Intervention: In case of market fluctuations, the Shenzhen EEB can sell extra allowances from a reserve at a fixed price. Such allowances can only be used for compliance and cannot be traded. The EEB can also buy back up to 10% of the total allocation.

Compliance

Compliance Period	One year
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Monitoring, Reporting, Verification (MRV)	<p>REPORTING FREQUENCY: Annual reporting of CO₂ emissions with a tiered approach taking into account the size of the company. A quarterly emissions report is also submitted. In addition, covered industrial entities must annually submit a statistical indicator data report.</p> <p>VERIFICATION: Third-party verification of the emissions report is required. Covered entities cannot use the same verifiers for three consecutive years. For the statistical indicator data report, the municipal statistical department may entrust the statistical indicator data verification agency to verify. In addition, further random checks of emission reports and verification reports are conducted by the government. The proportion of these checks shall 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>FRAMEWORK: The Shenzhen DRC has released a guiding document on monitoring and reporting that includes sector-specific guidance for the covered sectors.</p>
Enforcement	<p>Institutes 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 15,115). Companies 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.</p>

Linking

Links with other Systems	No information available yet.
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Other Information

Institutions involved	<p>Shenzhen DRC (competent authority)—the responsibility is expected to move to the Human Settlements and Environment Commission of Shenzhen Municipality in the course of 2020; China Shenzhen Emissions Exchange (trading Platform and Registry)</p>
Evaluation / ETS review	No formal evaluation has been conducted. Research on improving Shenzhen ETS has been undertaken every year, funded by Shenzhen DRC.
Revenue	<p>Since beginning of program: CNY 2.6 million in 2014* (USD 390,000)</p> <p>Collected in 2018: No auctions took place in 2018.</p> <p>*The objective of the auction was to increase market supply, and not as a means of allowance allocation.</p> <p>No information available yet.</p>
Implementing Legislation	<p>Shenzhen Special Economic Zone ETS Bill</p> <p>Interim Measures for Management of Emissions Trading in Shenzhen</p> <p>Shenzhen DRC – Notice of Carrying Out Emissions Trading Work for Vintage 2016</p>

China - Tianjin pilot ETS

General Information

Summary	<p>Status: ETS in force</p> <p>Jurisdictions: Tianjin</p> <p>Tianjin launched its pilot ETS in December 2013 and has concluded five compliance years so far. The system covers heat and electricity production; iron and steel; petrochemicals; chemicals; and oil and gas exploration. 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>
Year in Review	<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.</p> <p>Changes to the governance and design of the system are outlined in the 'Interim Measure for Management of Emissions Trading in Tianjin (Revised Draft)' that was published in November.</p>
Overall GHG emissions (excluding LULUCF)	Emissions: 215 MtCO ₂ e (2012)
Overall GHG emissions by sector	No information available yet.
Overall GHG reduction target	BY 2020: 20.5% reduction in carbon intensity compared to 2015 levels (13th Five-Year Plan)
Carbon Price	<i>Current Allowance Price (per t/CO₂e):</i> 13.69 CNY (USD 1.98) (updated prices available here)

ETS Size

Emissions covered by the ETS	0.55
GHG covered	CO ₂
Sectors covered and thresholds	<p>Heat and electricity production, iron and steel, petrochemicals, chemicals, and exploration for oil and gas. Papermaking, aviation, and building materials from 2019.</p> <p>INCLUSION THRESHOLDS: 20,000t CO₂/year considering both direct and indirect emissions.</p>
Point of regulation	<p>Downstream.</p> <p>Both direct and indirect emissions are covered.</p>
Number of liable entities	<p>107 in 2018 113 in 2019</p> <p>No information available yet.</p>
Cap	160-170 MtCO ₂ (2017)

Phases & Allocation

Trading period	2013-2019* *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	Free Allocation: Mainly free allocation through grandparenting based on 2009-2012 emissions or on emissions intensity. Benchmarking for new entrants and expanded capacity. Auctioning: 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 (USD2.08).

Flexibility

Banking and borrowing	Banking is allowed. Borrowing is not allowed.
Offsets and credits	QUANTITATIVE LIMIT: Domestic project-based China Carbon Offset Credits—CCERs—are allowed. The use of CCER credits is limited to 10% of the annual compliance obligation. QUALITATIVE LIMIT: Credits must stem from CO2 reduction projects, excluding hydro. They must be realized after 2013.
Market Stability Provisions	Intervention: In case of market fluctuations, the Tianjin EEB can buy or sell allowances in order to stabilize the market.

Compliance

Compliance Period	One year
Monitoring, Reporting, Verification (MRV)	REPORTING FREQUENCY: Annual reporting of CO2 emissions. VERIFICATION: Third-party verification is required. Covered entities cannot use the same verifiers for three consecutive years. FRAMEWORK: The Tianjin DRC has released a guiding document on monitoring and reporting that includes sector-specific guidance for the covered sectors, which EEB, as the competent authority since 2019, is continuing to improve.
Enforcement	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. There are no financial penalties for noncompliance.

Linking

Links with other Systems	No information available yet.
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Other Information

Institutions involved	Tianjin Ecology and Environment Bureau; Tianjin Climate Exchange (trading platform and registry)
Evaluation / ETS review	No information available yet.
Revenue	No information available yet.
Implementing Legislation	Tianjin Pilot ETS Implementation Plan Interim Measure for Management of Emissions Trading in Tianjin Interim Measure for Management of Emissions Trading in Tianjin (2016) Interim Measure for Management of Emissions Trading in Tianjin (2018)

EU Emissions Trading System (EU ETS)

General Information

Summary	<p>Status: ETS in force</p> <p>Jurisdictions: Member states: 28 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 cost-effectively reducing GHG emissions from the regulated sectors. The system covers ~45% of the EU's emissions, from the power sector, manufacturing industry, and aviation limited to flights within the European Economic Area. It is the oldest and largest ETS operating worldwide. Introduced in 2005, now approaching the end of the third trading phase, the EU ETS has gone through several reforms. The revision of the system's framework, completed in 2018, will be implemented with the start of the fourth trading phase in January 2021. In January 2020, the EU ETS became linked to the Swiss ETS, the first linking of this kind for both parties.</p>										
Year in Review	<p>Following the adoption of the revised ETS Directive setting the cornerstones of the post-2020 policy framework, in 2019, the focus shifted towards implementing the agreed provisions ahead of the next trading phase (2021-2030). New implementing legislation on the carbon leakage list, free allocation rules, the Innovation Fund, auctioning, monitoring, reporting, verification and accreditation, and on the Union Registry was adopted in the past year.</p> <p>On 1 January 2019, the market stability reserve (MSR), the instrument to address the supply-demand imbalance of allowances in the EU ETS and improve its resilience against future shocks, became operational. In 2019, the MSR absorbed around 397 million allowances from auction volumes. From January to August 2020 another 265 million allowances are due to be placed in the reserve.</p> <p>Following final regulatory changes in the design of the Swiss ETS in late 2019, a link between the Swiss and EU ETS took effect on 1 January 2020, allowing regulated entities in both systems to use allowances from either ETS for compliance.</p>										
Overall GHG emissions (excluding LULUCF)	<p>Emissions: 4,323 MtCO_{2e} (2017)</p>										
Overall GHG emissions by sector	<table border="1"> <thead> <tr> <th>Sector Name</th> <th>MtCO_{2e}</th> </tr> </thead> <tbody> <tr> <td>Energy</td> <td>3368</td> </tr> <tr> <td>Industrial Processes</td> <td>377</td> </tr> <tr> <td>Agriculture</td> <td>439</td> </tr> <tr> <td>Waste</td> <td>139</td> </tr> </tbody> </table>	Sector Name	MtCO _{2e}	Energy	3368	Industrial Processes	377	Agriculture	439	Waste	139
Sector Name	MtCO _{2e}										
Energy	3368										
Industrial Processes	377										
Agriculture	439										
Waste	139										
Overall GHG reduction target	<p>By 2020: 20% below 1990 GHG levels</p> <p>By 2030: At least 40% below 1990 GHG levels; emissions regulated by the EU ETS 43% below 2005 levels</p>										
Carbon Price	<p>By 2050: EU leaders have committed to reaching climate neutrality by mid-century</p> <p>Current Allowance Price (per tCO_{2e}): EUR 24.84 (USD 27.81) (average 2019 price of secondary market [EEX]; updated prices available here)</p>										

ETS Size

Emissions covered by the ETS	0.45
GHG covered	CO ₂ , N ₂ O, PFCs
Sectors covered and thresholds	<p>PHASE 1 (2005-2007): Power stations and other combustion installations with >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 board.</p> <p>PHASE 2 (2008-2012): Aviation was introduced in 2012 (>10,000 tCO₂/year for commercial aviation; >1,000 tCO₂/year for non-commercial aviation since 2013) (see below). NO_x emissions from the production of nitric acid were included by a number of countries. The EU ETS also expanded to include Iceland, Liechtenstein, and Norway.</p> <p>PHASE 3 (2013-2020): 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>PHASE 4 (2021-2030): Based on the current legislation, no changes to the scope have been agreed on for Phase 4.</p> <p>Aviation: 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. A further review and assessment will be carried out once there is clarity surrounding the content and nature of CORSIA, as well as the extent of participation by Europe’s international partners.</p>
Point of regulation	Downstream
Number of liable entities	10,744 power plants and manufacturing installations. No information available yet.
Cap	<p>PHASE ONE (2005-2007) and PHASE TWO (2008-2012):</p> <p>The cap was established bottom-up, based on the aggregation of the national allocation plans of each member state. Phase One started with a cap of 2,096 MtCO₂e in 2005, Phase Two with a cap of 2,049 MtCO₂e in 2009.</p> <p>PHASE THREE (2013-2020): A single EU-wide cap for stationary sources: 2,084 MtCO₂e 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 MtCO₂e in 2020.</p> <p>Aviation Sector Cap: The aviation sector cap was originally set at 210 MtCO₂e/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 still applies.</p> <p>PHASE FOUR (2021-2030): A linear cap reduction factor of 2.2% annually applied to both stationary sources and the aviation sector. The linear reduction factor does not have a sunset clause and the cap will continue to decline beyond 2030.</p>

Phases & Allocation

Trading period	<p>Phase 1: 3 years (2005-2007)</p> <p>Phase 2: 5 years (2008-2012)</p> <p>Phase 3: 8 years (2013-2020)</p> <p>Phase 4: 10 years (2021-2030)</p>
Allocation	<p>PHASE 1 (2005-2007): 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>PHASE 2 (2008-2012): Similar to Phase One, 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>PHASE 3 (2013-2020): 57% of allowances auctioned over the entire trading period with the remaining allowances allocated through the benchmark approach.</p> <p>88% of the allowances to be auctioned are distributed to EU Member States based on verified 2005 or average 2005-2007 emissions.</p> <p>10% allocated to lower-income EU Member States and 2% distributed among nine Member States who reduced 2005 emissions by 20% compared to the base year.</p> <p>Auctioning: 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.</p> <p>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) in Phase Four. Some Member States chose to monetize these allowances or to use these allowances to boost their share of the Modernization Fund.</p> <p>Manufacturing /industry: Free allocation follows product-based benchmarks. Benchmarks are based on activity levels in 2007-2008 and are set at the average of the 10% most efficient installations in the (sub)sector.</p> <p>Subsectors deemed at risk of carbon leakage receive free allocation at 100% of the predetermined benchmarks. Subsectors deemed not at risk of carbon leakage have free allocation phased out gradually from 80% of the respective benchmarks in 2013 to 30% by 2020. If free allocation exceeds the amount reserved for free allocation, a cross-sectoral correction factor is applied.</p> <p>Carbon leakage risk is assessed against the following criteria of emissions intensity and trade exposure:</p> <ul style="list-style-type: none"> - direct and indirect cost increase >30%; - or non-EU trade intensity >30%; - or direct and indirect cost increase >5% and trade intensity >10%. <p>Cost intensity is determined by the formula $\frac{[\text{Carbon price} \times (\text{direct emissions} \times \text{auctioning factor} + \text{electricity consumption} \times \text{electricity emission factor})]}{\text{GVA}}$</p> <p>Trade intensity is determined by the formula $\frac{(\text{imports} + \text{exports})}{(\text{imports} + \text{production})}$</p> <p>Aviation Sector: In 2012, 85% of allowances were allocated for free, based on benchmarks. In Phase Three, 15% of allowances are auctioned and 82% allocated for free, based on benchmarks. The remaining 3% constitute a special reserve for new entrants and fast-growing airlines. Due to the temporary derogation applying to flights with third countries, the allocation is adjusted to the intra-EEA scope.</p> <p>Back-loading: As a short-term measure to address a growing surplus in the EU ETS, the</p>

with the decision to create the market stability reserve, the back-loaded allowances are 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.

PHASE FOUR (2021-2030):

Benchmark values will be updated twice to reflect technological progress in different sectors. The first set of benchmark values will apply to the period 2021-2025; the second set of values will cover the period from 2026 to 2030. Member states are required to submit lists of incumbent installations and updated emissions data by 30 September 2019 and 30 September 2024. Based on this data, the European Commission will update Phase Three benchmarks.

- Benchmark values in Phase Four 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.
- 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 will apply 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 assessed against a composite indicator of trade intensity and emissions intensity.
- As an additional safeguard for industry, the Phase Four cap breakdown includes a free allocation buffer of over 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 applying the cross-sector correction factor).
- Carbon leakage risk will be assessed according to the following criteria:
 - Trade Intensity * Emissions Intensity > 0.2
 - Trade intensity * Emissions Intensity > 0.15 < 0.2; qualitative assessment will follow based on abatement potential, market characteristics, and profit margins.

Emissions intensity will be determined by:

$$[\text{direct emissions} + (\text{electricity consumption} \times \text{electricity emission factor})] / \text{GVA}$$

Trade exposure will be determined by:

$$(\text{imports} + \text{exports}) / (\text{imports} + \text{production})$$

Out of the allowances to be auctioned in Phase Four, 90% will be distributed to member states based on their share of verified emissions, with 10% distributed among the lower-income EU Member States.

Flexibility

Banking and borrowing	Unlimited banking has been allowed since 2008. Borrowing is not allowed.
Offsets and credits	<p>PHASE 1 (2005-2007): Unlimited use of Clean Development Mechanism (CDM) credits and Joint Implementation credits (JI) was provided for in the directive. In practice, no credits were used in Phase One.</p> <p>PHASE 2 (2008-2012): Qualitative Limits: Most categories of CDM/JI credits were allowed; no credits from LULUCF and nuclear power sectors. Strict requirements for large hydro projects exceeding 20 MW. Quantitative Limits: In Phase Two 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 Three (2013-2020).</p> <p>PHASE 3 (2013-2020): Qualitative Limits: Newly generated (post-2012) international credits may only come from projects in least developed countries. Credits from CDM and JI projects from other countries are eligible only if registered and implemented before 31 December 2012. Projects from industrial gas credits (projects involving the destruction of HFC-23 and N2O) are excluded regardless of the host country. Credits issued for emission reductions that</p>

	<p>occurred in the first commitment period of the Kyoto Protocol were no longer accepted after 31 March 2015.</p> <p>Quantitative Limits: The total use of credits for Phase Two and Phase Three may amount up to 50% of the overall reduction under the EU ETS in that period (~1.6 Gt CO₂e).</p> <p>PHASE 4 (2021-2030): Based on the current legislation, the use of offsets is not envisaged.</p>
Market Stability Provisions	<p>Market Stability Reserve (MSR): 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>Thresholds: The European Commission publishes the total numbers of allowances in circulation (TNAC) by 15 May. Allowances will be added to the reserve if TNAC is higher than 833 million. Allowances will be reinjected into the market if the number of allowances in circulation falls below 400 million.</p> <ul style="list-style-type: none"> - When the TNAC is above 833 million, 12% (24% up to 2023) of the surplus is withdrawn from future auctions and placed into the reserve over a period of 12 months. - When the TNAC is less than 400 million allowances, 100 million allowances are taken from the reserve and injected into the market. <p>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 lose their validity.</p> <p>Between 1 January 2019 and 1 September 2020, a total of 662 million allowances will have been placed in the reserve.</p> <p>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.</p> <p>Cancellations: As of Phase Four, 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 invalidated shall not exceed the average verified emissions of the installation from five years preceding the closure.</p>

Compliance

Compliance Period	<p>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.</p>
Monitoring, Reporting, Verification (MRV)	<p>REPORTING FREQUENCY: Annual self-reporting based on harmonized electronic templates prepared by the European Commission.</p> <p>VERIFICATION: Verification by independent accredited verifiers is required before 31 March each year.</p> <p>MRV FRAMEWORK: Since Phase Three, 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). In preparation for Phase Four, MRV procedures are currently under review.</p>
Enforcement	<p>Regulated entities must pay an excess emissions penalty of EUR 100/tCO₂ (USD 112/tCO₂) for each tonne of CO₂ emitted for which no allowance has been surrendered, next to buying and surrendering the equivalent amount of allowances. The name of the noncompliant operator is also made public. Member states may enforce different penalties for other forms of noncompliance.</p>

Linking

Links with other Systems	<p>Following final regulatory changes in the design of the Swiss ETS, a link between the Swiss ETS and EU ETS took effect on 1 January 2020.</p>
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The link caps a 10-year process of negotiations and 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, enabling covered entities in both systems to use allowances from either ETS for compliance.

Other Information

Institutions involved	The European Commission and the relevant authorities of the 28 Member States, Iceland, Liechtenstein, and Norway.
Evaluation / ETS review	<p>The European Commission publishes annual reports on the functioning of the European carbon market (2019 report).</p> <p>Two major EU ETS reviews—before Phase Three and before Phase Four—have been conducted to date, introducing changes to the system’s operational framework. The directive establishing the EU ETS 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>Since beginning of program: EUR 50.54 billion (USD 58.98 billion) Collected in 2019: EUR 14.64 billion (USD 16.39 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 2018, on average Member States spent ~70% of their revenues on domestic and international climate-related purposes.</p> <p>PHASE THREE (2013-2020): 300 million allowances were reserved for auction to fund demonstration of environmentally safe carbon capture and storage and innovative renewable energy technologies through the NER300.</p> <p>PHASE FOUR (2021-2030): The latest revision of the EU ETS set up two new multi-billion-euro funds to support EU stakeholders in the low-carbon investment challenge.</p> <p>Innovation Fund: Supporting demonstration of innovative technologies to breakthrough innovation in industry, as well as carbon capture and storage/use and renewable energy. The fund will be 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 will be auctioned to capitalize the Innovation Fund.</p> <p>Modernization Fund: Supporting 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).</p>
Implementing Legislation	<p>Directive 2003/87/EC of the European Parliament and of the Council establishing a scheme for GHG emission allowance trading within the Community and amending Council Directive 96/61/EC.</p> <p>Decision concerning the establishment and operation of a market stability reserve for the Union GHG emission trading scheme and amending Directive 2003/87/ECU (6 October 2015).</p> <p>Consolidated Auctioning Regulation (25 February 2014): Commission Regulation EU No 176/2014 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 here.</p>

Japan - Saitama Target Setting Emissions Trading System

General Information

Summary	<p>Status: ETS in force</p> <p>Jurisdictions: Saitama</p> <p>Saitama's ETS was established in April 2011 as part of the 'Saitama Prefecture Global Warming Strategy Promotion Ordinance.' Under the ETS, large buildings and factories in Saitama are required to reduce emissions by 15% or 13% in its second compliance period (FY2015-2019), depending on characteristics such as potential energy efficiency gains.</p> <p>Saitama's ETS is linked to Tokyo's program.</p>										
Year in Review	<p>In FY2017, the Saitama ETS achieved a 28% reduction in emissions below base-year emissions.</p> <p>In August 2019, Saitama announced the targets for the third compliance period (FY2020-2024), which will require facilities to reduce emissions by 20% or 22% depending on their category.</p>										
Overall GHG emissions (excluding LULUCF)	<p>Emissions: 36.6 MtCO₂e (2016)</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 CO₂ emissions.</p>										
Overall GHG emissions by sector	<table border="1"> <thead> <tr> <th>Sector Name</th> <th>MtCO₂e</th> </tr> </thead> <tbody> <tr> <td>Industry</td> <td>11.2</td> </tr> <tr> <td>Residential</td> <td>8.8</td> </tr> <tr> <td>Transport</td> <td>9.4</td> </tr> <tr> <td>Commercial</td> <td>4.8</td> </tr> </tbody> </table>	Sector Name	MtCO ₂ e	Industry	11.2	Residential	8.8	Transport	9.4	Commercial	4.8
Sector Name	MtCO ₂ e										
Industry	11.2										
Residential	8.8										
Transport	9.4										
Commercial	4.8										
Overall GHG reduction target	BY 2020: 21% reduction from 2005 GHG levels (demand side)										
Carbon Price	<i>Current Allowance Price (per t/CO₂e):</i> No information available yet.										

ETS Size

Emissions covered by the ETS	0.18
GHG covered	CO ₂
Sectors covered and thresholds	<p>Consumption of fuels, heat, and electricity in commercial and industrial buildings</p> <p>INCLUSION THRESHOLDS: Facilities that consume the energy equivalent of at least 1,500kL of crude oil per year.</p>
Point of regulation	Downstream
Number of liable entities	<p>~580 facilities (2017): office/commercial buildings: 169; factories: 411</p> <p>No information available yet.</p>
Cap	The Saitama-wide cap is aggregated based on emissions baselines set at the facility level.

Compliance factor:

FIRST PERIOD (FY2010-FY2014): 8% or 6% reduction below base-year emissions

SECOND PERIOD (FY2015-FY2019): 15% or 13% reduction below base-year emissions

THIRD PERIOD (FY2020-FY2024): 22% or 20% reduction below base-year emissions

The higher compliance factor applies to commercial buildings, as well as to district heating and cooling (DHC) plant facilities (excluding facilities that use a large amount of DHC). 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.

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. The certification standards represent the highest-level energy-efficiency measures currently feasible, stipulating more than 200 different energy-saving measures.

Phases & Allocation

Trading period	<p>FIRST PERIOD: 1 April 2012 to 30 September 2016 SECOND PERIOD: 1 April 2015 to 30 September 2021 THIRD PERIOD: 1 April 2020 to 30 September 2026</p> <p>Each of the above trading periods includes an 18-month adjustment period.</p>
Allocation	<p>The baselines for facilities are set according to the following formula: Base-year emissions x (1 - compliance factor) x compliance period (5 years).</p> <p>Base-year emissions are based on the average emissions of three consecutive years between FY 2002 and 2007, 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 or on emissions intensity standards.</p>

Flexibility

Banking and borrowing	<p>Banking is only allowed between two consecutive compliance periods. Borrowing is not allowed.</p>
Offsets and credits	<p>Credits from five offset types are allowed in the Saitama ETS.</p> <p>SMALL AND MID-SIZE FACILITY CREDITS: Emissions reductions from non-covered small and medium-sized facilities in Saitama. Quantitative Limits: None.</p> <p>OUTSIDE SAITAMA CREDITS: Emission reductions achieved from large facilities outside of the 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. Quantitative Limits: Credits are only issued 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>RENEWABLE ENERGY CREDITS: Credits from solar (heat, electricity), wind, geothermal, or hydro (under 1,000kW) electricity production are converted to 1.5 times the value of regular credits until the second compliance period and will be converted on a 1 to 1 basis from the third compliance period. Credits from biomass (biomass rate of 95% or more, black liquor is excluded) are converted with the factor 1. These credits encompass the following</p>

types: Environmental Value Equivalent, Renewable Energy Certificates, and New Energy Electricity, generated under the Renewable Portfolio Standard Law.

Quantitative Limits: None.

TOKYO CREDITS (VIA LINKING):

(1) Excess Credits: Emissions reductions from facilities with base-year emissions of 150,000 tonnes or less. Issuance of credits from FY2015.

(2) Small and mid-size Facility Credits: Issued by Saitama Prefecture. Issuance of credits from FY2012.

Quantitative Limits: None.

FOREST ABSORPTION CREDITS: Credits from forests inside the Saitama Prefecture are counted at 1.5 times the value of regular credits. Others are converted with the factor 1.

Quantitative Limits: None.

All offsets have to be verified by verification agencies.

EMISSIONS REDUCTION METHODS:

(1) 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.

(2) Low carbon electricity: In order to evaluate energy efficiency efforts of the covered facilities, CO₂emissions factors of electricity suppliers are fixed during each compliance period. When covered facilities procure electricity from suppliers with lower emissions factors, they can reduce the difference between these emission factors from their emissions to be reported to Saitama from the third compliance period. In general, Saitama does not use market stability provisions.

Market Stability Provisions

Compliance

Compliance Period	<p>FIRST PERIOD: FY2011-2014 SECOND PERIOD: FY2015-2019 THIRD PERIOD: FY2020-2024</p>
Monitoring, Reporting, Verification (MRV)	<p>REPORTING FREQUENCY: Annual emissions reporting, including emission reduction plans. All seven GHGs must be monitored and reported: CO₂, CH₄, N₂O, PFCs, HFCs, SF₆, and NF₃.</p> <p>VERIFICATION: These reports require third-party verification by the end of adjustment period.</p> <p>FRAMEWORK: These are based on 'Saitama Monitoring/Reporting Guidelines' and 'Saitama Verification Guidelines.'</p>
Enforcement	None

Linking

Links with other Systems	Linking with Tokyo 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).
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Other Information

Institutions involved	Saitama Prefectural Government
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Evaluation / ETS review	No information available yet.
Revenue	No information available yet.
Implementing Legislation	Saitama Prefecture Global Warming Strategy Promotion Ordinance Regulation on Saitama Prefecture Global Warming Strategy Promotion Ordinance

Japan - Tokyo Cap-and-Trade Program

General Information

Summary	<p>Status: ETS in force</p> <p>Jurisdictions: Tokyo Metropolis</p> <p>Launched in April 2010, the Tokyo ETS—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 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 benchmark.</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 FY2017—the most recent year for which data has been released by the TMG—emissions were reduced by 27% overall among covered entities compared to base-year emissions. 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 March 2019, the TMG announced the targets for the third compliance period (FY2020-FY2024), which will require facilities to reduce emissions by 25% or 27% depending on their category. The third 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.</p>												
Overall GHG emissions (excluding LULUCF)	Emissions: 64.8 MtCO ₂ e (2017)												
Overall GHG emissions by sector	<table border="1"> <thead> <tr> <th>Sector Name</th> <th>MtCO₂e</th> </tr> </thead> <tbody> <tr> <td>Commercial</td> <td>25.5</td> </tr> <tr> <td>Residential</td> <td>17.1</td> </tr> <tr> <td>Transport</td> <td>9.8</td> </tr> <tr> <td>Industry</td> <td>4.3</td> </tr> <tr> <td>Waste</td> <td>1.8</td> </tr> </tbody> </table>	Sector Name	MtCO ₂ e	Commercial	25.5	Residential	17.1	Transport	9.8	Industry	4.3	Waste	1.8
Sector Name	MtCO ₂ e												
Commercial	25.5												
Residential	17.1												
Transport	9.8												
Industry	4.3												
Waste	1.8												
Overall GHG reduction target	<p>BY 2020: 25% reduction from 2000 GHG levels</p> <p>BY 2030: 30% reduction from 2000 GHG levels</p> <p>BY 2050: Net zero CO₂ emissions (‘TMG Zero Emissions Strategy’)</p>												
Carbon Price	<i>Current Allowance Price (per t/CO₂e):</i> ~JPY 600 (USD 5.50) (estimated standard transaction price in 2019)												

ETS Size

Emissions covered by the ETS	0.20
GHG covered	CO ₂
Sectors covered and thresholds	Consumption of fuels, heat, and electricity in commercial and industrial buildings.

	<p>Building owners are subject to surrender obligations, but large tenants (floor space above 5000m² or over six million kWh electricity usage per year) can assume obligations jointly or in place of building owners.</p> <p>INCLUSION THRESHOLDS: Facilities that consume energy equivalent to at least 1,500kL of crude oil per year.</p>
Point of regulation	Downstream
Number of liable entities	<p>1,123 facilities (2019):</p> <ul style="list-style-type: none"> · Office/commercial buildings: 954 · Factories: 169 <p>No information available yet.</p>
Cap	<p>A Tokyo-wide cap is aggregated from emissions baselines set at the facility level.</p> <p>Compliance factor: FIRST PERIOD (FY2010-FY2014): 8% or 6% reduction below base-year emissions SECOND PERIOD (FY2015-FY2019): 17% or 15% reduction below base-year emissions THIRD PERIOD (FY2020-FY2024): 27% or 25% reduction below base-year emissions</p> <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.</p> <p>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 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.</p>

Phases & Allocation

Trading period	<p>FIRST PERIOD: 1 April 2011 to 30 September 2016</p> <p>SECOND PERIOD: 1 April 2015 to 30 September 2021</p> <p>THIRD PERIOD: 1 April 2020 to 30 September 2026</p> <p>Each of the above trading periods includes an 18-month adjustment period.</p>
Allocation	<p>The baselines for facilities are set according to the following formula: base-year emissions x (1 - compliance factor) x compliance period (5 years).</p> <p>Base-year emissions are based on the average emissions of three consecutive years between FY2002 and 2007, as chosen by each entity. Credits are issued to facilities whose emissions fall below their baselines.</p> <p>Baselines for new entrants are based on past emissions or on emissions intensity standards.</p>

Flexibility

Banking and borrowing	Banking is only allowed between consecutive compliance periods. Borrowing is not allowed.
Offsets and credits	Credits from four offset types are allowed in the Tokyo ETS.

SMALL AND MID-SIZE FACILITY CREDITS: Emissions reductions from non-covered small and medium-sized facilities in Tokyo.

Quantitative Limits: None.

OUTSIDE TOKYO CREDITS: Emissions reductions achieved from large facilities outside of the Tokyo area. Large facilities are those with an energy consumption equivalent to at least 1,500kL of crude oil in a base year and with base-year emissions of 150,000 tonnes or less.

Quantitative limits: 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.

RENEWABLE ENERGY CREDITS: Credits from solar (heat, electricity), wind, geothermal, or hydro (under 1,000kW) electricity production are converted to 1.5 times the value of standard credits until the end of the second compliance period and will be converted on a 1 to 1 basis from the third compliance period. Credits from biomass (biomass rate of 95% or more, black liquor excluded) are converted with the factor 1. These credits encompass the following types: Environmental Value Equivalent, Renewable Energy Certificates, and New Energy Electricity, generated under the Renewable Portfolio Standard Law.

Quantitative limits: None.

SAITAMA CREDITS (VIA LINKING):

(1) Excess Credits: Emissions reductions from facilities in Saitama with base-year emissions of 150,000 tonnes or less. Issuance of credits from FY2015.

(2) Small and Mid-Size Facility Credits issued by Saitama Prefecture. Issuance of credits from FY2012.

Quantitative limits: None.

All offsets have to be verified by verification agencies.

EMISSIONS REDUCTION METHODS:

(1) Low Carbon Electricity and Heat: In order to evaluate energy efficiency efforts of the covered facilities, CO₂ emission factors of the supply side (electricity and others) are fixed during each compliance period. When covered facilities procure electricity or heating from TMG-certified suppliers with lower emission factors, they can reduce the difference between these emission factors from their emissions to be reported to the TMG.

(2) 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. During the third compliance period, covered entities can also purchase "non-fossil value" (renewable energy) certificates generated through the Japanese feed-in-tariff program.

Market Stability Provisions	In general, covered facilities trade over the counter and TMG does not control carbon prices. However, the TMG sells its own offset credits for trading in case of excessive price development.
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Compliance

Compliance Period	<p>Five years</p> <p>FIRST PERIOD: FY2010-2014</p> <p>SECOND PERIOD: FY2015-2019</p> <p>THIRD PERIOD: FY2020-2024</p>
Monitoring, Reporting, Verification (MRV)	<p>REPORTING FREQUENCY: Annual emissions reporting, including emission reduction plans. All seven GHGs have to be monitored and reported: CO₂, CH₄, N₂O, PFCs, HFCs, SF₆, and NF₃. Large tenants, i.e., those with a floor space above 5,000m² 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.</p> <p>VERIFICATION: These annual reports require third-party verification.</p>

	FRAMEWORK: These are based on ‘TMG Monitoring/Reporting Guidelines’ and ‘TMG Verification Guidelines.’
Enforcement	<p>In the case of noncompliance, the following measures may be taken:</p> <p>FIRST STAGE: The governor orders the facility to reduce emissions by the amount of the reduction shortfall multiplied by 1.3.</p> <p>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 4,587]) and surcharges (1.3 times the shortfall).</p>

Linking

Links with other Systems	<p>Linking with the Saitama Prefecture started in April 2011 when the Saitama ETS 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).</p>
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Other Information

Institutions involved	Tokyo Metropolitan Government
Evaluation / ETS review	<p>TMG established a committee of experts to analyze the structure of the Tokyo Cap-and-Trade Program post-2020 and finalized the third compliance period’s caps in March 2019. From FY2020, the program will enter 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.</p>
Revenue	No information available yet.
Implementing Legislation	<p>The Tokyo Metropolitan Security Ordinance and Regulation for the Enforcement of the Tokyo Metropolitan Environmental Security Ordinance Detailed documents on the Tokyo ETS can be found on the TMG website TMG Zero Emissions Strategy</p>

Kazakhstan Emissions Trading Scheme

General Information

Summary	<p>Status: ETS in force</p> <p>Jurisdictions: Republic of Kazakhstan</p> <p>Kazakhstan launched an 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 KAZ ETS operation. Amendments to the 'Environmental Code' in 2017 lay the groundwork for the introduction of benchmarking.</p> <p>The current 'National Allocation Plan' runs through 2018-2020 with a cap of 485.9 MtCO₂ (162 MtCO₂ on annual average), with 225 participating installations belonging to 129 operators.</p>												
Year in Review	The end of 2019 saw the first exchange of allowances since the KAZ ETS restarted operation in 2018. Based on December 2019 trade results from the Caspian Commodity Exchange JSC, the average weighted price was at the level of 431.79 tenge (USD 1.14) per tonne of CO ₂ .												
Overall GHG emissions (excluding LULUCF)	Emissions: 353.2 MtCO ₂ e (2017)												
Overall GHG emissions by sector	<table border="1"> <thead> <tr> <th>Sector Name</th> <th>MtCO₂e</th> </tr> </thead> <tbody> <tr> <td>Energy</td> <td>265.1</td> </tr> <tr> <td>Transport</td> <td>23.7</td> </tr> <tr> <td>Industrial processes</td> <td>26.1</td> </tr> <tr> <td>Agriculture</td> <td>34.3</td> </tr> <tr> <td>Waste</td> <td>4.0</td> </tr> </tbody> </table>	Sector Name	MtCO ₂ e	Energy	265.1	Transport	23.7	Industrial processes	26.1	Agriculture	34.3	Waste	4.0
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Energy	265.1												
Transport	23.7												
Industrial processes	26.1												
Agriculture	34.3												
Waste	4.0												
Overall GHG reduction target	<p>BY 2020: 5% reduction from 1990 GHG levels</p> <p>BY 2030: 15% (unconditional) to 25% (conditional) reduction from 1990 GHG levels (NDC submission)</p> <p>BY 2050: 40% CO₂ emission reduction in power sector from 2012 levels (Concept of Transition to Green Economy, 2013)</p>												
Carbon Price	<i>Current Allowance Price (per t/CO₂e):</i> 431 KZT (USD 1.14) (average 2019 price)												

ETS Size

Emissions covered by the ETS	0.50
GHG covered	CO ₂
Sectors covered and thresholds	<p>PHASE ONE (2013): Power sector and centralized heating. Extractive industries and manufacturing: oil and gas mining, metallurgy, chemical industry.</p> <p>PHASE TWO (2014-2015): Same as Phase one. (2016-2017: system suspended)</p>

	<p>PHASE THREE (2018-2020): 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>THRESHOLDS: Facilities emitting more than 20,000 tCO₂e/year.</p>
Point of regulation	Downstream
Number of liable entities	<p>PHASE 3 (2018-2020): 129 companies (225 installations)</p> <p>No information available yet.</p>
Cap	<p>PHASE ONE (2013): 147 MtCO₂ (+ new entrants reserve of 20.6 MtCO₂). This equalled a stabilization of the capped entities' emissions at 2010 levels.</p> <p>PHASE TWO (2014-2015): 2014: 154.9 MtCO₂ (+ a reserve of 18 MtCO₂); 2015: 152.8 MtCO₂ (+ a reserve of 20.5 MtCO₂). This represented reduction targets of 0% and 1.5% respectively, compared to the average CO₂emissions of capped entities in 2011-2012.</p> <p>(2016-2017: system suspended)</p> <p>PHASE THREE(2018-2020): 485.9 MtCO₂ (+ a reserve of 35.27 MtCO₂). The cap is set at a 5% reduction by 2020 from 1990 levels. The cap is allocated for the overall compliance period of 2018-2020; there is no yearly cap.</p>

Phases & Allocation

Trading period	<p>PHASE ONE: 1 year (2013) PHASE TWO: 2 years (2014-2015) PHASE THREE: 3 years (2018-2020)</p> <p>(2016-2017: system suspended)</p>
Allocation	<p>PHASE ONE (2013): Free allocation: grandfathering. Based on emissions data from 2010.</p> <p>PHASE TWO (2014-2015): Free allocation: grandfathering(0% and 1.5% below 2011/2012 average emissions), with a reserve of 18 MtCO₂ in 2014 and 20.5MtCO₂ in 2015.</p> <p>(2016-2017: system suspended)</p> <p>PHASE THREE (2018-2020): Free allocation: grandfathering and benchmarking. Allocation based on grandfathering or product-based benchmarking by each company's own choice. A reserve contains 35.27 million allowances to accommodate for new entrants, new stationary emission sources, and changes in output in case of the choice of benchmarking.</p>

Flexibility

Banking and borrowing	Banking is allowed within one trading period (i.e., within 2018-2020). Banking between trading periods is not possible.
Offsets and credits	<p>PHASE ONE (2013): The system allowed domestic offsets.</p> <p>PHASE TWO (2014-2015): Same as Phase One.</p> <p>PHASE THREE (2018-2020): Same as Phase One.</p> <p>Qualitative Limits: Domestic offsets.</p> <p>Quantitative Limits: None.</p>
Market Stability Provisions	No information available yet.

Compliance

Compliance Period	One year
Monitoring, Reporting, Verification (MRV)	<p>REPORTING FREQUENCY: Reporting is required annually for businesses or financial facilities above the 20,000 tCO₂/year threshold.</p> <p>Annual reporting is also required for operators of installations with emissions between 10,000 tCO₂/year and 20,000 tCO₂/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 CO₂, reporting is also required for CH₄, N₂O, and PFCs emissions.</p> <p>VERIFICATION: Emissions data reports and their underlying data require accredited third-party verification.</p> <p>FRAMEWORK: Environmental Code of the Republic of Kazakhstan.</p>
Enforcement	The non-compliance penalty equals five monthly standard units for each tonne (approximately KZT 13,255/tCO ₂ [USD 35.2/tCO ₂] in 2020). 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>Environmental Code of the Republic of Kazakhstan</p> <p>National GHG Emission Quota Allocation Plan for 2018-2020</p> <p>Rules for the allocation of quotas for GHG emissions and formation of reserves of the established number and volume of quotas</p> <p>Rules of trading greenhouse gas emission quota and carbon units</p>

Korea Emissions Trading Scheme

General Information

<p>Summary</p>	<p>Status: ETS in force</p> <p>Jurisdictions: Republic of Korea</p> <p>The KETS was launched on 1 January 2015, becoming East Asia’s first nationwide mandatory ETS and the second-largest carbon market after the EU ETS. The ETS covers 610 of the country’s largest emitters, which account for ~70% of national GHG emissions. It covers direct emissions of six Kyoto gases, as well as indirect emissions from electricity consumption. The KETS was designed to play an essential role in meeting Korea’s 2030 NDC target of 37% below BAU emissions.</p> <p>The first and highest legal base for green growth and implementation of the KETS 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 were passed in 2012; it stipulates government actions, institutions, and timelines for the KETS. Further details of the KETS were outlined in a Master Plan (January 2014; February 2017) and Allocation Plan (January 2014; February 2017).</p> <p>The KETS 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 enabled the collection of verified emissions data and training in the MRV process of TMS entities.</p>										
<p>Year in Review</p>	<p>2019 saw the implementation of key design changes as specified for the second phase (2018-2020) of the KETS, including (i) an expansion of benchmark-based allocation; (ii) the introduction of 3% auctioning; (iii) new banking rules; and (iv) the restricted use of international credits.</p> <p>The first regular auction of allowances took place in January 2019. Auction rules were outlined in a guidance document released in March 2018. During 2019, new rules were introduced that reduce the maximum amount of allowances a single entity can purchase at auction. In addition, to enhance liquidity, two market makers were named, specifically the Korea Development Bank and the Industrial Bank of Korea.</p> <p>2019 furthermore saw the first release of expected reforms for Phase 3, which is set to run from 2021 to 2025. Key changes for the third phase will include (i) a to-be-determined stricter emissions cap; (ii) an increasing share of auctioning (for nonenergy-intensive and trade-exposed (EITE) entities) to at least 10%; and (iii) increasing use of sector-specific benchmarking to 70%.</p>										
<p>Overall GHG emissions (excluding LULUCF)</p>	<p>Emissions: 709.1 MtCO₂e (2017)</p>										
<p>Overall GHG emissions by sector</p>	<table border="1"> <thead> <tr> <th>Sector Name</th> <th>MtCO₂e</th> </tr> </thead> <tbody> <tr> <td>Fuel combustion (including Transport)</td> <td>615.9</td> </tr> <tr> <td>Industrial processes</td> <td>56.0</td> </tr> <tr> <td>Agriculture</td> <td>20.4</td> </tr> <tr> <td>Waste</td> <td>16.8</td> </tr> </tbody> </table>	Sector Name	MtCO ₂ e	Fuel combustion (including Transport)	615.9	Industrial processes	56.0	Agriculture	20.4	Waste	16.8
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Fuel combustion (including Transport)	615.9										
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<p>Overall GHG reduction target</p>	<p>BY 2020: 30% below BAU (Copenhagen Accord target)</p> <p>By 2030: 37% below BAU (536 MtCO₂e), which represents a 22% reduction below 2012 GHG levels (NDC); 38 million international credits* may be used towards achieving this goal (2030 GHG mitigation roadmap)</p>										

	*This includes international credits through the KETS, as well as alternative options, including LULUCF and other international credits (i.e. Article 6 under the Paris Agreement).
Carbon Price	<i>Current Allowance Price (per t/CO₂e):</i> KRW 29,821.54 (USD 25.59) (average secondary market price from KRX in 2019; updated prices available here)

ETS Size

Emissions covered by the ETS	0.7
GHG covered	CO ₂ , CH ₄ , N ₂ O, PFCs, HFCs, SF ₆
Sectors covered and thresholds	<p>PHASE ONE (2015-2017): 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>PHASE TWO (2018-2020): According to the Allocation Plan, the public and waste sectors are disaggregated such that the KETS covers the following six sectors: heat and power, industry, building, transportation, waste sector, and public. These sectors are disaggregated into 64 subsectors.</p> <p>PHASE THREE (2021-2025): No changes to sectors and thresholds are currently foreseen for Phase 3.</p> <p>INCLUSION THRESHOLDS: company >125,000 tCO₂/year, facility >25,000 tCO₂/year</p>
Point of regulation	<p>Downstream</p> <p>Next to direct emission coverage, the KETS covers indirect emissions from electricity consumption.</p>
Number of liable entities	<p>610 (2019)</p> <p>No information available yet.</p>
Cap	<p>PHASE ONE (2015-2017): 1,686 MtCO₂e, including a reserve of 88MtCO₂e for market stabilization measures, early action, and new entrants. 84.5% of reserve was used.</p> <p>Annual Caps in Phase One 2015: 540 MtCO₂e; 2016: 560 MtCO₂e; 2017: 567 (including early reduction and additional allowances) MtCO₂e.</p> <p>PHASE TWO (2018-2020): 1,796 MtCO₂e, including 14 million allowances for market stabilization, five million for market makers, and 134 million for new entrants and other purposes.*</p> <p>Annual Caps in Phase Two 2018: 548 MtCO₂e; 2019: 548 MtCO₂e; 2020: 548 MtCO₂e.</p> <p>PHASE THREE (2021-2025): Expected stricter annual caps, the levels of which have yet to be determined.</p> <p>*The competent authority expects the actual cap to be 1,777 MtCO₂e, considering that not all the reserves would be used.</p>

Phases & Allocation

Trading period	PHASE ONE: 3 years (2015-2017)
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	<p>PHASE TWO: 3 years (2018-2020)</p> <p>PHASE THREE: 5 years (2021-2025)</p>
Allocation	<p>PHASE ONE (2015-2017): Free Allocation: 100% free allocation. Most sectors received free allowances based on the average GHG emissions of the base year (2011-2013). Three sectors (grey clinker, oil refinery, and aviation) were allocated free allowances following benchmarks based on previous activity data from the base year (2011-2013).</p> <p>During Phase One, ~5% of total allowances were retained in a reserve for market stabilization measures (14 MtCO₂e), early action (41 MtCO₂e), and other purposes including new entrants (33 MtCO₂e). In addition, unallocated allowances and withdrawn allowances were transferred to the reserve.</p> <p>PHASE TWO (2018-2020): Free Allocation: 97% of total allowance supply. Toward the end of Phase Two, the share of sector-specific benchmarking is set to reach 50%.</p> <p>Auctioning: 3% auctioned. Auctioning is determined on the subsector level. These include, among others, entities from the electricity, domestic aviation, wooden product, and metal foundry sectors. Although auctioning was scheduled to start in 2018, it was delayed to the beginning of 2019. In 2019 authorities auctioned a total of 7.95 million allowances.</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 that will be set by the following formula:</p> <p>“the average price over the previous three months + the average price of last month + the average price over the previous three days/3.”</p> <p>In 2020, 8.25 million allowances are set to be auctioned.*</p> <p>* Ecoeye International. 2019. December 2019: Korean Market Update.</p> <p>PHASE THREE (2021-2025): Free Allocation: Less than 90% free allowances. The share of sector-specific benchmarking is to reach 70%.</p> <p>Auctioning: more than 10%.</p> <p>Energy-intensive and trade-exposed (EITE) sectors will receive 100% of their allowances for free in all phases. EITE sectors are defined along the following criteria:</p> <ul style="list-style-type: none"> (1) Additional production cost of >5% and trade intensity of >10%; or (2) Additional production cost of >30%; or (3) Trade intensity of >30%.

Flexibility

Banking and borrowing	<p>Banking is allowed with some restrictions across phases. From Phase One to Phase Two, banking is limited for each installation to 10% of the annual average allocation and 20,000 Korean Allowance Units (KAUs). The amount that exceeds the threshold is deducted from the Phase Two allocation. From Phase Two to Phase Three, banking is limited to the higher of two limits:</p> <ul style="list-style-type: none"> (1) the net annual amount of allowances sold in Phase Two; and (2) company- and facility-specific limits, of 250,000 KAUs and 5,000 KAUs respectively.
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	<p>Borrowing is allowed only within a single trading phase. In 2015, this was limited to 10% of an entity's obligation. This limit was increased to 20% in 2016 and 2017. In the first compliance year of Phase Two (2018), borrowing was limited to 15% of an entity's obligation. From 2019, the borrowing limit will be affected by how much an entity has borrowed in the past via the following formula: [Borrowing limit of previous year - ("borrowing ratio" in previous year x 50%)]/entity's emission volume.</p>
<p>Offsets and credits</p>	<p>PHASE ONE (2015-2017) QUALITATIVE LIMIT: 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. These credits had to be converted to Korean Credit Units (KCU) of a specified vintage before being used for compliance. Eligible activities included those eligible under the CDM and Carbon Capture and Storage. However, only activities implemented after 14 April 2010 were eligible. As of December 2017, 35 domestic and 211 CDM methodologies had been approved for use under the KETS.</p> <p>QUANTITATIVE LIMIT: Up to 10% of each entity's compliance obligation.</p> <p>PHASE TWO (2018-2020) QUALITATIVE LIMIT: In Phase Two, trades of CERs generated after 1 June 2016 from international CDM projects developed by domestic companies are allowed. CDM projects operated by Korean companies will be allowed when: (1) at least 20% of the ownership rights, operating rights, or the voting stocks are owned by a Korean company; (2) a Korean company sells or distributes more than 20% of the total project cost; or (3) 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.</p> <p>Regulated entities must convert CDM credits (CERs) to KCUs for them to be used for compliance.</p> <p>QUANTITATIVE LIMIT: Up to 10% of each entity's compliance obligation (of which up to 5% can be international offset credits).</p> <p>PHASE THREE (2021-2025): Offsets will continue to be allowed in limited fashion. Further rules and conditions have yet to be released.</p>
<p>Market Stability Provisions</p>	<p>Auction Reserve Price: Regular auctions and auctions for market stability are subject to an auction reserve price set by the following formula: "the average price over the previous three months + the average price of last month + the average price over the previous three days/3."</p> <p>Allocation Committee: An Allocation Committee is in place to implement market stabilization measures in particular cases: (1) the market allowance price of six consecutive months is at least three times higher than the average price of the two previous years; (2) 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; (3) the average market allowance price of a given month is smaller than 40% of the average price of the two previous years. In 2015 and 2016, the price threshold is KRW 10,000 (USD 9.09); or (4) it is difficult to trade allowances due to the imbalance of supply or demand.</p> <p>The stabilization measures may include: (1) additional allocation from the reserve (up to 25%); (2) establishment of an allowance retention limit: minimum (70%) or maximum (150%) of the allowance of the compliance year; (3) an increase or decrease of the borrowing limit; (4) an increase or decrease of the offsets limit; and (5) temporary setup of a price ceiling or price floor.</p> <p>In 2016, the Allocation Committee doubled the borrowing limit to 20% and an additional 0.9 million allowances were auctioned at a reserve price of KRW 16,200 (USD 13.96) of which less than a third of allowances were sold. In 2018, the Allocation Committee made an</p>

additional 5.5 million allowances available from the stability reserve in an attempt to ease the market in the lead-up to the 2017 compliance deadline.

On 10 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, have been allowed to trade in the market.

Phase Three is likely to see an expansion of the market maker system.

Compliance

Compliance Period	One year
Monitoring, Reporting, Verification (MRV)	<p>REPORTING FREQUENCY: Annual reporting of emissions must be submitted within three months from the end of a given compliance year (by the end of March).</p> <p>VERIFICATION: Emissions must be verified by a third-party verifier.</p> <p>OTHER: Emissions reports are reviewed and certified by the Certification Committee of the Ministry of Environment (MOE) 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 85.8)/tonne.

Linking

Links with other Systems	No linkage is currently considered.
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Other Information

Institutions involved	<p>In 2016, overall responsibility for the KETS moved from the MOE to the Ministry of Economy and Finance (MOEF). On 1 January 2018, responsibility was transferred back to the MOE, while the MOEF still chairs the Allocation Committee;</p> <p>Korea Exchange (Trading Platform);</p> <p>Greenhouse Gas Inventory and Research Center (Registry and technical support).</p>
Evaluation / ETS review	<p>No standardized evaluation process has been developed to date, but an analysis of the economic impact of the KETS is ongoing for the current phase.*</p> <p>*The method/modelling of the ongoing study is not yet open to the public.</p>
Revenue	<p>Since beginning of program: USD 199.4 million*</p> <p>Collected in 2019: USD 199.4 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 from these auctions totalled USD 99.6 million and are not included in the total auction revenue figure above.</p>

	<p>The government has put forward possible options for the use of the revenues—such as supporting mitigation equipment projects, innovation, and technology development of ETS-covered entities. Specific rules on the use of revenues are yet to be decided.</p>
Implementing Legislation	<p>Framework Act on Low Carbon, Green Growth</p> <p>Enforcement Decree of the Act on the Allocation and Trading of Greenhouse Gas Emissions Allowances</p> <p>Act on the Allocation and Trading of Greenhouse Gas Emissions Allowances</p> <p>First Master Plan for 2015-2024</p> <p>Second Master Plan for 2017-2026</p> <p>First Allocation Plan</p> <p>Second Allocation Plan</p>

Mexico

General Information

<p>Summary</p>	<p>Status: ETS in force</p> <p>Jurisdictions: Mexico</p> <p>The Mexican ETS pilot started operating on 1 January 2020. Mandated by Provisional Article 2 of the July 2018 reform to the ‘General Law of Climate Change’ and implemented through its 2019 regulation, 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 period of the ETS, which will commence in 2023. The rules for the transitional phase in 2022 are yet to be announced. Together, the pilot phase (2020-2021) and the transition phase (2022) constitute the test program of the Mexican system.</p> <p>The pilot covers direct CO₂ emissions from entities in the energy and industry sectors generating at least 100,000 tCO₂ per year. Around 300 entities are covered by the pilot, corresponding to ~37% of national emissions.</p> <p>The Mexican pilot is designed to pose no economic impact on regulated entities during the pilot years; 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>After a process of public consultation, the Ministry of Environment and Natural Resources (SEMARNAT) published in October 2019 the implementing regulation of the Mexican pilot, which specified the system requirements such as scope, existence and use of reserves, allocation process, MRV process, compliance cycle, and existence of flexibility instruments (offsets and early action credits). The regulation also includes a mechanism of stakeholder engagement, the Consultative Committee, which is a consolidation of the stakeholder engagement process initiated between SEMARNAT and the private sector for the development of the ETS pilot rules.</p> <p>In November 2019, SEMARNAT published the caps for 2020 and 2021, as well as allowance allocations for the different sectors.</p> <p>Parallel to this process, SEMARNAT has been working on different infrastructure elements needed for the ETS: the system’s registry, which is expected to be completed by the end of June of 2020, offset protocols, and the auction platform. SEMARNAT is considering having auctions during the pilot years, and expects to have the offsets registry ready within the next two years.</p>										
<p>Overall GHG emissions (excluding LULUCF)</p>	<p>Emissions: 733.8 MtCO_{2e} (2017)</p>										
<p>Overall GHG emissions by sector</p>	<table border="1"> <thead> <tr> <th>Sector Name</th> <th>MtCO_{2e}</th> </tr> </thead> <tbody> <tr> <td>Energy</td> <td>522.4</td> </tr> <tr> <td>Industrial Processes</td> <td>58.0</td> </tr> <tr> <td>Agriculture</td> <td>106.7</td> </tr> <tr> <td>Waste</td> <td>46.7</td> </tr> </tbody> </table>	Sector Name	MtCO _{2e}	Energy	522.4	Industrial Processes	58.0	Agriculture	106.7	Waste	46.7
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Energy	522.4										
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<p>Overall GHG reduction target</p>	<p>BY 2020: 30% below BAU GHG emissions baseline (aspirational, included in the ‘General Law of Climate Change’)</p> <p>BY 2030: 22% below BAU GHG emissions baseline (NDC, included in the ‘General Law of Climate Change’)</p>										

	BY 2050: 50% below 2000 GHG levels (aspirational, included in the 'General Law of Climate Change')
Carbon Price	<i>Current Allowance Price (per t/CO₂e):</i> No information available yet.

ETS Size

Emissions covered by the ETS	0.37
GHG covered	CO ₂
Sectors covered and thresholds	<p>The pilot ETS will cover 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 CO₂ 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 tCO₂.</p>
Point of regulation	Downstream
Number of liable entities	<p>~300. 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 tCO₂e. Under RENE, emitters 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, CFCs, HCFCs, halogenated ethers, halocarbons, and their mixes.</p> <p>No information available yet.</p>
Cap	<p>PILOT (2020-2021): Year 2020: 271.3 MtCO₂ Year 2021: 273.1 MtCO₂[1]</p> <p>Three reserves will be filled each year with allowances additional to the cap:</p> <ul style="list-style-type: none"> · auctions reserve (equivalent to 5% of the cap); · new entrants reserve (equivalent to 10% of the cap, for new entrants as well as increases in production among existing regulated entities); and · general reserve (equivalent to 5% of the cap, for ex post adjustment allocation for entities with higher emissions relative to their baselines). <p>The reserves serve as safeguards to avoid any impact to competitiveness during the pilot phase, as required by the '2018 General Law on Climate Change'.</p> <p>[1] The increase in the cap between 2020 and 2021 is due to an increase in the sectoral allocation for regulated entities categorized as "others."</p>

Phases & Allocation

Trading period	<ul style="list-style-type: none"> · Pilot phase (2020-2021); and · transition phase to the operational period of the ETS (2022). <p>The schedule of implementation as contained in Annex I to the ETS pilot regulation 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>
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	SEMARNAT is expected to publish the regulation of the operational period of the ETS in 2022.
Allocation	<p>The pilot will use free allocation with the following specifications.</p> <p>Initial Allocation: Entities will receive free allowances based on historical emissions. New entrants will receive free allowances based on their reported emissions in the year in which they first crossed the 100,000 tCO₂ threshold.</p> <p>Ex-Post Adjustment: 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. The regulation does not specify how adjustments will be made in the event that demand for additional allowances exceeds reserves.</p> <p>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. Additionally, 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>With regards to auctions, 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	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. 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.
Offsets and credits	<p>QUALITATIVE LIMITS: Two types of flexibility instruments are foreseen, both of which will generate “offsets credits” eligible for use under the pilot.</p> <ul style="list-style-type: none"> • Offsets: 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 or domestically recognized protocols (as yet unspecified). Emission reductions related to all GHGs will be eligible, though the pilot ETS regulates only CO₂. • Early action: For those projects or mitigation activities operating under recognized protocols that receive offsets before the pilot comes into force, SEMARNAT may issue offsets credits if a certificate of cancellation is presented. These projects will be allowed to continue generating offsets during the pilot. <p>QUANTITATIVE LIMITS: Participants will be able to meet up to 10% of their compliance obligations with offset or early action credits.</p>
Market Stability Provisions	No information available yet.

Compliance

Compliance Period	From 1 January to 31 December
Monitoring, Reporting, Verification (MRV)	<p>REPORTING FREQUENCY: Annual self-reporting based on electronic templates prepared by SEMARNAT.</p> <p>VERIFICATION: Verification by independent accredited verifiers is required by 30 June each year.</p>

	<p>FRAMEWORK: A monitoring plan is required from all regulated entities, but noncompliance has no effects on free allocation or ex post adjustments. Report of verified annual CO₂ emissions is made both to the RENE (on top of other obligations that regulated entities have to report to the RENE) and to the ETS registry.</p>
Enforcement	<p>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).</p>

Linking

Links with other Systems	<p>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.</p>
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Other Information

Institutions involved	<p>SEMARNAT; National Institute for Ecology and Climate Change (INECC)</p>
Evaluation / ETS review	<p>SEMARNAT will annually review the pilot, publishing reports on topics such as price behavior and emissions reductions achieved. An evaluation of the pilot, supported by the INECC and by the Consultative Committee, will also 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. Regulations for the operational period of the Mexican ETS are to be published in 2022.</p>
Revenue	<p>No information available yet.</p>
Implementing Legislation	<p>General Law of Climate Change Agreement on the establishment of the preliminary basis of the Pilot Program of the Emissions Trading System (implementing regulation of the pilot) Notice on the cap for the years 2020 and 2021 Notice on the reserve and sectoral allocation of allowances for the years 2020 and 2021</p>

New Zealand Emissions Trading Scheme

General Information

Summary	<p>Status: ETS in force</p> <p>Jurisdictions: New Zealand</p> <p>The NZ ETS was launched in 2008. Originally designed to cover the whole economy, it has broad sectoral coverage, including forestry as a source of both emissions and units. Biological emissions from agriculture currently have only reporting obligations and no surrender obligations. However, the government is proposing that biological emissions will be priced at the farm level from 2025. The 'Climate Change Response Act 2002' sets the legislative framework for the NZ ETS.</p> <p>The NZ ETS was conceived as a nested system under the Kyoto Protocol, with full links to international carbon markets. However, as of 1 June 2015, the NZ ETS became a domestic-only system. Following its second statutory review, the government is proposing legislative reform of the NZ ETS to improve its design and operation, and its alignment with New Zealand's Paris Agreement commitments. A link to high-integrity international carbon markets could form part of New Zealand's strategy for meeting its NDC and its 2030 target.</p>										
Year in Review	<p>Following the second review process of the NZ ETS, the government decided on further reforms to the system in 2019. These include phasing down industrial allocation starting in 2021, canceling and replacing units from the first commitment period of the Kyoto Protocol, introducing averaging accounting for the forestry sector, and confirming a new repayment penalty.</p> <p>The New Zealand government also reached an agreement with the agricultural sector to foster on-farm emissions reductions and work towards implementing farm-level pricing by 2025. These changes, as well as additional changes decided on throughout 2018, have been incorporated into an amendment to the 'Climate Change Response Act 2002' titled the 'Climate Change Response (Emissions Trading Reform) Amendment Bill.' While some amendments to the 'Climate Change Response Act' passed into law in October 2019, the Climate Change Response (Emissions Trading Reform) Amendment Bill is currently being reviewed by the Environmental Select Committee and is expected to be enacted in mid-2020.</p>										
Overall GHG emissions (excluding LULUCF)	<p>Emissions: 81.0 MtCO₂e (2017)</p>										
Overall GHG emissions by sector	<table border="1"> <thead> <tr> <th>Sector Name</th> <th>MtCO₂e</th> </tr> </thead> <tbody> <tr> <td>Agriculture</td> <td>39.0</td> </tr> <tr> <td>Energy (road transport and electricity production)</td> <td>32.9</td> </tr> <tr> <td>Industrial processes and product use</td> <td>5.1</td> </tr> <tr> <td>Waste</td> <td>4.1</td> </tr> </tbody> </table>	Sector Name	MtCO ₂ e	Agriculture	39.0	Energy (road transport and electricity production)	32.9	Industrial processes and product use	5.1	Waste	4.1
Sector Name	MtCO ₂ e										
Agriculture	39.0										
Energy (road transport and electricity production)	32.9										
Industrial processes and product use	5.1										
Waste	4.1										
Overall GHG reduction target	<p>BY 2020: 5% reduction from 1990 GHG levels (unconditional target)</p> <p>BY 2030: 30% reduction from 2005 GHG levels (NDC)</p> <p><u>Climate Change Response (Zero Carbon) Amendment Act 2019:</u></p> <p>BY 2050: reduce net emissions of all greenhouse gases (except biogenic methane) to zero</p> <p>Biogenic methane target: BY 2030: Reduce biogenic methane emissions 10% below 2017 levels, and by 24%-47% by 2050</p>										

Carbon Price	<i>Current Allowance Price (per t/CO₂e):</i> NZD 24.82 (USD 16.33) (average secondary market price in 2019; updated prices available here)
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ETS Size

Emissions covered by the ETS	0.51
GHG covered	CO ₂ , CH ₄ , N ₂ O, SF ₆ , HFCs, and PFCs
Sectors covered and thresholds	<p>Sectors were gradually phased in over time.</p> <p>2008: Forestry (mandatory: deforesting pre-1990 forest land; voluntary: post-1989 forest land).</p> <p>2010: Stationary energy (various thresholds), industrial processing (various thresholds), and liquid fossil fuels (various thresholds).</p> <p>2013: Waste (except for small and remote landfills) and synthetic GHGs (various thresholds). Synthetic GHGs not in the NZ ETS are subject to an equivalent levy.</p> <p>Biological emissions from agriculture must be reported but face no surrender obligations. By 2025, a carbon price will be levied on agricultural emissions, at farm-level for livestock, and at processor level for fertilizer.</p>
Point of regulation	<p>The point of obligation is generally placed upstream.</p> <p>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.</p>
Number of liable entities	<p>2,409 entities registered, of which 2,334 have surrender obligations (as of June 2019).</p> <p>200 entities with mandatory reporting and surrender obligations (as of June 2019).</p> <p>2,134 entities with voluntary reporting and surrender obligations; most for post-1989 forestry activities (as of June 2018).</p> <p>75 entities with mandatory reporting without surrender obligations; all for agricultural activities.</p> <p>No information available yet.</p>
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>It is expected that the NZ ETS will have its own fixed cap in the future. This would restrict the number of units supplied into the scheme, in line with New Zealand's GHG reduction targets. The 'Climate Change Response (Emissions Trading Reform) Amendment Bill' outlines a process for setting unit supply over a rolling five-year period with annual updates.</p> <p>It will set the number of allowances that can be released to the market from auctioning and the new Cost Containment Reserve (CCR), as well as from any international units. There will be no limit on NZUs generated from removals from forestry.</p>

Phases & Allocation

Trading period	There are no fixed trading periods or phases under the NZ ETS.
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	<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 when they choose to report their emissions.</p>
Allocation	<p>FREE ALLOCATION, BENCHMARKING: Free allocation is provided based on output and intensity-based benchmarks for 26 eligible activities. Eligibility is based on emissions-intensive, trade-exposed (EITE) criteria.</p> <p>Highly EITE activities (over 1,600 tCO₂e/ NZD 1 million of revenue [USD 0.66 million]) receive 90% free allocation. Moderately EITE activities (over 800 tCO₂e/NZD 1 million of revenue [USD 0.66 million]) receive 60% free allocation. Trade exposure is qualitative and based on the existence of transoceanic trade in the good in question.</p> <p>As a part of the ‘Climate Change Response (Emissions Trading Reform) Amendment Bill’, 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>Post-1989 Forestry Sector and Other Removal Activities: NZUs are granted to participants that voluntarily register in the scheme for removal activities, as outlined below. There is no limit on the number of units that can be granted for removal activities.</p> <p>Forestry Removal Activities: Participants are entitled to receive one NZU per tCO₂ 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. 10.5 million NZUs were issued for forest removal activities from 1 July 2018 and 30 June 2019.</p> <p>Other Removal Activities: Participants are entitled to receive one NZU per tonne of removal from the export of products that embed carbon and export of HFCs and PFCs. 2.7 million NZUs were issued for other removal activities for the 2018/2019 financial year.</p> <p>Forestry and Fisheries Sectors: 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>AUCTIONING: Following the second review, the government plans to introduce an auctioning mechanism. Auctioning is expected to begin in late 2020.</p>

Flexibility

Banking and borrowing	<p>Banking is allowed except for those units that were purchased under the fixed price option (see “Market Stability Provisions” below).</p> <p>Borrowing is not allowed.</p>
Offsets and credits	<p>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.</p> <p>A link to high-integrity international carbon markets is likely to form part of New Zealand’s strategy for meeting its 2030 target.</p>
Market Stability Provisions	<p>Transitional Measures: Two measures were implemented in 2009 to help firms adjust to the carbon cost: (1) One-for-two surrender obligation (one allowance could be surrendered for every two tonnes of emissions); (2) A fixed price option of NZD 25 (USD 16.45), which acts as a price ceiling.</p>

After the second NZ ETS review, the one-for-two measure was phased out and entities have faced full surrender obligations since 1 January 2019.

New Zealand ETS Review Proposals:

As a part of the second stage of the second mandatory review of the New Zealand ETS, several market stability measures have been proposed, and are encompassed in the ‘Climate Change Response (Emissions Trading Reform) Amendment Bill.’ The bill is currently being reviewed by the Environmental Select Committee and is expected to pass into law in mid-2020. Proposed changes are listed below.

Cost Containment Reserve:

The fixed price option will remain until it is replaced with a CCR incorporated into the auctioning mechanism. Allowances from the CCR will be auctioned if a predetermined trigger price—currently proposed at NZD 50 (USD 32.94) for the period 2020-2025—is reached. Allowances released from the reserve will come from outside of the domestic emissions budget and would therefore need to be backed by an equivalent tonne of removals.

Price Floor:

The government is proposing to introduce a price floor of NZD 20 (USD 13.16) for the period 2020-2025. The price floor would operate through a reserve price below which NZUs would not be sold at auction.

Compliance

Compliance Period	One year
Monitoring, Reporting, Verification (MRV)	<p>REPORTING FREQUENCY: Most sectors are required to report annually; deadline of 31 March to submit emissions return.</p> <p>VERIFICATION: Self-reporting supplemented by a program of second- and third-party audits run by the regulator. Participants must seek third- party verification if they apply for the use of a unique emissions factor.</p>
Enforcement	<p>Currently, an entity that fails to surrender emissions units when required to must surrender the units and pay a penalty of NZD 30 (USD 19.73) for each unit that was not surrendered by the due date. In certain circumstances the penalty may be reduced. As a part of the review and reform process, the government plans to introduce a new surrender penalty consisting of a cash penalty set at three times the allowance price.</p> <p>Entities can be fined up to NZD 24,000 (USD 15,789) 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 required to do so.</p> <p>Entities can also be fined up to NZD 50,000 (USD 32,894) on conviction for knowingly altering, falsifying, or providing incomplete or misleading information about any obligations under the scheme, including emissions return. 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.</p>

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 current reforms will make the NZ ETS more similar to ETSs in other countries, which will make 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; New Zealand Customs Service; New Zealand Transport Agency</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—originally required every five years, but the timing is now discretionary. The first review took place in 2011-2012, and the second review took place in 2015-2017.</p> <p>Public consultation on proposed amendments to the 'Climate Change Response Act' following the second review was undertaken in 2018 in order to support implementing proposed changes.</p>
Revenue	<p>No information available yet.</p> <p>Revenues are assigned to the general budget; no earmarking for specific purposes.</p>
Implementing Legislation	<p>Climate Change Response Act 2002 - Part 4 'New Zealand greenhouse gas emissions trading scheme'</p> <p>Note the act now incorporates the provisions of the 2019 Zero Carbon Bill, which includes domestic targets and the process of setting and meeting five-year national emission budgets</p>

Swiss ETS

General Information

Summary	<p>Status: ETS in force</p> <p>Jurisdictions: Switzerland</p> <p>The Switzerland (Swiss) ETS started in 2008 with a five-year voluntary phase as an alternative option to the CO₂ 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 on 1 January 2020 and expanded sector coverage to Swiss domestic aviation (including flights to the EEA) and fossil-thermal power plants. The ETS furthermore applies to industrial entities, largely comprising of companies from the cement, chemicals, pharmaceuticals, paper, refinery, and steel sectors. It covered about 10% of the country's total GHG emissions in 2019. In the 2013-2020 mandatory phase, participants in the ETS are exempt from the CO₂ levy.</p>												
Year in Review	<p>Capping a 10-year process of negotiations and regulatory alignment, the linking agreement between the Swiss and EU ETSs took effect on 1 January 2020. Ratification of the agreement by the EU and Switzerland was announced on 12 December 2019 and followed revisions to the 'Swiss CO₂ Act' and the 'CO₂ Ordinance' that were required for the Swiss ETS to be adapted to the EU ETS legislative framework.</p> <p>In March 2019 Swiss Parliament approved legal changes to the 'CO₂ Act,' the core framework of Swiss climate legislation. In November 2019, the Federal Council made the necessary amendments to the 'CO₂ Ordinance'—which specifies regulations and implementation—expanding ETS coverage to civil aviation and fossil-thermal power plants. With the linking agreement having taken effect, covered entities in the Swiss ETS will be able to use allowances from the EU ETS for compliance, and vice versa. The two systems will run separate auctions.</p>												
Overall GHG emissions (excluding LULUCF)	<p>Emissions: 47.2 MtCO₂e (2017)</p>												
Overall GHG emissions by sector	<table border="1"> <thead> <tr> <th>Sector Name</th> <th>MtCO₂e</th> </tr> </thead> <tbody> <tr> <td>Energy</td> <td>21.6</td> </tr> <tr> <td>Transport</td> <td>14.9</td> </tr> <tr> <td>Industrial processes</td> <td>3.9</td> </tr> <tr> <td>Agriculture</td> <td>6.1</td> </tr> <tr> <td>Others (incl. waste and other)</td> <td>0.7</td> </tr> </tbody> </table>	Sector Name	MtCO ₂ e	Energy	21.6	Transport	14.9	Industrial processes	3.9	Agriculture	6.1	Others (incl. waste and other)	0.7
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Energy	21.6												
Transport	14.9												
Industrial processes	3.9												
Agriculture	6.1												
Others (incl. waste and other)	0.7												
Overall GHG reduction target	<p>BY 2020: At least 20% reduction from 1990 GHG levels (unconditional, domestic target) By 2025: 35% reduction from 1990 GHG levels (NDC) BY 2030: 50% reduction from 1990 GHG levels (NDC) BY 2050: Net-zero GHG emissions (aspirational)</p>												
Carbon Price	<p><i>Current Allowance Price (per t/CO₂e):</i> CHF 12.65/tCO₂e (USD 12.78) (average auction price in 2019; updated prices available here)</p>												

ETS Size

Emissions covered by the ETS	0.10
GHG covered	CO ₂ , NO ₂ , CH ₄ , HFCs, NF ₃ , SF ₆ , and theoretically PFCs. (In principle, all these gases are covered in accordance with the 'CO ₂ Ordinance.' In practice, monitoring is required only for CO ₂ , NO ₂ , and PFCs, since their share is negligible.)
Sectors covered and thresholds	<p>MANDATORY PARTICIPATION: Industries listed under Annex 6 of the revised 'CO₂ 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>INCLUSION THRESHOLDS: Facilities pertaining to the sectors included in Annex 6 that have a total rated thermal input of >20MW. For aircraft operators, the same thresholds apply as in the EU ETS (see below).</p> <p>POSSIBLE VOLUNTARY OPT-IN: Industries—listed under Annex 7 of the revised 'CO₂ 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>POSSIBLE OPT-OUT: Industries with a total rated thermal input of >20MW, but yearly emissions <25,000 tCO₂e/year in each of the past three years. Should their future emissions rise above the threshold during at least one year, they must start participating in the ETS the following year and cannot opt out anymore 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 tCO₂e/year.</p> <p>AVIATION: Coverage of civil aviation (domestic flights within Switzerland or flights from Switzerland to member states of the EEA) is a requirement of the linking agreement between Switzerland and the EU.</p> <p>The ETS covers commercial aircraft operators emitting more than 10,000 tCO₂/year or operating more than 243 flights in a four-month period in the preceding year. Noncommercial operators are included when emitting more than 1,000 t/CO₂ per year. The thresholds do not apply if the operator has obligations under the EU ETS.</p>
Point of regulation	Downstream
Number of liable entities	53 (2019, only industrial installations) No information available yet.
Cap	<p>VOLUNTARY PHASE (2008-2012): Each participant received its own entity-specific reduction target.</p> <p>MANDATORY PHASE (2013-2020): Overall cap of 5.63 MtCO₂e (2013), to be reduced annually by a constant linear reduction factor (currently 1.74% of 2010 emissions), to 4.9 MtCO₂e in 2020.</p> <p>Aviation Sector Cap: 1.3 MtCO₂ (2020)</p>

Phases & Allocation

Trading period	<p>VOLUNTARY PHASE: 2008 - 2012 MANDATORY PHASE: 2013 - 2020</p>
Allocation	VOLUNTARY PHASE (2008-2012):

Free Allocation: Each participant was granted free allocation of allowances covering emissions up to their own entity-specific emissions target.

MANDATORY PHASE (2013-2020):

Free allocation: Free allocation is based on industry benchmarks using a similar methodology to the EU ETS. Free allocation for sectors not exposed to the risk of carbon leakage will be phased out gradually: in 2013, such entities received 80% free allocation whereas in 2020 the share of free allocation will be reduced to 30%.

An overarching correction factor is applied given that the benchmarked allocation exceeds the overall emissions cap.

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

Auctioning: Allowances that are not allocated for free are auctioned. Auctions take place two or three times a year, depending on available auction volumes. As of 1 January 2020, auctions are open to entities covered by the Swiss ETS and the EU ETS and noncompliance entities are 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. In such a situation, allowances are transferred to subsequent auctions scheduled at the same trading platform.

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

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

Flexibility

Banking and borrowing	Banking within and across phases is allowed without limits. Valid certificates (CERs, ERUs) from the 2008-2012 phase could be banked into the mandatory phase 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. Borrowing is not allowed.
Offsets and credits	<p>QUALITATIVE LIMIT: Only international offsets are allowed. Exclusion criteria are listed in Annex 2 of the revised 'CO2 Ordinance.' Most categories of credits from CDM projects in least developed countries are allowed. Credits from CDM and JI projects from other countries are eligible only if registered and implemented before 31 December 2012.</p> <p>QUANTITATIVE LIMIT: Industries that already participated in the voluntary phase (2008-2012): for 2013-2020, the maximum amount of offsets allowed into the scheme equals 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 entering the Swiss ETS in the mandatory phase and newly covered emission sources (2013-2020): 4.5% of their actual emissions in 2013-2020. For aircraft operators, the quantitative limit is 1.5% of their verified CO2 emissions in 2020.</p>
Market Stability Provisions	As of 1 January 2020, the Swiss legislation foresees the possibility to reduce 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 will not adopt the EU ETS Market Stability Reserve (see EU ETS factsheet).

Compliance

Compliance Period	One year (1 January to 31 December). Covered entities have until April 30 of the following year to surrender allowances.
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>REPORTING FREQUENCY: Annual monitoring report, based on self-reported information (by 31 March).</p> <p>VERIFICATION: The Federal Office for the Environment may order third-party verification of the monitoring reports from installations. Aircraft operators need to have their monitoring reports verified by an accredited third-party verifier.</p>
Enforcement	The penalty for failing to surrender sufficient allowances is set at CHF 125/tCO ₂ (USD 127.82/tCO ₂). In addition to the fine, entities must surrender the missing allowances and/or international credits in the following year.

Linking

Links with other Systems	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.
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Other Information

Institutions involved	Federal Office for the Environment
Evaluation / ETS review	The 'Federal Act on the Reduction of CO ₂ Emissions,' which contains the main legislation on the Swiss ETS, is in the process of being reviewed and revised for the period of 2021-2030. Implications for the design of the ETS are possible.
Revenue	<p>Since beginning of programme: CHF 34.76 million (USD 36 million)</p> <p>Collected in 2019: CHF 8.6 million (USD 8.6 million)</p> <p>Revenues from auctioning allowances are fed into the federal government budget.</p>
Implementing Legislation	<p>Federal Act on the Reduction of CO₂ Emissions (CO₂ Act)</p> <p>Partial revision of the Ordinance on the Reduction of CO₂ Emissions—Explanatory report (CO₂ Ordinance)</p> <p>Ordinance on the Reduction of CO₂ Emissions (CO₂ Ordinance)</p>

USA - California Cap-and-Trade Program

General Information

Summary	<p>Status: ETS in force</p> <p>Jurisdictions: California</p> <p>Initiated in 2012, the California Cap-and-Trade Program began its compliance obligation 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 and with Ontario's in January 2018 (until the latter's termination in mid-2018).</p> <p>The California program covers sources responsible for approximately 80% of the state's GHG emissions. In 2017, legislation (Assembly Bill [AB] 398) was passed to provide direction on the cap-and-trade system post-2020 to help achieve California's climate goals.</p>																
Year in Review	<p>CARB did not commence any regulatory development on the California Cap-and-Trade Program in 2019. Amendments to the program pursuant to AB 398 went into effect in April 2019, though some (e.g., price ceiling, offsets-related limits) will not take effect until 2021.</p> <p>CARB also commenced the solicitation process for convening the Compliance Offsets Protocol Task Force called for by AB 398. This task force is charged with providing guidance to CARB in establishing new offset protocols for the cap-and-trade program with direct environmental benefits in the state while prioritizing disadvantaged communities, Native American or tribal lands, and rural and agricultural regions. In addition, in July 2019, the California legislature passed legislation to require the task force to consider new offset protocols for enhanced management or conservation of agricultural and natural lands as well as the enhancement and restoration of wetlands.</p>																
Overall GHG emissions (excluding LULUCF)	<p>Emissions: 424 MtCO_{2e} (2017)</p>																
Overall GHG emissions by sector	<table border="1"> <thead> <tr> <th>Sector Name</th> <th>MtCO_{2e}</th> </tr> </thead> <tbody> <tr> <td>Electricity Generation (In State)</td> <td>38.6</td> </tr> <tr> <td>Electricity Generation (Imports)</td> <td>24</td> </tr> <tr> <td>Transportation</td> <td>174.3</td> </tr> <tr> <td>Industrial</td> <td>101.1</td> </tr> <tr> <td>Commercial</td> <td>23.3</td> </tr> <tr> <td>Residential</td> <td>30.4</td> </tr> <tr> <td>Agriculture & Forestry</td> <td>32.4</td> </tr> </tbody> </table>	Sector Name	MtCO _{2e}	Electricity Generation (In State)	38.6	Electricity Generation (Imports)	24	Transportation	174.3	Industrial	101.1	Commercial	23.3	Residential	30.4	Agriculture & Forestry	32.4
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Industrial	101.1																
Commercial	23.3																
Residential	30.4																
Agriculture & Forestry	32.4																
Overall GHG reduction target	<p>By 2020: Return to 1990 GHG levels</p> <p>By 2030: 40% reduction from 1990 GHG levels</p> <p>By 2045: Achieve carbon neutrality</p>																
Carbon Price	<p><i>Current Allowance Price (per t/CO_{2e}):</i> USD 16.84 (average auction price in 2019; updated prices available here)</p>																

ETS Size

Emissions covered by the ETS	0.80
GHG covered	CO ₂ , CH ₄ , N ₂ O, SF ₆ , HFCs, PFCs, NF ₃ , and other fluorinated GHGs.

Sectors covered and thresholds	<p>FIRST COMPLIANCE PERIOD (2013-2014): 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 CO₂ suppliers.</p> <p>SINCE THE SECOND COMPLIANCE PERIOD (STARTING 2015): 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>INCLUSION THRESHOLDS: Facilities $\geq 25,000$ tCO₂e/data year.</p>
Point of regulation	Mixed
Number of liable entities	<p>~500 entities (2015-2017)</p> <p>No information available yet.</p>
Cap	<p>The system started in 2013 with a cap of 162.8 Mt CO₂e. With the program expanding to include fuel distribution, the cap rose to 394.5 Mt CO₂e in 2015.</p> <p>From 2015 through 2020, the cap declines by about 12 Mt CO₂e each year, reaching 334.2 Mt CO₂e in 2020. The cap decline factor averaged 3.1% per year in the second compliance period (2015-2017) and 3.4% in the third compliance period (2018-2020). During the period 2021-2030, the cap declines by about 13.4 Mt CO₂e each year, reaching 200.5 Mt CO₂e in 2030. The cap decline factor averages 5.0% during this period. The 'Cap-and-Trade Regulation' sets a formula for declining caps through 2050.</p>

Phases & Allocation

Trading period	<p>The California Cap-and-Trade Program is structured around compliance periods (see "Compliance" below). A cap trajectory has been set through 2030, with a formula for the declining cap through 2050 (see "Cap" above).</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	<p>Allowances are distributed via auction and/or free allocation.</p> <p>Free Allocation: Industrial facilities: Facilities receive free allowances for transition assistance and to minimize carbon leakage. For nearly all industrial facilities, the amount is determined by specific benchmarks, production amounts, a cap adjustment factor, and an assistance factor based on assessment of leakage risk.</p> <p>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 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 as well.</p> <p>There is no cap on the total amount of industrial allocation.</p>

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:* Utilities receive allowances on behalf of their ratepayers. All natural gas and electrical utilities must use the allowance value for ratepayer benefit and for emissions reductions.

Auctioning: In 2019, about 65% of vintage 2019 allowances were available through auction, including both allowances owned by CARB (about 40%) and allowances consigned to auction by utilities (about 25%). The revenue from consignment allowances is mandated to benefit ratepayers or contribute to emissions reductions. The remainder of allowances was allocated for free.

Flexibility

Banking and borrowing	<p>Banking is allowed, but the emitter is subject to a general holding limit.</p> <p>Borrowing of future vintage allowances is not allowed.</p> <p>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 (e.g., after eight auctions), they will be placed into CARB’s reserve tiers and price ceiling. CARB has transferred to the reserve over 37 million allowances originally designated for auction that remained unsold in the Auction Holding Account for more than 24 months.</p>
Offsets and credits	<p>QUANTITATIVE LIMIT: Up to 8% of each entity’s compliance obligation until 2020 emissions.</p> <p>QUALITATIVE LIMIT: Currently, six domestic offset types are accepted as compliance units originating from projects carried out according to six “protocols”:</p> <ol style="list-style-type: none"> (1) US forest projects; (2) Urban forest projects; (3) Livestock projects (methane management); (4) Ozone depleting substances projects; (5) Mine methane capture (MMC) projects; and (6) Rice cultivation projects. <p>FROM 2021: AB 398 lays out two significant changes to the offset program from 2021 onwards:</p> <ol style="list-style-type: none"> (1) The share of offsets that can be used to fulfill the compliance obligation will decrease to 4% between 2021-2025 and will remain at 6% thereafter. (2) No more than one half of the offsets usage limit post-2020 may come from offsets that do not provide direct environmental benefits (DEBS) in the State of California. The DEBS requirement is operationalized through a performance standard, which defines DEBS eligibility by offset activity type. Offset projects implemented outside of California may still result in DEBS based on scientific evidence and project data provided. For example, afforestation projects outside California could also provide benefits within California by improving the quality of waters flowing through the state. Recent regulatory amendments specify the exact criteria that will be used for determining DEBS. <p>Offsets credits issued by jurisdictions linked with California 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 can invalidate an offset credit that is later determined not to meet the requirements of an offset protocol, and the entity that surrendered that offset credit for compliance must substitute a valid compliance instrument for the invalidated offset credit.</p>
Market Stability Provisions	<p>Auction Reserve Price: USD 16.68 per allowance in 2020. 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.</p>

Reserve: An Allowance Price Containment Reserve allocates allowances from various budgets (1% from budget years 2013-2014; 4% from budget years 2015-2017; and 7% from budget years 2018-2020). AB 398 required two-thirds of the reserve allowances that remained on 31 December 2017 to be used to populate the two price containment points starting in 2021.

The reserve sale administrator can sell accumulated allowances on a regular basis in three equal price tiers. For 2020, these prices are USD 62.29, USD 70.09, and USD 77.86. Tier prices increase by 5% plus inflation (as measured by the Consumer Price Index).

Price Containment Points: AB 398 reforms the price containment provisions starting in 2021: two price containment points triggered at increasing price levels will be filled with remaining APCR allowances and with allowances from within the annual budgets from 2021-2030.

A third price level will be a price ceiling. 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 these sales would be used to purchase real, permanent, quantifiable, verifiable, enforceable, and additional emissions reductions on at least a metric tonne for metric tonne basis.

In 2021, the two cost containment reserve tiers and the price ceiling will be set at USD 41.40, USD 53.20, and USD 65.00, respectively.

Compliance

Compliance Period	<p>Except for the year following the last year of a compliance period, compliance instruments equal to 30% of the last 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>FIRST COMPLIANCE PERIOD: 2013-2014</p> <p>SUBSEQUENT COMPLIANCE PERIODS: Three calendar years (2015-2017, 2018-2020, and so forth)</p>
Monitoring, Reporting, Verification (MRV)	<p>REPORTING FREQUENCY: Annually</p> <p>VERIFICATION: Emission data reports and their underlying data require independent third-party verification annually for all entities covered by the program.</p> <p>OTHER: Reporting is required for most operators at or above 10,000 tCO₂e per year. Operators 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 must surrender each missing compliance instrument and will have to surrender three additional compliance instruments for each compliance instrument it failed to surrender.</p> <p>Failure to surrender any additional compliance instruments as described above would subject the entity to substantial financial penalties for its noncompliance.</p> <p>Penalties may be assessed pursuant to 'California Health and Safety Code' Section 38580 (e.g., monetary fines and/or imprisonment).</p> <p>There are separate and substantial penalties for mis- or non-reporting under the 'Regulation for the Mandatory Reporting of Greenhouse Gas Emissions.'</p>

Linking

Links with other Systems	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.
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Other Information

Institutions involved	California Air Resources Board (CARB)
Evaluation / ETS review	Pursuant to requirements in existing legislation (AB 32, AB 197, and AB 398), CARB must update the California Climate Change Scoping Plan at least every five years and must provide annual reports to various committees of the legislature and the board. These updates and reports provide opportunities for future review of the cap-and-trade program's progress in meeting the 2030 target.
Revenue	<p>Since beginning of program: USD 12.5 billion</p> <p>Collected in 2018: USD 3.065 billion</p> <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.</p> <p>Revenue From Auction of Utility-owned Allowances: Electric and natural gas utilities are allocated allowances, a portion of which must be consigned to auction. Auction proceeds must be used for ratepayer benefit and for emissions reductions.</p>
Implementing Legislation	<p>Global Warming Solutions Act of 2006 (AB 32)</p> <p>AB 398</p> <p>Current regulation can be found on the CARB website</p>

USA - Massachusetts Limits on Emissions from Electricity Generators

General Information

Summary	<p>Status: ETS in force</p> <p>Jurisdictions: Massachusetts</p> <p>The Massachusetts system started operation in 2018 and covers 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 government would need to take additional action to guarantee it meets the state's climate targets—a 25% reduction in 2020 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.</p> <p>The Massachusetts Limits on Emissions from Electricity Generators system exists in parallel to, but does not directly interact with, RGGI.</p>																
Year in Review	<p>2019 saw the reduction of the share of allowances distributed through free allocation from 100% to 75%. The remainder, after an adjustment to account for banked allowances, were distributed via auctions. The system is expected to increase to full auctioning by 2021. Auction results are included in market monitoring reports posted on the program web page.</p>																
Overall GHG emissions (excluding LULUCF)	<p>Emissions: 73.3 MtCO₂e (2017)</p>																
Overall GHG emissions by sector	<table border="1"> <thead> <tr> <th>Sector Name</th> <th>MtCO₂e</th> </tr> </thead> <tbody> <tr> <td>Transportation</td> <td>30.7</td> </tr> <tr> <td>Electricity</td> <td>13.6</td> </tr> <tr> <td>Industry</td> <td>3.8</td> </tr> <tr> <td>Buildings</td> <td>23.5</td> </tr> <tr> <td>Oil and gas</td> <td>0.8</td> </tr> <tr> <td>Waste</td> <td>0.7</td> </tr> <tr> <td>Agriculture</td> <td>0.2</td> </tr> </tbody> </table>	Sector Name	MtCO ₂ e	Transportation	30.7	Electricity	13.6	Industry	3.8	Buildings	23.5	Oil and gas	0.8	Waste	0.7	Agriculture	0.2
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Overall GHG reduction target	<p>BY 2020: 25% reduction compared to 1990</p> <p>BY 2050: 80% reduction compared to 1990</p>																
Carbon Price	<p><i>Current Allowance Price (per t/CO₂e):</i> No information available yet.</p>																

ETS Size

Emissions covered by the ETS	0.12
GHG covered	CO ₂
Sectors covered and thresholds	Large electricity generators subject to RGGI (>= 25 MWe).
Point of regulation	Downstream
Number of liable entities	24 (2019)

	No information available yet.
Cap	<p>The cap declines annually by 223,876 tCO₂e per year until it reaches a cap of 1.8 MtCO₂e by 2050.</p> <p>ANNUAL CAPS 2019: 8.74 MtCO₂e; 2020: 8.50 MtCO₂e</p>

Phases & Allocation

Trading period	The system has an annual compliance deadline of 1 March for the prior year's emissions.
Allocation	<p>AUCTIONING: From 2019 onwards, allowances are partially auctioned, with 25% auctioned in 2019, 50% in 2020, and 100% from 2021 onwards. One to four auctions will be held each year. The first auction took place in December 2018. The second auction took place in December 2019.18.</p> <p>FREE ALLOCATION, GRANDPARENTING: Until 2021, remaining allowances will be freely allocated proportionally 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	Auction reserve price: The first two auctions had a reserve price of USD 0.50 per allowance.

Compliance

Compliance Period	One year
Monitoring, Reporting, Verification (MRV)	<p>REPORTING FREQUENCY: 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> <p>VERIFICATION: Emissions must match reports to RGGI and the US Environmental Protection Agency. Documents (i.e., emissions reports and compliance certification reports) must be certified by a designated representative identified by the facility, and the Massachusetts Department of Environmental Protection (MassDEP) may choose to conduct audits.</p>
Enforcement	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.

Linking

Links with other Systems	No information available yet.
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Other Information

Institutions involved	The Executive Office of Energy and Environmental Affairs; Massachusetts Department of Environmental Protection
Evaluation / ETS review	The first program review will be in 2021, with a review every 10 years thereafter.
Revenue	No information available yet. Auction proceeds will be paid to a segregated account and shall be used to further reduce GHG emissions.
Implementing Legislation	Electricity Generator Emissions Limits (310 CMR 7.74)

USA - Regional Greenhouse Gas Initiative (RGGI)

General Information

Summary	<p>Status: ETS in force</p> <p>Jurisdictions: Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island, Vermont</p> <p>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. Its development was based on the '2005 RGGI Memorandum of Understanding' (MoU) and the '2006 RGGI Model Rule'. Through statutes or regulations based on the Model Rule, each state then established individual CO₂ budget trading programs. New Jersey withdrew from the program at the end of 2011, but rejoined RGGI in January 2020.</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) will be added in 2021. The ECR is an automatic adjustment mechanism that will adjust the cap downward in the face of lower-than-expected costs.</p>														
Year in Review	<p>After the finalization of the '2017 Model Rule', the proposed post-2020 cap-and-trade regulations must be adopted by each RGGI state according to its own regulatory processes.</p> <p>New Jersey rejoined RGGI as of January 2020 after final legislation for establishing an ETS in the state and reentering RGGI was adopted 17 June 2019. New Jersey's first auction as a rejoined member was in March 2020.</p> <p>Virginia is also in the process of establishing an ETS and linking it to the RGGI program. The state started regulatory processes in 2018 and adopted final regulations in April 2019 which entered into force in June 2019. In addition, in February 2020, Virginia adopted legislation for ETS implementation and linkage to RGGI that is now planned for the end of 2020 (see factsheet on Virginia).</p> <p>Pennsylvania is considering an ETS and linking to RGGI. In October 2019, Pennsylvania Governor Tom Wolf issued an executive order for the state to draft ETS legislation for RGGI linkage. 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 factsheet on Pennsylvania).</p>														
Overall GHG emissions (excluding LULUCF)	<p>Emissions: 463.6 MtCO_{2e} (2014)</p>														
Overall GHG emissions by sector	<table border="1"> <thead> <tr> <th>Sector Name</th> <th>MtCO_{2e}</th> </tr> </thead> <tbody> <tr> <td>Energy</td> <td>223.5</td> </tr> <tr> <td>Transportation</td> <td>174.6</td> </tr> <tr> <td>Industrial Processes</td> <td>25.6</td> </tr> <tr> <td>Agriculture</td> <td>9.8</td> </tr> <tr> <td>Waste</td> <td>30</td> </tr> <tr> <td>Bunker Fuels</td> <td>0.1</td> </tr> </tbody> </table>	Sector Name	MtCO _{2e}	Energy	223.5	Transportation	174.6	Industrial Processes	25.6	Agriculture	9.8	Waste	30	Bunker Fuels	0.1
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Overall GHG reduction target	<p>BY 2020: By adopting the '2013 Model Rule' RGGI states committed to a regional cap of more than 50% reduction of CO₂ emissions from electricity generation from 2005 CO₂ emissions.</p> <p>BY 2030: By adopting the '2017 Model Rule' RGGI states have committed to implement a reduction of 30% compared to the 2020 CO₂ emissions cap.</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/CO₂e):</i> USD 5.98 (average price in 2019; updated prices available here)
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ETS Size

Emissions covered by the ETS	0.18
GHG covered	CO ₂
Sectors covered and thresholds	Fossil Fuel Electric Generating Units INCLUSION THRESHOLDS: Capacity equal to or greater than 25 MW.
Point of regulation	Downstream (at installation level)
Number of liable entities	168 sources (December 2019) No information available yet.
Cap	<p>The RGGI cap was 188 million short tons CO₂ per year in the 2009-2011 period. It was then set to 165 million short tons CO₂ per year for the 2012-2014 period, with a 2.5% annual reduction factor from 2015 through 2018, totaling a 10% reduction between 2015 and 2018. However, by 2012, 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, with a 2020 cap of approximately 96 million short tons including the 18 million short tons cap of new RGGI entrant New Jersey. The RGGI states adjusted the caps between 2014 and 2020 to account for banked CO₂ allowances accumulated in the first and second control periods. The adjusted cap for 2020 comprises 74 million short tons.</p> <p>The reduction factor between 2021 and 2030 as set out in the '2017 Model Rule' is about 3% of the 2020 cap, resulting in a 2030 regional cap (unadjusted) of about 68 million short tons.</p>

Phases & Allocation

Trading period	<p>RGGI is structured around “control” (or compliance) periods. A cap trajectory until 2030 has been set (see “Cap” above).</p> <p>FIRST CONTROL PERIOD: 2009-2011 SECOND CONTROL PERIOD: 2012-2014 THIRD CONTROL PERIOD: 2015-2017 FOURTH CONTROL PERIOD: 2018-2020 FIFTH CONTROL PERIOD: 2021-2023</p> <p>Since the third control period, RGGI operates with interim control periods. Regulated entities must cover 50% of their emissions with allowances in each of the first two years of a control period. They must cover 100% of the remaining emissions at the end of the three-year control period.</p>
Allocation	<p>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.</p>

Flexibility

Banking and borrowing	<p>Banking of allowances is allowed without restrictions, but regulations include adjustments to the cap to address the aggregate bank by reducing the amount of allowances available for auctions in future years by the amount of allowances not used for compliance in previous control periods.</p> <p>Borrowing is not allowed.</p>
Offsets and credits	<p>QUANTITATIVE LIMIT: 3.3% of an entity's liability may be covered with offsets. This share will remain the same between 2021 and 2030.</p> <p>QUALITATIVE LIMIT: Currently the program allows offset allowances from five offset types located in RGGI states:</p> <ul style="list-style-type: none"> (1) landfill methane capture and destruction; (2) sequestration of carbon due to reforestation, improved forest management, or avoided conversion; (3) avoidance of methane emissions from agricultural manure management operations; (4) reduction or avoidance of CO₂ emissions from natural gas, oil, or propane end-use combustion due to end-use energy efficiency; and (5) reduction in SF₆ emissions. <p>According to the Model Rule, offset Protocols 4 and 5 will be discontinued from 2021. Some states have discontinued other 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>Auction Price Floor: USD 2.3 per short ton in 2020, increasing by 2.5% per year (to reflect inflation).</p> <p>Reserves: Since 2014, RGGI has operated with a cost containment reserve (CCR), where allowances are released to the market when certain trigger prices are reached. Trigger price: USD 10.77 in 2020 (having increased at 2.5% annually from USD 10 in 2017).</p> <p>In 2021, the CCR trigger price will be set at USD 13 and will increase by 7% compared to the previous year thereafter.</p> <p>In addition, an emissions containment reserve (ECR) will be added in 2021. Under the ECR, allowances will be withheld from circulation (from auction) if certain trigger prices are reached, up to an annual withholding limit of 10% of the budgets of participating states. Allowances withheld will not be re-offered for sale, effectively adjusting the cap downward. In 2021, this trigger price will be set at USD 6, increasing by 7% compared to the previous year thereafter.</p>

Compliance

Compliance Period	Three years (see "Phases and Allocation" above)
Monitoring, Reporting, Verification (MRV)	<p>REPORTING FREQUENCY: Compliance is evaluated at the end of each three-year control period. From the third control period, covered entities have been required to hold allowances equal to 50% of their emissions during each interim control period (the first two calendar years of each control period).</p> <p>FRAMEWORK: 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, which is publicly available.</p>

Enforcement	In case of excess emissions, compliance allowances for three times the amount of excess emissions have to be surrendered in future periods. Furthermore, covered entities may also be subject to specific penalties imposed by the RGGI state where the entity is located.
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Linking

Links with other Systems	New Jersey will rejoin RGGI as of 2020. Virginia plans to link to RGGI in late 2020. Pennsylvania plans to link to RGGI as of 2022.
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Other Information

Institutions involved	Each RGGI state has its own statutory and/or regulatory authority; RGGI Inc. (non-profit cooperative supporting RGGI's development and implementation)
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 no later than 2021.
Revenue	Since beginning of program: USD 3.4 billion Collected in 2019: USD 284 million Revenues are collected from the quarterly auctions. They are returned to the RGGI states and have been primarily invested in consumer benefit programs: energy efficiency, renewable energy, direct energy bill assistance, and other greenhouse gas reduction programs.
Implementing Legislation	2017 RGGI Model Rule 2017 RGGI Model Rule Updates (Summary) RGGI States' Statutes & Regulations RGGI Program design

China National ETS

General Information

<p>Summary</p>	<p>Status: ETS under development</p> <p>Jurisdictions: China</p> <p>Building on its experience of successfully piloting carbon markets in seven regions, China launched its national ETS politically in December 2017. This launch was a goal set in 2015 at China's highest political level, which was reaffirmed by its NDC under the Paris Agreement and the '13th Five-Year Work Plan for Greenhouse Gas Emission Control.'</p> <p>The provisions for the launch and incremental development of the ETS are laid out in the Work Plan for Construction of the National Emissions Trading System (Power Sector) (Work Plan), approved by the State Council in late 2017.</p> <p>The objective of the ETS is to contribute to the effective control and gradual reduction of carbon emissions in China and the achievement of green and low carbon development. The ETS is expected to regulate ~1,700 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 tonnes GHG or consume more than 10,000 tce per year. The Chinese system would cover more than three billion tonnes of CO₂e in its initial phase, accounting for about 30% of national emissions. The scope is to be further expanded in the future.</p> <p>The Work Plan foresees a three-phase roadmap for the development of the ETS:</p> <ul style="list-style-type: none"> · First Phase: will focus on the development of market infrastructures (roughly one year); · Second Phase: foresees simulation trading (roughly another year); and · Third Phase: will be the deepening and expanding phase with allowances spot trading for compliance purposes (roughly starting from 2020). <p>A gradual transition of the Chinese pilots is foreseen by the Work Plan. In the short term, the existing ETS pilots are expected to operate in parallel to the national market, covering the non-power sectors. Over the medium to long term, they are expected to be integrated into the national market once it is fully operational.</p>
<p>Year in Review</p>	<p>2019 saw the final stages of the transition of ETS-related responsibilities from the National Development and Reform Commission (NDRC) to the newly created Ministry for Ecology and Environment (MEE), particularly at the provisional level.</p> <p>In addition, the government continued to advance the work on reporting and verification of the 2018 emissions data from eight emission-intensive sectors of the economy.</p> <p>MEE also continued to improve the establishment of plans for a national registry and a trading system, as well as the development of a national enterprise GHG direct reporting system. In March, the MEE published a draft of the 'Interim Regulation on Carbon Emission Trading' for public consultation, marking progress towards the adoption of ETS implementing legislation.</p> <p>In 2019, MEE also conducted a China-ETS Allowance Allocation and Management Training Series in more than 15 cities. The aim of the training was to enhance the capacity and readiness of various stakeholders for the national ETS. Further, MEE released the information regarding the allocation plan through the 'Implementation plan of carbon emission allowance allocation for key emitters in power generation industry (including captive power plant and co-generation) in 2019 (trial version).' The training plan was</p>

	<p>used in capacity-building activities and further tested the rationality and operability of the benchmarks for the power sector.</p> <p>Looking to the future, the main tasks of national ETS development are legislating national ETS regulations, accelerating the development of market infrastructure, promoting reporting, carrying out verification and carbon management for key enterprises, and strengthening capacity-building activities. The simulation trading in the power sector is expected to start in 2020.</p>												
Overall GHG emissions (excluding LULUCF)	Emissions: 10,976 MtCO ₂ e (2012)												
Overall GHG emissions by sector	<table border="1"> <thead> <tr> <th>Sector Name</th> <th>MtCO₂e</th> </tr> </thead> <tbody> <tr> <td>Energy</td> <td>7,946.9</td> </tr> <tr> <td>Industrial Processes</td> <td>1,296.6</td> </tr> <tr> <td>Agriculture</td> <td>831.6</td> </tr> <tr> <td>Transportation</td> <td>702.9</td> </tr> <tr> <td>Waste</td> <td>197.6</td> </tr> </tbody> </table>	Sector Name	MtCO ₂ e	Energy	7,946.9	Industrial Processes	1,296.6	Agriculture	831.6	Transportation	702.9	Waste	197.6
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Waste	197.6												
Overall GHG reduction target	<p>2016-2020: Reduction in carbon emissions per unit GDP by 18% compared to 2015 level (13th FYP)</p> <p>BY 2020: 40-45% reductions in carbon intensity compared to 2005 levels (voluntary commitment under the Copenhagen Accord of 2009)</p> <p>BY 2030: Peak CO₂ emissions around 2030, with best efforts to peak earlier; China also has committed to lowering CO₂ emissions per unit of GDP by 60-65% from 2005 levels (NDC)</p>												
Carbon Price	<i>Current Allowance Price (per tCO₂e):</i> No information available yet.												

ETS Size

Emissions covered by the ETS	0.30
GHG covered	CO ₂
Sectors covered and thresholds	<p>Power sector (including combined heat and power, as well as captive power plants of other sectors).</p> <p>The scope is expected to be gradually expanded to finally cover a total of eight sectors: petrochemical, chemical, building materials, steel, nonferrous metals, paper, and domestic aviation. There is no specific timeline for this expansion.</p> <p>INCLUSION THRESHOLDS: Entities with annual emissions of ~26,000 tCO₂ (energy consumption of more than 10,000 tce) in any year over the period 2013-2015.</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 liable entities	<p>~1,700</p> <p>No information available yet.</p>
Cap	~3,300 MtCO ₂ e/year

Phases & Allocation

Trading period	<p>First Phase (~a year as of 2018): Development of market infrastructures</p> <p>Second Phase (~another year as of 2019): Simulation trading</p>
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	<p>Third Phase (~from 2020 on): Expanding sectoral coverage and deepening and expanding the system</p>
Allocation	<p>The ETS competent authority will develop detailed allocation rules in cooperation with energy sector authorities.</p> <p>Free Allocation: Free allocation is expected to be based on subsector benchmarks with ex-post adjustments for changes in actual production.</p> <p>In 2017, draft allocation plans for power, cement, and electrolytic aluminum were developed and trial allocation work was carried out in two provinces. In 2019, MEE released the 'Implementation plan of carbon emission allowance allocation for key emitters in power generation industry (including captive power plant and co-generation) in 2019 (trial version),' which provided further information on the approach to benchmarks for the power sector.</p>

Flexibility

Banking and borrowing	Expected to allow banking across compliance phases, but not to allow borrowing.
Offsets and credits	<p>The use of China Certified Emissions Reduction (CCER) credits is expected to be allowed during the third phase.</p> <p>In 2012, the NDRC issued the 'Interim Measures for the Management of Voluntary GHG Emission Reduction Transactions' ("Interim Measures"). These measures include guidelines for the issuance of CCERs. The acceptance of CCERs is expected to be regulated through a revision of the Interim Measures and through the development of an 'Administration Measure of Offset Scheme for National ETS' focusing on the quality of and limits on the use of CCERs in the ETS. Specific timelines and detailed rules are yet to be published.</p>
Market Stability Provisions	Adjustment mechanisms to prevent abnormal price fluctuations, as well as risk prevention and control mechanism to prevent market manipulations, are to be developed.

Compliance

Compliance Period	One year
Monitoring, Reporting, Verification (MRV)	<p>REPORTING FREQUENCY: Annual reporting of emissions to be submitted within a given timeline.</p> <p>VERIFICATION: Emissions must be verified by a third-party verifier.</p> <p>FRAMEWORK: MRV guidelines, supplementary data sheets, verification guidelines, and other guidance are available for the eight sectors expected to be covered by the ETS.</p> <p>From 2013 to 2015, the NDRC released a series of MRV guidelines covering a total of 24 sectors. Supplementary MRV data sheets for the eight sectors expected to be covered under the national ETS, as well as 'Reference Guidance on Third-party Verification of China ETS' and 'Reference Qualification on Third-party Verification Body and Verifiers of China ETS,' were all released in 2016. In 2017, new requirements on data collection, categorization, and verification were added.</p> <p>OTHER: The MEE is taking efforts to develop the management measure for corporate emissions reports as well as improve the existing guidelines and technical specifications for the national ETS.</p>
Enforcement	Noncompliance would result in punishment, which may include recording the noncompliance information in the national credibility information sharing platform*, although details are yet to be developed.

*The national credibility information sharing platform, developed in 2015, integrates credibility information provided by various departments and regions across the country. As of 2018, it has achieved interconnection with 44 ministries, 31 provinces and autonomous regions, and 65 market institutions.

Linking

Links with other Systems

At the initial phases of the ETS, the focus is on the domestic ETS construction (rather than linking with other systems). Once the national ETS is fully operational, China and other jurisdictions such as the EU and Korea may be interested in exploring linking opportunities.

Other Information

Institutions involved	<p>The MEE, in cooperation with other relevant ministries, is responsible for policy design and rule-making for the national ETS.</p> <p>Prior to 2019, provisional DRCs implemented the policies and rules set up by the central level in their respective regions. Post 2019, responsibilities for the ETS was moved to local Ecology and Environment Bureaus, which are the corresponding government institutions of the MEE at the regional level.</p>
Evaluation / ETS review	No information available yet.
Revenue	No information available yet.
Implementing Legislation	<p>Work Plan for Construction of the National Emissions Trading System (Power Sector)</p> <p>Notice on Key Works in Preparation for the Launch of the National ETS</p> <p>24 Guidelines for GHG Monitoring and Reporting for various sectors (2013, 2014 and 2015)</p> <p>Interim Administrative Measures on Emissions Trading</p>

Colombia

General Information

<p>Summary</p>	<p>Status: ETS under development</p> <p>Jurisdictions: 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 number of allowances will be determined by the Ministry of Environment and Sustainable Development (Minambiente), 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 eligible for the program.</p> <p>Further regulations are yet to be developed in order to operationalize the PNCTE. With support from the Partnership for Market Readiness, Colombia has tasked several teams to provide technical support on the design of the system; these studies are ongoing and more details on the ETS are expected in the course of 2020. Public discussions on the policy will then follow.</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 also recognize carbon tax payments as part of the compliance obligation of regulated entities.</p>										
<p>Year in Review</p>	<p>No information available yet.</p>										
<p>Overall GHG emissions (excluding LULUCF)</p>	<p>Emissions: 237 MtCO_{2e} (2014)</p>										
<p>Overall GHG emissions by sector</p>	<table border="1"> <thead> <tr> <th>Sector Name</th> <th>MtCO_{2e}</th> </tr> </thead> <tbody> <tr> <td>Energy</td> <td>82.5</td> </tr> <tr> <td>Industrial Processes</td> <td>10.5</td> </tr> <tr> <td>Agriculture, Forestry, and Other Land Use</td> <td>129.5</td> </tr> <tr> <td>Waste</td> <td>14.4</td> </tr> </tbody> </table>	Sector Name	MtCO _{2e}	Energy	82.5	Industrial Processes	10.5	Agriculture, Forestry, and Other Land Use	129.5	Waste	14.4
Sector Name	MtCO _{2e}										
Energy	82.5										
Industrial Processes	10.5										
Agriculture, Forestry, and Other Land Use	129.5										
Waste	14.4										
<p>Overall GHG reduction target</p>	<p>BY 2022: Accumulated reduction of GHG emissions of 36 MtCO_{2e}, with respect to the national reference scenario, between 2018 and 2022 (aspirational)</p> <p>BY 2030: Reduce GHG emissions by 20% compared to BAU emissions by 2030, or by 30% if international support is provided (NDC)</p>										
<p>Carbon Price</p>	<p><i>Current Allowance Price (per t/CO_{2e}):</i> No information available yet.</p>										

ETS Size

Emissions covered by the ETS	No information available yet.
GHG covered	No information available yet.
Sectors covered and thresholds	No information available yet.
Point of regulation	No information available yet.
Number of liable entities	No information available yet.
Cap	No information available yet.

Phases & Allocation

Trading period	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 Environment and Sustainable Development; Department of National Planning; Ministry of Mines and Energy; Ministry of Finance;
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	National Climate Change System
Evaluation / ETS review	No information available yet.
Revenue	No information available yet.
Implementing Legislation	No information available yet.

German National Emissions Trading System

General Information

Summary	<p>Status: ETS under development</p> <p>Jurisdictions: Germany</p> <p>Germany is scheduled to launch a national ETS 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. Since GHG emissions from Germany's energy, industry, and domestic aviation sectors are already covered by the EU ETS, the introduction of the national ETS will lead to most major sectors in Germany facing a CO₂ price from 2021 onwards.</p>										
Year in Review	<p>After the release of the 'Cornerstones for the Design of a National ETS' in October 2019, the implementing legislation—'Fuel Emissions Trading Act'—was adopted by the two German federal legislative bodies in December 2019. Now that the key design features of the system are agreed upon, regulatory efforts in 2020 and 2021 will focus on the implementation of the law.</p> <p>The national ETS will be phased in gradually, with a fixed price per tCO₂ from 2021 to 2025. In 2026, auctions with minimum and maximum prices will be introduced. The price trajectory for 2027 onwards will be decided in 2025. The coverage of fuels will also be expanded stepwise.</p> <p>The current 'Fuel Emissions Trading Act' sets prices of EUR 10/tCO₂ (USD 11.19) in 2021, continuously rising to EUR 35/tCO₂ (USD 39.18) in 2025. In 2026, a price corridor between EUR 35 and EUR 60 (USD 67.17) would apply. These figures, however, are being revised as further negotiations between the two German federal legislative bodies yielded a decision to increase the fixed-price levels. The system is now to start with a higher fixed price of EUR 25/tCO₂ (USD 27.99) in 2021, which will then increase yearly to EUR 55/tCO₂ (USD 61.57) in 2025. The federal government agreed to draft a law containing these amendments and to initiate the legislative procedure beginning in 2020.</p>										
Overall GHG emissions (excluding LULUCF)	<p>Emissions: 906.6 MtCO₂e (2017)</p>										
Overall GHG emissions by sector	<table border="1"> <thead> <tr> <th>Sector Name</th> <th>MtCO₂e</th> </tr> </thead> <tbody> <tr> <td>Energy</td> <td>765.7</td> </tr> <tr> <td>Industry</td> <td>64.5</td> </tr> <tr> <td>Agriculture</td> <td>66.3</td> </tr> <tr> <td>Waste</td> <td>10.2</td> </tr> </tbody> </table>	Sector Name	MtCO ₂ e	Energy	765.7	Industry	64.5	Agriculture	66.3	Waste	10.2
Sector Name	MtCO ₂ e										
Energy	765.7										
Industry	64.5										
Agriculture	66.3										
Waste	10.2										
Overall GHG reduction target	<p>BY 2020: 40% below 1990 GHG levels</p> <p>BY 2030: 55% below from 1990 GHG levels</p> <p>BY 2050: GHG neutrality</p>										
Carbon Price	<p><i>Current Allowance Price (per t/CO₂e):</i> No information available yet.</p>										

ETS Size

Emissions covered by the ETS

No information available yet.

GHG covered	CO2
Sectors covered and thresholds	<p>The CO2 price will be charged to fuel distributors and suppliers and applies to all fuels used in the transport sector and for heating purposes, e.g., fuel oil, LPG, natural gas, coal, gasoline, and diesel.</p> <p>Initially, the system starts with a limited scope, e.g., coal (for heating) will be covered from 2023 onwards.</p>
Point of regulation	Upstream
Number of liable entities	No information available yet.
Cap	No information available yet.

Phases & Allocation

Trading period	No information available yet.
Allocation	<p>PHASE ONE (2021-2026): Allowances will not be allocated for free. The government will start selling and auctioning allowances with a fixed price on CO2 emissions between 2021 and 2024. [1]</p> <p>2021: EUR 10 (EUR 25) / USD 11.19 (USD 27.99) 2022: EUR 20 (EUR 30) / USD 22.39 (USD 33.58) 2023: EUR 25 (EUR 35) / USD 27.99 (USD 39.18) 2024: EUR 30 (EUR 45) / USD 33.58 (USD 50.38) 2025: EUR 35 (EUR 55) / USD 39.36 (USD 61.57)</p> <p>In 2026 auctioning of allowances starts and a price corridor with a minimum price of EUR 35 (EUR 55) and a maximum price of EUR 60 (EUR 65) (USD 72.77) per tCO2 will apply.</p> <p>The cap will be based on Germany's reduction targets for the non-EU ETS sectors as defined by the European Effort Sharing Regulation (ESR) and decline each year. However, in case the allocation of allowances within the national ETS exceeds the available German emissions budget set out in the ESR, allowances for emissions reductions will be acquired under the ESR flexibility mechanisms, including inter-member state trade.</p> <p>PHASE TWO (FROM 2027): 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>Allowances will be allocated through auctions, and the annually declining cap will be based on Germany's reduction targets for the non-EU ETS sectors as defined in the ESR. If not decided otherwise, the cap will be fixed.</p> <p>[1] fixed price level foreseen as a compromise between the legislative bodies Bundesrat und Bundestag. Corresponding amendments of the 'Fuel Emissions Trading Act' expected in the first half of 2020.</p>

Flexibility

Banking and borrowing	Banking is not allowed during the introductory phase but will be allowed in the second phase.
Offsets and credits	No information available yet.
Market Stability Provisions	Additional allowances exceeding the cap can be acquired by operators in the initial phase (fixed-price phase).

In 2026 auctions of allowances will contain a price corridor of a minimum price per tCO₂ of EUR 35 (EUR 55) and a maximum price of EUR 60; USD 67.17 (EUR 65; USD 72.77).

A potential price corridor for the time after 2026 will be decided upon in 2025.

Compliance

Compliance Period	From 1 January until 31 December each year.
Monitoring, Reporting, Verification (MRV)	<p>Details are under preparation in a separate regulation.</p> <p>REPORTING FREQUENCY: Annual self-reporting in form of an emissions report based on electronic templates. Emissions data are recorded in a national registry and are publicly available.</p> <p>VERIFICATION: Verification by independent third-party verifiers.</p>
Enforcement	<p>During the first phase, when allowances are allocated at a fixed price, entities must pay an excess emissions penalty for each tCO₂ emitted for which no allowance has been surrendered, which is two times the fixed price. Mistakes in the emissions reports also lead to payments in the equivalent amount. Payment of the penalty doesn't release 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." The excess emissions penalty will be the same as in the EU ETS, approximately EUR 100/tCO₂ (USD 112/tCO₂) for each tCO₂ emitted for which no allowance has been surrendered.</p> <p>For other non-compliances—e.g., misreporting, 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;</p> <p>German Emissions Trading Authority at the German Environment Agency.</p>
Evaluation / ETS review	The German government publishes reports on the functioning and implementation of the 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>Revenue from selling allowances at the fixed price and from auctioning will be partly used to support measures under the climate protection program and partly redistributed to consumers.</p>
Implementing Legislation	<p>The Cornerstones for the design of a national emissions trading scheme for heat and transport were released on 16 October 2019.</p> <p>After adoption by the legislative bodies basic implementation legislation—the Fuel Emissions Trading Act—entered into force on 20 December 2019.</p>

An amendment of the Fuel Emissions Trading Act to strengthen the national ETS by increasing the fixed price in the initial phase is expected for the first half of 2020.

Further government regulations foreseen by the basic act will be drafted and adopted in 2020 and 2021.

Montenegro

General Information

Summary	<p>Status: ETS under development</p> <p>Jurisdictions:</p> <p>On 21 February 2020, Montenegro's regulation on emissions trading entered into force, launching preparations for a national ETS that would cover the industry and power sectors.</p> <p>The regulation was adopted on 6 February 2020 and follows the earlier passage of a climate change law in December 2019, which provides the legislative framework for Montenegro's low-carbon strategy and introduced, among other measures, emissions reporting obligations.</p> <p>The launch date of the ETS to be implemented under the regulation has not been announced, but the regulation establishes 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, and a linear reduction factor that would reduce the emissions cap by 1.5% year-on-year between 2020–2030.</p> <p>Revenue from auction proceeds will 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 policy in line with the EU 2030 climate & energy framework as part of Chapter 27 accession talks, which opened late 2018.</p>										
Year in Review	No information available yet.										
Overall GHG emissions (excluding LULUCF)	Emissions: 3494 MtCO ₂ e (2015)										
Overall GHG emissions by sector	<table border="1"> <thead> <tr> <th>Sector Name</th> <th>MtCO₂e</th> </tr> </thead> <tbody> <tr> <td>Energy</td> <td>2528</td> </tr> <tr> <td>Industrial Processes</td> <td>0.411</td> </tr> <tr> <td>Waste</td> <td>0.203</td> </tr> <tr> <td>Other</td> <td>0.352</td> </tr> </tbody> </table>	Sector Name	MtCO ₂ e	Energy	2528	Industrial Processes	0.411	Waste	0.203	Other	0.352
Sector Name	MtCO ₂ e										
Energy	2528										
Industrial Processes	0.411										
Waste	0.203										
Other	0.352										
Overall GHG reduction target	By 2030: 30% GHG emissions reduction below 1990 levels (NDC)										
Carbon Price	<i>Current Allowance Price (per t/CO₂e):</i> No information available yet.										

ETS Size

Emissions covered by the ETS	No information available yet.
GHG covered	No information available yet.
Sectors covered and thresholds	No information available yet.
Point of regulation	No information available yet.
Number of liable entities	No information available yet.

Cap	No information available yet.
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Phases & Allocation

Trading period	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	Decree on activities for which a GHG permit is issued (2020) Law on Climate Protection (2019) Law on Air Protection (2010)

Ukraine

General Information

<p>Summary</p>	<p>Status: ETS under development</p> <p>Jurisdictions: 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 on 1 September 2017. Climate change related issues are addressed in Article 365 (c) Title V and Annex XXX to the agreement, which outlines steps for national ETS implementation, including:</p> <ul style="list-style-type: none"> · adopting national legislation and designating competent authority(ies); · establishing a system for identifying relevant installations and identifying GHGs; · developing a national allocation plan to distribute allowances; · establishing a system for issuing GHG emissions permits and allowances to be traded domestically among installations in Ukraine; and · establishing MRV and enforcement systems, as well as public consultations procedures. <p>Ukraine is working on its ETS plans with the assistance of the PMR and the German Development Agency (GIZ).</p>												
<p>Year in Review</p>	<p>The country has developed the main elements of the national MRV system to provide a solid basis for the upcoming ETS. In the third quarter of 2018, the Cabinet of Ministers approved a framework law on MRV, which was adopted by Parliament in December 2019. Secondary legislation has also been drafted to establish the MRV system. The MRV law will enter into force in spring 2020 and will be applied starting on 1 January 2021. To establish the ETS, Ukraine plans to develop separate legislation based on at least three years of data from the MRV system.</p> <p>In 2019, the Ministry of Ecology and Natural Resources of Ukraine was merged with the Ministry of Energy and Coal Mining to form the new Ministry of Energy and Environment Protection. The objective was to achieve better coherence between environmental and energy policies.</p>												
<p>Overall GHG emissions (excluding LULUCF)</p>	<p>Emissions: 320.6 MtCO_{2e} (2017)</p>												
<p>Overall GHG emissions by sector</p>	<table border="1"> <thead> <tr> <th>Sector Name</th> <th>MtCO_{2e}</th> </tr> </thead> <tbody> <tr> <td>Energy</td> <td>182.8</td> </tr> <tr> <td>Transport</td> <td>34.9</td> </tr> <tr> <td>Industrial Processes, solvent and other product use</td> <td>51.8</td> </tr> <tr> <td>Agriculture</td> <td>38.9</td> </tr> <tr> <td>Waste</td> <td>12.2</td> </tr> </tbody> </table>	Sector Name	MtCO _{2e}	Energy	182.8	Transport	34.9	Industrial Processes, solvent and other product use	51.8	Agriculture	38.9	Waste	12.2
Sector Name	MtCO _{2e}												
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Transport	34.9												
Industrial Processes, solvent and other product use	51.8												
Agriculture	38.9												
Waste	12.2												
<p>Overall GHG reduction target</p>	<p>BY 2020: 20% voluntary reduction from 1990 GHG levels (‘Copenhagen Accord’)</p> <p>BY 2030: GHG emissions will not exceed 60% of 1990 GHG levels, including LULUCF (‘NDC Submission’)</p> <p>BY 2035: 20% GHG emissions reduction from final energy consumption from 2010 levels (‘Energy Strategy 2035’)</p> <p>BY 2050: GHG emissions from energy and industrial processes will not exceed 31%-34% of 1990 GHG levels (aspirational target of the ‘Low Emission Development Strategy 2050’)</p>												

Carbon Price	<i>Current Allowance Price (per t/CO₂e)</i> : No information available yet.
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ETS Size

Emissions covered by the ETS	No information available yet.
GHG covered	No information available yet.
Sectors covered and thresholds	No information available yet.
Point of regulation	No information available yet.
Number of liable entities	No information available yet.
Cap	No information available yet.

Phases & Allocation

Trading period	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 Energy and Environment Protection of Ukraine; Cabinet of Ministers of Ukraine
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Evaluation / ETS review	No information available yet.
Revenue	No information available yet.
Implementing Legislation	Law on the principles of monitoring, reporting and verification of greenhouse gas emissions

USA - Pennsylvania

General Information

<p>Summary</p>	<p>Status: ETS under development</p> <p>Jurisdictions: Pennsylvania</p> <p>On 3 October 2019 Pennsylvania’s Democratic Governor Tom Wolf signed an executive order directing the Pennsylvania Environmental Quality Board (EQB) to develop a proposal for an ETS covering CO2 emissions from the electric power sector and its linkage to the Regional Greenhouse Gas Initiative (RGGI) by 31 July 2020.</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. The executive order comes after Pennsylvania’s Department of Environmental Protection (DEP) recommended the implementation of an ETS for the power sector in April 2019 and the EQB directed the DEP to study a petition of over 200 businesses, organizations, and individuals to introduce an economy-wide cap-and-trade program in the state.</p> <p>End of January 2020, the DEP released a first draft proposal for a power sector ETS covering CO2 emissions. The draft proposal is largely consistent with the system design features of the RGGI Model Rule, including the implementation of an emissions containment reserve (ECR) and a cost containment reserve (CCR) as well as quarterly auctions to allocate allowances. It also includes additional features such as an automatic implementation of cap adjustments for banked allowances, an additional offset protocol and a waste-coal set aside account.</p> <p>This first proposal is now going through a review and stakeholder engagement process before the release of the final ETS proposal by mid-2020. As a next step it must go through the state’s regulatory review process, including through state boards and legislative committees, for comment. A final proposal could be presented in the third quarter of 2021, while the earliest start date for Pennsylvania’s ETS and its linkage to 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 power sector emissions are higher than the collective emissions output of all current RGGI states.</p>																
<p>Year in Review</p>	<p>No information available yet.</p>																
<p>Overall GHG emissions (excluding LULUCF)</p>	<p>Emissions: 264.4 MtCO_{2e} (2016)</p>																
<p>Overall GHG emissions by sector</p>	<table border="1"> <thead> <tr> <th>Sector Name</th> <th>MtCO_{2e}</th> </tr> </thead> <tbody> <tr> <td>Energy</td> <td>80.5</td> </tr> <tr> <td>Industrial</td> <td>81.4</td> </tr> <tr> <td>Transportation</td> <td>61.1</td> </tr> <tr> <td>Residential</td> <td>18.5</td> </tr> <tr> <td>Commercial</td> <td>10.6</td> </tr> <tr> <td>Agriculture</td> <td>8.0</td> </tr> <tr> <td>Waste Management</td> <td>4.3</td> </tr> </tbody> </table>	Sector Name	MtCO _{2e}	Energy	80.5	Industrial	81.4	Transportation	61.1	Residential	18.5	Commercial	10.6	Agriculture	8.0	Waste Management	4.3
Sector Name	MtCO _{2e}																
Energy	80.5																
Industrial	81.4																
Transportation	61.1																
Residential	18.5																
Commercial	10.6																
Agriculture	8.0																
Waste Management	4.3																
<p>Overall GHG reduction target</p>	<p>By 2025: 26% below 2005 levels.</p> <p>By 2050: 80% below 2005 levels.</p>																
<p>Carbon Price</p>	<p><i>Current Allowance Price (per t/CO_{2e}):</i> No information available yet.</p>																

ETS Size

Emissions covered by the ETS	No information available yet.
GHG covered	No information available yet.
Sectors covered and thresholds	No information available yet.
Point of regulation	No information available yet.
Number of liable entities	No information available yet.
Cap	No information available yet.

Phases & Allocation

Trading period	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	Pennsylvania Department of Environmental Protection (DEP)
Evaluation / ETS review	No information available yet.

Revenue	No information available yet.
Implementing Legislation	Executive Order 2019-07 Preliminary Draft for Review

USA - Transportation and Climate Initiative (TCI)

General Information

<p>Summary</p>	<p>Status: ETS under development</p> <p>Jurisdictions: Connecticut, Delaware, Maryland, Massachusetts, New Jersey, Pennsylvania, Rhode Island, Vermont, Virginia, Washington D.C.</p> <p>The Transportation and Climate Initiative (TCI) is a regional collaboration of 13 northeastern and mid-Atlantic US jurisdictions (Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, Virginia, and Washington DC) 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. The mechanism is the result of several years of consultations and negotiations amongst TCI members.</p>								
<p>Year in Review</p>	<p>Over the course of 2019, the participating TCI jurisdictions have 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, on 1 October 2019 the jurisdictions released a draft framework outlining basic design features of a regional transport sector ETS starting as early as 2022.</p> <p>The program will cap CO₂ emissions from the combustion of gasoline and on-road diesel fuel in the participating states. Compliance obligations fall to suppliers that produce the covered fuels within these states, as well as suppliers that import them to the states. Point of regulation is upstream. The program intends to auction nearly 100% of its allowances with revenues being returned to participating TCI states. Each state can invest the revenue as determined appropriate to achieve TCI program goals, with a key feature of the draft framework being a commitment to address equity concerns. The program will implement a minimum reserve price and include a Cost Containment Reserve (CCR) as well as an Emissions Containment Reserve (ECR). Banking of allowances will be allowed without restrictions.</p> <p>On 17 December 2019, the jurisdictions released a draft memorandum of understanding (MOU) consistent with the policy design elements from the draft framework and announced modeling results for different cap reduction factors. Furthermore, the MOU introduced further design elements such as three-year compliance periods and interim compliance obligations and a program evaluation three years after program launch and regularly thereafter. The final MOU will include a decision surrounding the cap-and-decline trajectory and whether the program will accept limited use of offsets.</p> <p>The current timeline foresees that the MOU is finalized in the spring of 2020 after considering further public input in January and February 2020. At this point each jurisdiction will decide whether to sign the final MOU and participate in the regional program. Other states would also be able to join the effort at any time. As a next step, the participating jurisdictions will develop a model rule, which will be released by 31 December 2020. Finally, over the course of 2021 jurisdictions will conduct rulemaking processes to adopt regulations on the state level and start implementing the program as early as 2022.</p>								
<p>Overall GHG emissions (excluding LULUCF)</p>	<p>Emissions: 1034.8 MtCO₂e (2014)</p>								
<p>Overall GHG emissions by sector</p>	<table border="1"> <thead> <tr> <th>Sector Name</th> <th>MtCO₂e</th> </tr> </thead> <tbody> <tr> <td>Energy</td> <td>555.6</td> </tr> <tr> <td>Transportation</td> <td>346.8</td> </tr> <tr> <td>Industrial processes</td> <td>52.4</td> </tr> </tbody> </table>	Sector Name	MtCO ₂ e	Energy	555.6	Transportation	346.8	Industrial processes	52.4
Sector Name	MtCO ₂ e								
Energy	555.6								
Transportation	346.8								
Industrial processes	52.4								

	Sector Name	MtCO ₂ e
	Agriculture	23.3
	Waste	56.6
Overall GHG reduction target	No information available yet.	
Carbon Price	<i>Current Allowance Price (per t/CO₂e)</i> : No information available yet.	

ETS Size

Emissions covered by the ETS	No information available yet.
GHG covered	No information available yet.
Sectors covered and thresholds	No information available yet.
Point of regulation	No information available yet.
Number of liable entities	No information available yet.
Cap	No information available yet.

Phases & Allocation

Trading period	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	No information available yet.
Evaluation / ETS review	No information available yet.
Revenue	No information available yet.
Implementing Legislation	Framework for a Draft Regional Policy Proposal Draft Memorandum of Understanding

USA - Virginia

General Information

Summary

Status: ETS under development

Jurisdictions: USA - Virginia

Virginia has been working on establishing an ETS since 2017. This is based on Executive Directive (ED) 11, which was issued by then-Governor McAuliffe. ED 11 directed the Department of Environmental Quality (DEQ) and the Secretary of Natural Resources to develop a proposed regulation for the State Air Pollution Control Board's consideration to control CO₂ from electric power facilities that (a) includes provisions to ensure that Virginia's regulation is "trading-ready" to allow for the use of market-based mechanisms and the trading of CO₂ allowances through a multi-state trading program; and (b) establishes abatement mechanisms providing for a corresponding level of stringency to limits on CO₂ emissions imposed in other states with such limits. As a result, the DEQ proposed and the board approved a proposed 'CO₂ Budget Trading Program' regulation for public comment that would be in line with many of RGGI's major design features, with the aim to link with RGGI by 2020.

In September 2018, the DEQ released a revised proposed regulation taking into account comments from the general public as well as from the RGGI states concerning the consistency of its proposed regulation with the RGGI states' '2017 Model Rule.' The updated proposal sets a cap of 28 million short tons CO₂e (25.4 MtCO₂e) in 2020, which would decline 3% per year to 19.6 million short tons CO₂e (17.6 MtCO₂e) in 2030. CO₂ offset allowances generated by other RGGI states will be recognized by Virginia. This revised proposal, which is consistent with the '2017 RGGI Model Rule,' was approved by the board to be released for additional public comments.

Following the second public comment period, on 19 April 2019, the board approved the final regulation for the ETS. The regulation is based on the September 2018 revised proposed regulation from the DEQ and in addition includes a minimum reserve price, a cost containment reserve (CCR) and an emissions containment reserve (ECR). In contrast to RGGI, Virginia intends to distribute its allowances through consignment auctions.

On 26 June 2019, Virginia's 'ETS Regulation' became effective. However, on 2 May 2019, Virginia's Democratic Governor Northam approved a '2019 Budget Act' adopted by the Republican legislative majority, which contained provisions that would prevent Virginia's ETS from joining RGGI in 2020. Nonetheless, Democrats won a majority in the state's House of Representatives and Senate during the November 2019 general election.

As a consequence, on 11 December 2019, Northam announced that the ETS-preventing budget provisions will be removed from the upcoming budget bill, and additional cap-and-trade legislation will be introduced in 2020.

Hence, in February 2020, the Virginia legislature adopted two bills paving the way for a power sector ETS and participation in RGGI by 2021. The Virginia Clean Economy Act implements a cap-and-trade program that largely aligns with the 2019 regulation but differs from it in that it distributes all allowances through RGGI auctions, instead of using consignment allowances. The Clean Energy and Community Flood Preparedness Act determines how revenue from ETS will be used. The different Virginia House and Senate versions of both bills now have to be reconciled before they go for a final vote and can be signed by Northam.

[Proposed Regulation for Emissions Trading \(2017\)](#)
[Executive Directive 11 \(2017\)](#)

[Report and Final Recommendations to the Governor \(2017\)](#)

Year in Review

No information available yet.

Overall GHG emissions (excluding LULUCF)	Emissions: 136 MtCO ₂ e (2017)	
Overall GHG emissions by sector	Sector Name	MtCO ₂ e
	Electric Power and Energy Production	40.4
	Transportation	48.0
	Industrial	20.6
	Residential	5.3
	Commercial	5.9
	Waste Management	12.6
	Agriculture	3.2
Overall GHG reduction target	BY 2025: 23.80% reduction below BAU projection of GHG emissions	
Carbon Price	<i>Current Allowance Price (per t/CO₂e):</i> No information available yet.	

ETS Size

Emissions covered by the ETS	No information available yet.
GHG covered	No information available yet.
Sectors covered and thresholds	No information available yet.
Point of regulation	No information available yet.
Number of liable entities	No information available yet.
Cap	No information available yet.

Phases & Allocation

Trading period	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

Virginia is planning to join the RGGI cap-and-trade program (see above).

Other Information

Institutions involved	Virginia Department of Environmental Quality (DEQ)
Evaluation / ETS review	No information available yet.
Revenue	No information available yet.
Implementing Legislation	Regulation for Emissions Trading Programs Virginia Clean Economy Act Clean Energy and Community Flood Preparedness Act

Brazil

General Information

<p>Summary</p>	<p>Status: ETS under consideration</p> <p>Jurisdictions: 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.</p> <p>As part of its activities under the PMR, the Brazilian government is considering the implementation of market instruments to meet Brazil's mitigation targets and reduce overall mitigation costs. Brazil is currently assessing different carbon pricing instruments, including an ETS and a carbon tax. The Ministry of Economy is developing design options and conducting comprehensive economic and regulatory impact assessments for both instruments. This includes, among others, an analysis on potential interactions between carbon pricing instruments and existing policies. In addition, the Ministry of Economy has launched a strategy to strengthen the understanding of carbon pricing instruments among stakeholders through engagement, communication, and consultation.</p> <p>Currently, the Brazilian government is also working on the regulatory impact assessment of a national mandatory GHG emissions/removals registry with support from the German Development Agency, thus developing the fundamentals of a central building block for carbon pricing.</p> <p>RenovaBio, the National Policy for Biofuels, was approved in 2017 (Federal Law 13576), establishing mandatory goals for the reduction of GHG emissions by avoiding the use of fossil fuels. The policy provides for a trading mechanism for emissions reduction units generated from switching from fossil fuels to biofuels, relative to a 100% fossil fuel use scenario.</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 emissions trading system in Brazil that can reduce national GHG emissions at the lowest possible cost. In 2018, 29 companies from diverse sectors of the Brazilian economy participated in this exercise. The ETS simulation is coordinated by the Centro de Estudos em Sustentabilidade da Fundação Getulio Vargas (FGVces). Trading takes place through the Rio de Janeiro Green Stock Exchange (BVRio).</p>										
<p>Year in Review</p>	<p>No information available yet.</p>										
<p>Overall GHG emissions (excluding LULUCF)</p>	<p>Emissions: 1036 MtCO_{2e} MtCO_{2e} (2015)</p>										
<p>Overall GHG emissions by sector</p>	<table border="1"> <thead> <tr> <th>Sector Name</th> <th>MtCO_{2e}</th> </tr> </thead> <tbody> <tr> <td>Energy</td> <td>449</td> </tr> <tr> <td>Industrial processes</td> <td>95</td> </tr> <tr> <td>Agriculture</td> <td>429</td> </tr> <tr> <td>Waste</td> <td>63</td> </tr> </tbody> </table>	Sector Name	MtCO _{2e}	Energy	449	Industrial processes	95	Agriculture	429	Waste	63
Sector Name	MtCO _{2e}										
Energy	449										
Industrial processes	95										
Agriculture	429										
Waste	63										
<p>Overall GHG reduction target</p>	<p>By 2020: Voluntary commitment to reduce GHG emissions by 36.1-38.9% compared to BAU projections.</p> <p>By 2025: 37% reduction from 2005 GHG levels (NDC).</p> <p>By 2030: Indicative contribution of 43% reduction from 2005 GHG levels (NDC).</p>										
<p>Carbon Price</p>	<p><i>Current Allowance Price (per t/CO_{2e}):</i> No information available yet.</p>										

ETS Size

Emissions covered by the ETS	No information available yet.
GHG covered	No information available yet.
Sectors covered and thresholds	No information available yet.
Point of regulation	No information available yet.
Number of liable entities	No information available yet.
Cap	No information available yet.

Phases & Allocation

Trading period	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 Environment; Ministry of Economy (previously Ministry of Finance); Ministry of Mines and Energy
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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

Summary	<p>Status: ETS under consideration</p> <p>Jurisdictions: Chile</p> <p>Since 2013, Chile has been conducting a series of studies on the design and implementation of carbon pricing instruments in the country.</p> <p>In the tax reform of 2014, a green tax for some fixed sources was introduced. In this context, stationary emission sources over 50MW of installed thermal capacity (MWt) are subject to a carbon tax—set at USD 5 per tCO₂— as well as to a tax on local pollutants (SO₂, NO_x, and particulate matter).</p> <p>In 2019, regulatory activities on carbon pricing focused primarily on two elements:</p> <ul style="list-style-type: none"> · the further improvement of the carbon tax. A modification of the carbon and local pollutants tax was sent to Congress in 2018 (in the context of a second revision of the tax reform) to change to an emissions-based threshold and include the use of offsets in the tax. The tax reform was approved in January 2020, with offset provisions still under elaboration; and · the accompanying MRV system (see “MRV” section below). <p>In addition, 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. It sets a carbon neutrality goal by 2050, alongside a detailed governance framework to reach it. Also, the draft law defines a system in which the Ministry of Environment would establish GHG emissions limits to individual or groups of emitting sources; 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 law also allows those 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. The law was sent for Congress’s approval in January of 2020.</p> <p>Chile will continue its cooperation with the PMR in 2020. 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.</p> <p>With regards to offsets and emissions reductions, Chile joined the Warehouse Initiative of the World Bank with the aim of developing a GHG mitigation portfolio of energy projects. These outcomes could potentially be transferred in the context of Article 6 of the Paris Agreement. MRV protocols and third-party verification procedures are part of this Article 6 piloting endeavor. The certification and verification of mitigation results has been piloted using block-chain technology of 10 installations of the public PV roof program.</p>										
Year in Review	No information available yet.										
Overall GHG emissions (excluding LULUCF)	Emissions: 111.7 MtCO ₂ e (2016)										
Overall GHG emissions by sector	<table border="1"> <thead> <tr> <th>Sector Name</th> <th>MtCO₂e</th> </tr> </thead> <tbody> <tr> <td>Energy</td> <td>87.1</td> </tr> <tr> <td>Agriculture</td> <td>11.8</td> </tr> <tr> <td>Industrial processes</td> <td>6.9</td> </tr> <tr> <td>Waste</td> <td>5.8</td> </tr> </tbody> </table>	Sector Name	MtCO ₂ e	Energy	87.1	Agriculture	11.8	Industrial processes	6.9	Waste	5.8
Sector Name	MtCO ₂ e										
Energy	87.1										
Agriculture	11.8										
Industrial processes	6.9										
Waste	5.8										

Overall GHG reduction target	<p>BY 2020: Under the UNFCCC and conditional to external support, Chile has pledged to reduce projected BAU emissions by 20% (as projected from 2007)</p> <p>BY 2030: 30% reduction of emissions intensity compared to 2007, in terms of CO₂/unit of GDP. Conditional to international funding, 35-45% reduction of emissions intensity compared to 2007, in terms of CO₂/unit of GDP (NDC). An update to the 2030 NDC is currently being considered and is undergoing public consultation.</p>
Carbon Price	<i>Current Allowance Price (per t/CO₂e):</i> No information available yet.

ETS Size

Emissions covered by the ETS	No information available yet.
GHG covered	No information available yet.
Sectors covered and thresholds	No information available yet.
Point of regulation	No information available yet.
Number of liable entities	No information available yet.
Cap	No information available yet.

Phases & Allocation

Trading period	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 with 25,000 tCO₂ and/or 100 tonnes of particulate matter due to combustion processes per year.</p> <p>The Chilean government is currently developing a new mandatory air pollutants report under the Pollutant Release and Transfer Register for entities regulated under the tax and other norms. This would unify the various reporting needs and improve the quality of the information provided. This new system, developed with support from the PMR, covers four</p>

	<p>GHGs and local pollutants, among others. The registry infrastructure is expected to enter operation around March 2020.</p> <p>VERIFICATION: 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 the Environment; Ministry of Finance; 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.

Indonesia

General Information

Summary	<p>Status: ETS under consideration</p> <p>Jurisdictions: 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, next 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 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 (MBI) 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 consultation a pilot ETS was selected for further development. The Ministry of Environment and Forestry (MoEF) is currently drafting regulations for the pilot system.</p>										
Year in Review	No information available yet.										
Overall GHG emissions (excluding LULUCF)	Emissions: 1457 MtCO ₂ e (2016)										
Overall GHG emissions by sector	<table border="1"> <thead> <tr> <th>Sector Name</th> <th>MtCO₂e</th> </tr> </thead> <tbody> <tr> <td>Energy</td> <td>538</td> </tr> <tr> <td>Industrial processes and product use</td> <td>55</td> </tr> <tr> <td>AFOLU (including peat fire)</td> <td>752</td> </tr> <tr> <td>Waste</td> <td>112</td> </tr> </tbody> </table>	Sector Name	MtCO ₂ e	Energy	538	Industrial processes and product use	55	AFOLU (including peat fire)	752	Waste	112
Sector Name	MtCO ₂ e										
Energy	538										
Industrial processes and product use	55										
AFOLU (including peat fire)	752										
Waste	112										
Overall GHG reduction target	BY 2030: 29% below BAU by 2030 incl. LULUCF (unconditional NDC); up to 41% below BAU by 2030 incl. LULUCF (NDC conditional on international support)										
Carbon Price	<i>Current Allowance Price (per t/CO₂e):</i> No information available yet.										

ETS Size

Emissions covered by the ETS	No information available yet.
GHG covered	No information available yet.
Sectors covered and thresholds	No information available yet.
Point of regulation	No information available yet.
Number of liable entities	No information available yet.

Cap	No information available yet.
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Phases & Allocation

Trading period	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>Coordinating Ministry for Economic Affairs;</p> <p>Ministry of Environment and Forestry;</p> <p>Ministry of Energy and Mineral Resources;</p> <p>Ministry of Industry;</p> <p>Ministry of Finance;</p> <p>Environment Fund Agency;</p> <p>National Development Planning Agency;</p> <p>PMR Indonesia Secretariat;</p> <p>UNDP Indonesia.</p>
Evaluation / ETS review	No information available yet.

Revenue	No information available yet.
Implementing Legislation	GR 46/2017 on Government Regulation on Environmental Economic Instruments Act No. 32/2009 on Environmental Conservation and Management

Japan

General Information

Summary	<p>Status: ETS under consideration</p> <p>Jurisdictions: Japan</p> <p>In March 2017, the Global Environment Committee of the Central Environment Council of Japan formulated the “Long-term Low-Carbon Vision” of the country. The document refers to carbon pricing as essential to decarbonizing the society. Based on that 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 solve economic and social issues. In June 2018, a deliberative council—the Subcommittee on Utilization of Carbon Pricing, Global Environmental Subcommittee, Central Environment Council—was set up 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. The subcommittee published an interim summary report of the discussion in August 2019. Discussions on the shape a future carbon pricing mechanism may take are still ongoing within the Ministry of Environment and with various stakeholders.</p> <p>In parallel, Japan operates the Advanced Technologies Promotion Subsidy Scheme with Emission Reduction Targets Program, which functions as a voluntary cap-and-trade program. Entities establish a reduction target based on historical emissions and propose new technologies to implement in reaching these targets.</p> <p>Japan also is 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>												
Year in Review	No information available yet.												
Overall GHG emissions (excluding LULUCF)	Emissions: 1291.7 MtCO ₂ e (2017)												
Overall GHG emissions by sector	<table border="1"> <thead> <tr> <th>Sector Name</th> <th>MtCO₂e</th> </tr> </thead> <tbody> <tr> <td>Energy</td> <td>1137</td> </tr> <tr> <td>Industrial Processes & Product Use</td> <td>99.3</td> </tr> <tr> <td>Agriculture</td> <td>33.2</td> </tr> <tr> <td>Waste</td> <td>20.1</td> </tr> <tr> <td>Indirect CO₂</td> <td>2.1</td> </tr> </tbody> </table>	Sector Name	MtCO ₂ e	Energy	1137	Industrial Processes & Product Use	99.3	Agriculture	33.2	Waste	20.1	Indirect CO ₂	2.1
Sector Name	MtCO ₂ e												
Energy	1137												
Industrial Processes & Product Use	99.3												
Agriculture	33.2												
Waste	20.1												
Indirect CO ₂	2.1												
Overall GHG reduction target	<p>BY FY2020: 3.8% below 2005 levels by 2020</p> <p>BY FY2030: 26% reduction from FY2013 GHG levels (NDC)</p> <p>BY FY2050: 80% reduction (base year not stipulated)</p>												
Carbon Price	<i>Current Allowance Price (per t/CO₂e):</i> No information available yet.												

ETS Size

Emissions covered by the ETS	No information available yet.
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GHG covered	No information available yet.
Sectors covered and thresholds	No information available yet.
Point of regulation	No information available yet.
Number of liable entities	No information available yet.
Cap	No information available yet.

Phases & Allocation

Trading period	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, Central Environment Council
Evaluation / ETS review	No information available yet.
Revenue	No information available yet.
Implementing Legislation	No information available yet.

Pakistan

General Information

Summary	<p>Status: ETS under consideration</p> <p>Jurisdictions:</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 and the Pakistan Climate Change Authority tasked with coordinating climate policy development and implementation. The act furthermore delegates responsibility to the authority on designing and establishing a national registry and database on GHG emissions.</p>										
Year in Review	<p>In 2019 the Pakistani Ministry of Climate Change, in cooperation with the United Nations Framework Convention on Climate Change 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 will be tasked with assessing the role and scope of carbon markets in delivering Pakistan’s NDC and identifying opportunities 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 credit-based trading mechanisms linked to international carbon markets, which would enable Pakistan to supply offsets to partner countries.</p>										
Overall GHG emissions (excluding LULUCF)	Emissions: 394.7 MtCO _{2e} (2015)										
Overall GHG emissions by sector	<table border="1"> <thead> <tr> <th>Sector Name</th> <th>MtCO_{2e}</th> </tr> </thead> <tbody> <tr> <td>Energy</td> <td>186.0</td> </tr> <tr> <td>Industrial processes</td> <td>21.9</td> </tr> <tr> <td>Agriculture</td> <td>174.6</td> </tr> <tr> <td>Waste</td> <td>12.3</td> </tr> </tbody> </table>	Sector Name	MtCO _{2e}	Energy	186.0	Industrial processes	21.9	Agriculture	174.6	Waste	12.3
Sector Name	MtCO _{2e}										
Energy	186.0										
Industrial processes	21.9										
Agriculture	174.6										
Waste	12.3										
Overall GHG reduction target	BY 2030: 20% below BAU including LULUCF (NDC conditional on international support)										
Carbon Price	<i>Current Allowance Price (per t/CO_{2e}):</i> No information available yet.										

ETS Size

Emissions covered by the ETS	No information available yet.
GHG covered	No information available yet.
Sectors covered and thresholds	No information available yet.

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

Phases & Allocation

Trading period	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	Pakistan Climate Change Act 2017

Philippines

General Information

Summary	<p>Status: ETS under consideration</p> <p>Jurisdictions:</p> <p>In February of 2020, the Filipino House of Representatives[EK-11] Committee on Climate Change conditionally approved a cap-and-trade bill. A technical working group has since been established and the bill will be reconsidered based on the group's input.</p> <p>The bill would establish a cap-and-trade system for the industrial and commercial sectors administered by the Filipino Department of Environment and Natural Resources (DENR) and the Department of Trade and Industry. The system would cover a variety of GHGs, including carbon dioxide, methane, nitrous oxide, hydro fluorocarbons, and any other gas determined by the DENR to contribute to global warming. Key details on setting annual emissions reduction targets for each calendar year, setting a cap, distributing allowances, monitoring, and enforcement are to be determined by the DENR. 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)	Emissions: 210 MtCO ₂ e (2016)												
Overall GHG emissions by sector	<table border="1"> <thead> <tr> <th>Sector Name</th> <th>MtCO₂e</th> </tr> </thead> <tbody> <tr> <td>Agriculture</td> <td>59</td> </tr> <tr> <td>Bunker Fuels</td> <td>4.1</td> </tr> <tr> <td>Energy</td> <td>120</td> </tr> <tr> <td>Industrial Processes</td> <td>16</td> </tr> <tr> <td>Waste</td> <td>13</td> </tr> </tbody> </table>	Sector Name	MtCO ₂ e	Agriculture	59	Bunker Fuels	4.1	Energy	120	Industrial Processes	16	Waste	13
Sector Name	MtCO ₂ e												
Agriculture	59												
Bunker Fuels	4.1												
Energy	120												
Industrial Processes	16												
Waste	13												
Overall GHG reduction target	Conditionally pledged to keep 2030 emissions 70% below BAU levels (INDC, NDC to be submitted in 2020)												
Carbon Price	<i>Current Allowance Price (per t/CO₂e):</i> No information available yet.												

ETS Size

Emissions covered by the ETS	No information available yet.
GHG covered	No information available yet.
Sectors covered and thresholds	No information available yet.
Point of regulation	No information available yet.
Number of liable entities	No information available yet.
Cap	No information available yet.

Phases & Allocation

Trading period	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	Department of Environment and Natural Resources (DENR) 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>Status: ETS under consideration</p> <p>Jurisdictions: Taiwan</p> <p>In July 2015, Taiwan, China enacted the ‘Greenhouse Gas Reduction and Management Act,’ which legislates a 50% emissions reduction target for 2050 compared to 2005 GHG levels. The act also implements carbon reduction by setting regulatory goals in stages on a five-year basis. It further charges the Taiwanese Environmental Protection Administration (TEPA) with the development of appropriate climate change policies to reach this target. The government approved and implemented the ‘National Climate Change Action Guideline’ in February 2017. The guideline lays out 10 general principles on how to achieve Taiwan’s climate mitigation and adaptation targets. The third principle calls for the implementation of a cap-and-trade system. Accordingly, TEPA has been conducting research on the design options and the timetable for establishing a cap-and-trade system.</p> <p>The act also mandated TEPA to develop the ‘GHG Reduction Action Plan,’ which outlines details on how to implement the mitigation policies contained in the act. It includes periodic regulatory goals for both national and sectoral net GHG emissions, as well as implementation strategies in the form of eight policy packages. The plan was approved and published in March 2018 and 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. In the next step, the 22 municipalities will each submit an implementation plan adapted to their local conditions.</p> <p>A series of subsidiary regulations has been formulated in preparation for rolling out the cap-and-trade system. This includes the ‘2018 Regulations Governing GHG Offset Program Management,’ which provide an opportunity for enterprises to acquire carbon offsets credits. Mandatory emissions reporting for entities with annual emissions above 25,000 tCO₂e from certain sectors has been ongoing since 2013. A crediting program for intensity-based early action and offset projects, promulgated by TEPA in 2010, will evolve into a reward program based on performance standards, which is currently under design.</p>										
<p>Year in Review</p>	<p>No information available yet.</p>										
<p>Overall GHG emissions (excluding LULUCF)</p>	<p>Emissions: 293.1 MtCO₂e (2016)</p>										
<p>Overall GHG emissions by sector</p>	<table border="1"> <thead> <tr> <th>Sector Name</th> <th>MtCO₂e</th> </tr> </thead> <tbody> <tr> <td>Industrial Processes</td> <td>21.7</td> </tr> <tr> <td>Agriculture</td> <td>2.7</td> </tr> <tr> <td>Waste</td> <td>4.0</td> </tr> <tr> <td>Energy</td> <td>264.7</td> </tr> </tbody> </table>	Sector Name	MtCO ₂ e	Industrial Processes	21.7	Agriculture	2.7	Waste	4.0	Energy	264.7
Sector Name	MtCO ₂ e										
Industrial Processes	21.7										
Agriculture	2.7										
Waste	4.0										
Energy	264.7										
<p>Overall GHG reduction target</p>	<p>BY 2020: 2% below 2005 GHG levels</p> <p>BY 2025: 10% below 2005 GHG levels</p> <p>BY 2030: 20% below 2005 GHG levels</p> <p>BY 2050: 50% below 2005 GHG levels</p>										
<p>Carbon Price</p>	<p><i>Current Allowance Price (per t/CO₂e):</i> No information available yet.</p>										

ETS Size

Emissions covered by the ETS	No information available yet.
GHG covered	No information available yet.
Sectors covered and thresholds	No information available yet.
Point of regulation	No information available yet.
Number of liable entities	No information available yet.
Cap	No information available yet.

Phases & Allocation

Trading period	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>REPORTING FREQUENCY: Annual reporting of GHGs (CO₂, CH₄, N₂O, SF₆, NF₃, PFCs, HFCs, and NF₃) for entities from certain sectors with annual emissions greater than 25,000 tCO₂e.</p> <p>VERIFICATION: Third-party verification is required.</p> <p>FRAMEWORK: GHG reporting under the 'Air Pollution Control Act' has been possible on a voluntary basis since 2004 and became mandatory in 2013. Since 2016, GHG reporting and the inventory program is mandatory under the 'GHG Accounting and Registration Regulations,' which are authorized by the 'Greenhouse Gas Reduction and Management Act.'</p>
Enforcement	No information available yet.

Linking

Links with other Systems	No information available yet.
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Other Information

Institutions involved	Taiwanese Environmental Protection Administration
Evaluation / ETS review	No information available yet.
Revenue	No information available yet.
Implementing Legislation	No information available yet.

Thailand

General Information

Summary	<p>Status: ETS under consideration</p> <p>Jurisdictions:</p> <p>The '12th National Economic and Social Development Plan (2017-2021)' of Thailand calls for several 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. According to the 'National Reform Plan (2018),' the Thai government must set up an economic instrument, such as a cap-and-trade program, to incentivize the private sector to reduce emissions. The specific instrument will be outlined in the 'Climate Change Act,' which is expected to be proposed for cabinet consideration in 2021.</p> <p>Since 2013, the Thailand Greenhouse Gas Management Organization (Public Organization) (TGO) has developed an MRV system for the 'Thailand Voluntary Emissions Trading Scheme.' (Thailand V-ETS). The first 3-year pilot phase (2015-2017) aimed at testing the MRV system for four industrial sectors, including cement, pulp and paper, iron and steel, and petrochemical, setting a cap for facilities' Scope 1 and 2 emissions, and allocating allowances for covered facilities. The second pilot phase (2018-2020) has tested the MRV, the registry and trading platform for an additional five industrial sectors, including petroleum refinery, glass, plastic, food and feed, and ceramics. In 2020, MRV for another three industrial sectors will be developed, and many seminars and meetings will be held to introduce the ETS concept to various stakeholders.</p> <p>In addition, as part of the Thailand PMR Program, TGO has conducted a study on the appropriate formulation of the legislation on the ETS and is currently in the process of developing draft laws for GHG reporting and establishment of the ETS for consideration at the policy level.</p>												
Year in Review	No information available yet.												
Overall GHG emissions (excluding LULUCF)	Emissions: 318.7 MtCO ₂ e (2013)												
Overall GHG emissions by sector	<table border="1"> <thead> <tr> <th>Sector Name</th> <th>MtCO₂e</th> </tr> </thead> <tbody> <tr> <td>Energy</td> <td>175.8</td> </tr> <tr> <td>Transport</td> <td>61.2</td> </tr> <tr> <td>Industrial Processes</td> <td>19.0</td> </tr> <tr> <td>Agriculture</td> <td>50.9</td> </tr> <tr> <td>Waste</td> <td>11.8</td> </tr> </tbody> </table>	Sector Name	MtCO ₂ e	Energy	175.8	Transport	61.2	Industrial Processes	19.0	Agriculture	50.9	Waste	11.8
Sector Name	MtCO ₂ e												
Energy	175.8												
Transport	61.2												
Industrial Processes	19.0												
Agriculture	50.9												
Waste	11.8												
Overall GHG reduction target	<p>BY 2020: In its 'Nationally Appropriate Mitigation Action (2014),' Thailand committed to a voluntary 7% reduction compared to BAU in the energy and transport sectors. The reduction target can be up to 20% with international support.</p> <p>BY 2030: 20% reduction compared to BAU with a 25% reduction contingent on adequate and enhanced access to technology development and transfer, financial resources, and capacity-building support through a balanced and ambitious global agreement under the UNFCCC (NDC).</p>												
Carbon Price	<i>Current Allowance Price (per t/CO₂e):</i> No information available yet.												

ETS Size

Emissions covered by the ETS	No information available yet.
GHG covered	No information available yet.
Sectors covered and thresholds	No information available yet.
Point of regulation	No information available yet.
Number of liable entities	No information available yet.
Cap	No information available yet.

Phases & Allocation

Trading period	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	12th National Economic and Social Development Plan (2017-2021)

Turkey

General Information

Summary	<p>Status: ETS under consideration</p> <p>Jurisdictions: 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 2013, Turkey has also been working with the PMR to enhance the MRV regulation through pilot studies in the energy, cement, and refinery sectors. A series of workshops and analytical studies have also been conducted, to explore options for using emissions trading and other market-based instruments in the MRV sectors.</p> <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 First Phase Closure Meeting and the Second Phase Opening Meeting were held at the end of 2018. With additional funding from the PMR through 2018, Turkey has been developing draft legislation and improving technical and institutional capacity, to prepare the groundwork for piloting a suitable carbon pricing policy. Specifically, there are five components to the country's plans during the second phase, which is expected to complete by the end of 2020:</p> <ol style="list-style-type: none"> (1) development of the 'Climate Change Law,' ETS regulation, and institutional framework for a pilot ETS; (2) development of the pilot ETS cap and allocation plans for the MRV sectors; (3) development of Turk-SIM, an ETS simulation with gamification features; (4) development of a transaction registry for the pilot ETS; and (5) assessment of Article 6 and options for Turkey. <p>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>												
Year in Review	No information available yet.												
Overall GHG emissions (excluding LULUCF)	Emissions: 526.3 MtCO ₂ e (2017)												
Overall GHG emissions by sector	<table border="1"> <thead> <tr> <th>Sector Name</th> <th>MtCO₂e</th> </tr> </thead> <tbody> <tr> <td>Energy (excluding transport)</td> <td>295.2</td> </tr> <tr> <td>Transport</td> <td>84.7</td> </tr> <tr> <td>Industry</td> <td>66.5</td> </tr> <tr> <td>Agriculture</td> <td>62.5</td> </tr> <tr> <td>Waste</td> <td>17.4</td> </tr> </tbody> </table>	Sector Name	MtCO ₂ e	Energy (excluding transport)	295.2	Transport	84.7	Industry	66.5	Agriculture	62.5	Waste	17.4
Sector Name	MtCO ₂ e												
Energy (excluding transport)	295.2												
Transport	84.7												
Industry	66.5												
Agriculture	62.5												
Waste	17.4												
Overall GHG reduction target	BY 2030: Up to 21% reduction from the BAU scenario (INDC)												
Carbon Price	<i>Current Allowance Price (per t/CO₂e):</i> No information available yet.												

ETS Size

Emissions covered by the ETS	No information available yet.
GHG covered	No information available yet.

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

Phases & Allocation

Trading period	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 CO₂ emissions for roughly 800 entities. Sector coverage includes the energy sector (combustion fuels >20MW) and industry sectors (coke production, metals, cement, glass, ceramic products, insulation materials, paper and pulp, and chemicals over specified threshold sizes/production levels).</p> <p>MONITORING AND REPORTING: Entities had until October 2014 to submit their first monitoring plans.</p> <p>VERIFICATION: Entities subsequently submitted verified emissions reports for 2015-2018 to the Ministry of Environment and Urbanization Verifiers were accredited by the Turkish Accreditation Organization by 2018. During 2016-2018, the Ministry of Environment and Urbanization provided training, examination, and licensing services.</p> <p>OTHER: 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

Links with other Systems	No information available yet.
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Other Information

Institutions involved	Ministry of Environment and Urbanization
Evaluation / ETS review	No information available yet.
Revenue	No information available yet.
Implementing Legislation	No information available yet.

United Kingdom

General Information

<p>Summary</p>	<p>Status: ETS under consideration</p> <p>Jurisdictions: United Kingdom</p> <p>Following a referendum on 23 June 2016 the United Kingdom left the European Union, effective 31 January 2020. The UK participated in the EU ETS since its inception in 2005. By exiting the EU, the UK will also withdraw from the EU ETS, however, this will not happen until 2021 as the UK will stay in the EU ETS until the end of Phase III (2013-2020).</p> <p>The UK government started a consultation process in May 2019 to set the stage for carbon pricing in the UK following Brexit. The government started the process by publishing “The Future of UK Carbon Pricing”[*] in which it lays out different carbon pricing options. The preferred option of the UK government contains a UK national GHG emissions trading system which would be linked to the EU ETS. Other options include a standalone domestic ETS, a carbon tax or participating in Phase IV of the EU ETS (2021-30). According to the UK Clean Growth Strategy^{**} the future carbon pricing approach will be at least as ambitious as the EU ETS.</p> <p>In early February 2020, the European Commission published a negotiating mandate to begin talks with Britain on a deal governing post-Brexit relations. The mandate encourages the Parties to consider linking a United Kingdom national GHG emissions trading system with the EU ETS.^{***}</p> <p>UK entities currently account for about 10% of the EU ETS, consisting of 800 installations, which emit around 140 million tonnes of CO₂e annually.</p> <p>[*] https://www.gov.uk/government/consultations/the-future-of-uk-carbon-pricing</p> <p>^{**} https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/700496/clean-growth-strategy-correction-april-2018.pdf</p> <p>^{***} https://ec.europa.eu/info/sites/info/files/communication-annex-negotiating-directives.pdf</p>																		
<p>Year in Review</p>	<p>No information available yet.</p>																		
<p>Overall GHG emissions (excluding LULUCF)</p>	<p>Emissions: 461.7 MtCO₂e (2018)</p>																		
<p>Overall GHG emissions by sector</p>	<table border="1"> <thead> <tr> <th>Sector Name</th> <th>MtCO₂e</th> </tr> </thead> <tbody> <tr> <td>Energy</td> <td>104.9</td> </tr> <tr> <td>Industrial processes</td> <td>10.2</td> </tr> <tr> <td>Agriculture</td> <td>45.4</td> </tr> <tr> <td>Waste</td> <td>20.7</td> </tr> <tr> <td>Transportation</td> <td>124.4</td> </tr> <tr> <td>Residential</td> <td>69.1</td> </tr> <tr> <td>Business</td> <td>79.0</td> </tr> <tr> <td>Public</td> <td>8.0</td> </tr> </tbody> </table>	Sector Name	MtCO ₂ e	Energy	104.9	Industrial processes	10.2	Agriculture	45.4	Waste	20.7	Transportation	124.4	Residential	69.1	Business	79.0	Public	8.0
Sector Name	MtCO ₂ e																		
Energy	104.9																		
Industrial processes	10.2																		
Agriculture	45.4																		
Waste	20.7																		
Transportation	124.4																		
Residential	69.1																		
Business	79.0																		
Public	8.0																		
<p>Overall GHG reduction target</p>	<p>By 2030: 57% reduction from 1990 GHG levels</p> <p>By 2050: net-zero GHG emissions by 2050</p>																		
<p>Carbon Price</p>	<p><i>Current Allowance Price (per t/CO₂e):</i> No information available yet.</p>																		

ETS Size

Emissions covered by the ETS	No information available yet.
GHG covered	No information available yet.
Sectors covered and thresholds	No information available yet.
Point of regulation	No information available yet.
Number of liable entities	No information available yet.
Cap	No information available yet.

Phases & Allocation

Trading period	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	UK Department for Business, Energy and Industrial Strategy
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>Status: ETS under consideration</p> <p>Jurisdictions: 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. This includes the adoption of a comprehensive market-based program that sets emissions limits to reduce CO₂ and other GHG pollutants in New Mexico. The task force released initial recommendations and a status update in November 2019 that determined “even with current and planned policies to reduce our emissions, we will likely fall short of our goals without a broader market-based program to reduce carbon usage and emissions.” State agencies will continue to evaluate options for a future ETS that would result in the most cost-effective approach, including through cooperation with states that already operate cap-and-trade programs, with the next report from the task force due in September 2020.</p> <p>The Climate Change Task Force also announced in its November 2019 update that the state will complete its first-ever comprehensive inventory of GHGs that includes small emitters in 2021.</p>														
Year in Review	No information available yet.														
Overall GHG emissions (excluding LULUCF)	Emissions: 66.7 MtCO ₂ e (2018)														
Overall GHG emissions by sector	<table border="1"> <thead> <tr> <th>Sector Name</th> <th>MtCO₂e</th> </tr> </thead> <tbody> <tr> <td>Electricity generation</td> <td>12.0</td> </tr> <tr> <td>Residential/Commercial</td> <td>4.0</td> </tr> <tr> <td>Transportation</td> <td>14.7</td> </tr> <tr> <td>Oil and gas</td> <td>16</td> </tr> <tr> <td>Other industry</td> <td>12.0</td> </tr> <tr> <td>Agriculture</td> <td>7.3</td> </tr> </tbody> </table>	Sector Name	MtCO ₂ e	Electricity generation	12.0	Residential/Commercial	4.0	Transportation	14.7	Oil and gas	16	Other industry	12.0	Agriculture	7.3
Sector Name	MtCO ₂ e														
Electricity generation	12.0														
Residential/Commercial	4.0														
Transportation	14.7														
Oil and gas	16														
Other industry	12.0														
Agriculture	7.3														
Overall GHG reduction target	BY 2030: At least 45% from 2005 GHG levels (Executive Order 2019-003)														
Carbon Price	<i>Current Allowance Price (per t/CO₂e):</i> No information available yet.														

ETS Size

Emissions covered by the ETS	No information available yet.
GHG covered	No information available yet.
Sectors covered and thresholds	No information available yet.
Point of regulation	No information available yet.
Number of liable entities	No information available yet.
Cap	No information available yet.

Phases & Allocation

Trading period	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

Summary	<p>Status: ETS under consideration</p> <p>Jurisdictions: New York City</p> <p>As part of a local law setting emissions-intensity limits for most large buildings starting in 2024, the New York City (NYC) government is required to study the feasibility of a citywide ETS for the buildings sector and release its findings by 2021.</p> <p>‘Local Law 97,’ part of the broader ‘Climate Mobilization Act of 2019,’ requires most buildings over 25,000 square feet to meet annual emissions-intensity limits based on occupancy type. Buildings with rent regulated housing have an alternate compliance pathway under the law, which includes implementing a list of prescriptive energy conservation measures. The requirement set in ‘Local Law 97’ to study the feasibility of a future citywide ETS specifies that it shall “include methods to ensure equitable investment in environmental justice communities that preserve a minimum level of benefits for all covered buildings [and]...an approach to a marketplace for credit trading, pricing mechanisms, credit verification, and mechanisms for regular improvement of the scheme.”</p> <p>The trading system being studied would serve as a compliance mechanism under the existing law.</p>								
Year in Review	No information available yet.								
Overall GHG emissions (excluding LULUCF)	Emissions: 50.7 MtCO ₂ e (2017)								
Overall GHG emissions by sector	<table border="1"> <thead> <tr> <th>Sector Name</th> <th>MtCO₂e</th> </tr> </thead> <tbody> <tr> <td>Stationary energy</td> <td>33.4</td> </tr> <tr> <td>Transportation</td> <td>15.4</td> </tr> <tr> <td>Waste</td> <td>1.9</td> </tr> </tbody> </table>	Sector Name	MtCO ₂ e	Stationary energy	33.4	Transportation	15.4	Waste	1.9
Sector Name	MtCO ₂ e								
Stationary energy	33.4								
Transportation	15.4								
Waste	1.9								
Overall GHG reduction target	<p>BY 2030: 40% below 2005 levels citywide</p> <p>BY 2050: Zero net emissions citywide</p>								
Carbon Price	<i>Current Allowance Price (per t/CO₂e):</i> No information available yet.								

ETS Size

Emissions covered by the ETS	No information available yet.
GHG covered	No information available yet.
Sectors covered and thresholds	No information available yet.
Point of regulation	No information available yet.
Number of liable entities	No information available yet.
Cap	No information available yet.

Phases & Allocation

Trading period	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	NYC Mayor's Office of Sustainability; NYC Office of Climate Policy and Programs.
Evaluation / ETS review	No information available yet.
Revenue	No information available yet.
Implementing Legislation	Local Law 97

USA - North Carolina

General Information

Summary	<p>Status: ETS under consideration</p> <p>Jurisdictions: North Carolina</p> <p>On 29 October 2018, North Carolina’s Governor Roy Cooper issued an executive order (EO No. 80) demanding stronger commitment to address climate change and a transition to a clean energy economy by reducing statewide GHG emissions to 40% below 2005 levels. As directed by the EO, on 27 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. However, the list of policy options being considered to reach the GHG reduction targets is not final at this point.</p> <p>To assess the most cost-effective options to achieve CO₂ emissions reductions in the power sector, the DEQ will commission an academic report that will evaluate policy designs for a market-based carbon reduction program, a coal phase-out, clean energy policies, and hybrid approaches that will be delivered by 31 December 2020.</p> <p>According to the CEP, key policy design elements for a market-based carbon reduction program that should be analyzed in the report include levels of emission limits, scope of covered sources, distribution of emission allowances, investment of revenue generated from the program, linking the program with similar programs in other states, technical platforms for administering the program, and mechanisms for protecting ratepayers.</p>																
Year in Review	No information available yet.																
Overall GHG emissions (excluding LULUCF)	Emissions: 150.1 MtCO ₂ e (2017)																
Overall GHG emissions by sector	<table border="1"> <thead> <tr> <th>Sector Name</th> <th>MtCO₂e</th> </tr> </thead> <tbody> <tr> <td>Electricity (direct combustion and imported)</td> <td>52.6</td> </tr> <tr> <td>Industrial</td> <td>18.5</td> </tr> <tr> <td>Residential</td> <td>5.3</td> </tr> <tr> <td>Commercial</td> <td>5.7</td> </tr> <tr> <td>Transportation</td> <td>48.7</td> </tr> <tr> <td>Agriculture</td> <td>10.5</td> </tr> <tr> <td>Waste</td> <td>8.8</td> </tr> </tbody> </table>	Sector Name	MtCO ₂ e	Electricity (direct combustion and imported)	52.6	Industrial	18.5	Residential	5.3	Commercial	5.7	Transportation	48.7	Agriculture	10.5	Waste	8.8
Sector Name	MtCO ₂ e																
Electricity (direct combustion and imported)	52.6																
Industrial	18.5																
Residential	5.3																
Commercial	5.7																
Transportation	48.7																
Agriculture	10.5																
Waste	8.8																
Overall GHG reduction target	BY 2025: 40% reduction compared to 2005 levels																
Carbon Price	<i>Current Allowance Price (per t/CO₂e):</i> No information available yet.																

ETS Size

Emissions covered by the ETS	No information available yet.
GHG covered	No information available yet.
Sectors covered and thresholds	No information available yet.
Point of regulation	No information available yet.

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

Phases & Allocation

Trading period	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	Executive Order No. 80 Clean Energy Plan

USA - Oregon

General Information

<p>Summary</p>	<p>Status: ETS under consideration</p> <p>Jurisdictions: 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>Senate Bill 1530 (SB1530), filed during the 2020 legislative session, built on 2019 legislation, House Bill 2020 (HB2020), but with some notable changes for the industry and transport sectors.</p> <p>Starting in 2022, it would set an allowance budget that declines in line with a target of a 45% reduction in GHG emissions below 1990 levels by 2035. From 2036, allowances would decline in line with Oregon’s proposed 2050 target of at least 80% below 1990 levels.</p> <p>Electricity companies would receive allowances equal to a forecast of emissions associated with serving their retail customers until 2030, declining annually each year to a floor of 20% in 2050. Natural gas utilities would be eligible for allowances based on the share of emissions that goes towards serving low-income residential customers as well as a share of consignment allowances based on emissions attributable to businesses. Entities that are deemed emissions intensive and trade-exposed would receive allowances based on 100% of product-specific benchmarks, excluding emissions attributable to natural gas combustion. These shares would decline in subsequent years proportionate to the decline in the cap. Auctioning would be held at least annually with a rising auction price floor and price ceiling.</p> <p>Notable changes between 2019’s HB2020 and 2020’s SB1530 include an exclusion of emissions from natural gas consumption for industrial entities when determining if they meet the threshold of 25,000 tCO₂e to be regulated by the program and a phase-in for transport fuels that first targets urban areas.</p> <p>SB1530 contains similar elements as California and Québec’s programs with regards to sectoral coverage and US domestic offset programs, as well as the use of auction price floors, price ceilings, and cost containment reserves. The possibility of linking with other market-based compliance mechanisms in other jurisdictions was mentioned in HB2020.</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 does not speak to the possibility of trading among covered entities or other details of the policy design.</p>										
<p>Year in Review</p>	<p>No information available yet.</p>										
<p>Overall GHG emissions (excluding LULUCF)</p>	<p>Emissions: 62.0 MtCO₂e (2016)</p>										
<p>Overall GHG emissions by sector</p>	<table border="1"> <thead> <tr> <th>Sector Name</th> <th>MtCO₂e</th> </tr> </thead> <tbody> <tr> <td>Transportation</td> <td>24.0</td> </tr> <tr> <td>Residential and Commercial</td> <td>20.0</td> </tr> <tr> <td>Industrial</td> <td>12.0</td> </tr> <tr> <td>Agriculture</td> <td>6.0</td> </tr> </tbody> </table>	Sector Name	MtCO ₂ e	Transportation	24.0	Residential and Commercial	20.0	Industrial	12.0	Agriculture	6.0
Sector Name	MtCO ₂ e										
Transportation	24.0										
Residential and Commercial	20.0										
Industrial	12.0										
Agriculture	6.0										
<p>Overall GHG reduction target</p>	<p>BY 2020: 10% reduction from 1990 GHG levels</p>										

	<p>BY 2035: 45% reduction from 1990 GHG levels (proposed target)</p> <p>BY 2050: At least 80% reduction from 1990 GHG levels (proposed target)</p>
Carbon Price	<i>Current Allowance Price (per t/CO2e):</i> No information available yet.

ETS Size

Emissions covered by the ETS	No information available yet.
GHG covered	No information available yet.
Sectors covered and thresholds	No information available yet.
Point of regulation	No information available yet.
Number of liable entities	No information available yet.
Cap	No information available yet.

Phases & Allocation

Trading period	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	Joint Interim Committee on Carbon Reduction; Oregon Carbon Policy Office; Oregon Department of Environmental Quality
Evaluation / ETS review	No information available yet.
Revenue	No information available yet.
Implementing Legislation	Oregon Greenhouse Gas Initiative (SB1530) House Bill 2020 (HB2020) Executive Order 20-04

USA - Washington

General Information

<p>Summary</p>	<p>Status: ETS under consideration</p> <p>Jurisdictions: Washington</p> <p>The State of Washington continues to pursue carbon pricing policies through its legislature and executive agencies.</p> <p>In 2016, the Washington Department of Ecology adopted 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. The CAR would apply to emitters responsible for at least 100,000 tonnes of GHGs per year, requiring covered facilities to reduce a cumulative 1.7% of their baseline emissions annually. They can comply by reducing their own emissions, buying credits from other regulated parties or from projects that reduce emissions, or by acquiring allowances from approved ETS programs.</p> <p>However, the CAR was suspended before it could be enforced, pending a legal challenge. The Washington Supreme Court partially upheld the CAR in January 2020, ruling that it could apply to stationary sources of emissions but not fuel suppliers and natural gas distributors that contribute to emissions from combustion farther downstream. The state legislature is considering a bill that would address this limitation by extending the CAR to producers and distributors of fossil fuels (Senate Bill 6628).</p> <p>Carbon pricing policies, including a proposed ETS, have repeatedly come before the legislature and in two unsuccessful state referenda. Laws forcing steep emissions reductions successfully passed in the 2019 session, but no carbon pricing measures were approved. The most recent ETS proposal, Senate Bill 5981, would establish a WCI-modeled ETS. Further debate on that bill and other carbon pricing measures is expected in the 2020 session.</p> <p>Clean Air Rule State of the State Address (2018)</p>																
<p>Year in Review</p>	<p>No information available yet.</p>																
<p>Overall GHG emissions (excluding LULUCF)</p>	<p>Emissions: 97.4 MtCO₂e (2017)</p>																
<p>Overall GHG emissions by sector</p>	<table border="1"> <thead> <tr> <th>Sector Name</th> <th>MtCO₂e</th> </tr> </thead> <tbody> <tr> <td>Electricity</td> <td>16.2</td> </tr> <tr> <td>Residential, Commercial, Industrial</td> <td>23.1</td> </tr> <tr> <td>Transport</td> <td>43.5</td> </tr> <tr> <td>Fossil Fuel Industry</td> <td>0.8</td> </tr> <tr> <td>Industrial Processes</td> <td>4.9</td> </tr> <tr> <td>Waste Management</td> <td>2.4</td> </tr> <tr> <td>Agriculture</td> <td>6.5</td> </tr> </tbody> </table>	Sector Name	MtCO ₂ e	Electricity	16.2	Residential, Commercial, Industrial	23.1	Transport	43.5	Fossil Fuel Industry	0.8	Industrial Processes	4.9	Waste Management	2.4	Agriculture	6.5
Sector Name	MtCO ₂ e																
Electricity	16.2																
Residential, Commercial, Industrial	23.1																
Transport	43.5																
Fossil Fuel Industry	0.8																
Industrial Processes	4.9																
Waste Management	2.4																
Agriculture	6.5																
<p>Overall GHG reduction target</p>	<p>BY 2020: Reduce emissions to 1990 GHG levels</p> <p>BY 2035: 25% reduction from 1990 GHG levels</p> <p>BY 2050: 50% reduction from 1990 GHG levels or 70% reduction from the state’s expected emissions for that year</p>																
<p>Carbon Price</p>	<p><i>Current Allowance Price (per t/CO₂e):</i> No information available yet.</p>																

ETS Size

Emissions covered by the ETS	No information available yet.
GHG covered	No information available yet.
Sectors covered and thresholds	No information available yet.
Point of regulation	No information available yet.
Number of liable entities	No information available yet.
Cap	No information available yet.

Phases & Allocation

Trading period	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
Evaluation / ETS review	No information available yet.

Revenue	No information available yet.
Implementing Legislation	No information available yet.

Vietnam

General Information

Summary	<p>Status: ETS under consideration</p> <p>Jurisdictions: Vietnam</p> <p>Vietnam's 'Green Growth Strategy' (2012) pursues the objective of a low-carbon economy and citing the use of market-based instruments as an avenue to achieve the strategy.</p> <p>Several measures lay the groundwork for implementing 'National Appropriate Mitigation Actions' (NAMAs) in the waste, industry (steel, cement, chemical), and power sectors. As part of its activities under the PMR, Vietnam is currently working on a roadmap that lays out policy proposals for implementing carbon pricing and market-based instruments in the country next to developing MRV and accreditation systems.</p> <p>The planned MRV system and NAMAs will provide the experience for the implementation of sector-based carbon pricing instruments after 2020, centering around the steel sector and solid waste sectors.</p>										
Year in Review	No information available yet.										
Overall GHG emissions (excluding LULUCF)	Emissions: 321.5 MtCO _{2e} (2014)										
Overall GHG emissions by sector	<table border="1"> <thead> <tr> <th>Sector Name</th> <th>MtCO_{2e}</th> </tr> </thead> <tbody> <tr> <td>Energy</td> <td>171.6</td> </tr> <tr> <td>Industrial Processes</td> <td>38.6</td> </tr> <tr> <td>Agriculture</td> <td>89.8</td> </tr> <tr> <td>Waste</td> <td>21.5</td> </tr> </tbody> </table>	Sector Name	MtCO _{2e}	Energy	171.6	Industrial Processes	38.6	Agriculture	89.8	Waste	21.5
Sector Name	MtCO _{2e}										
Energy	171.6										
Industrial Processes	38.6										
Agriculture	89.8										
Waste	21.5										
Overall GHG reduction target	BY 2030: 8% below BAU, or up to 25% below BAU conditional on international support (NDC). The target includes a 20% reduction in 2010 emission intensity levels, or 30% conditional on international support										
Carbon Price	<i>Current Allowance Price (per t/CO_{2e}):</i> No information available yet.										

ETS Size

Emissions covered by the ETS	No information available yet.
GHG covered	No information available yet.
Sectors covered and thresholds	No information available yet.
Point of regulation	No information available yet.
Number of liable entities	No information available yet.
Cap	No information available yet.

Phases & Allocation

Trading period	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
Evaluation / ETS review	No information available yet.
Revenue	No information available yet.
Implementing Legislation	No information available yet.

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