Emissions Trading Worldwide

International Carbon Action Partnership (ICAP)
Status Report 2015

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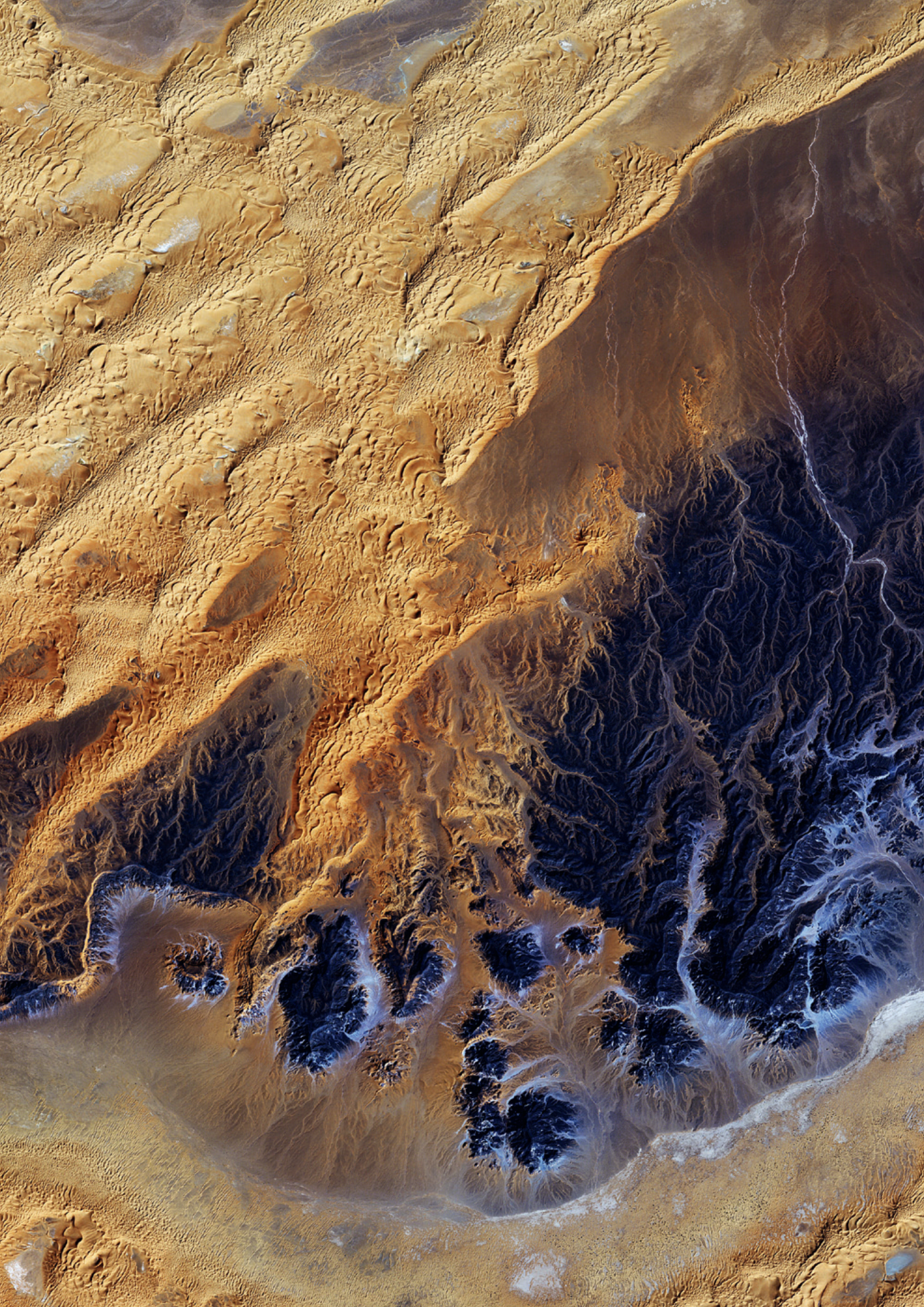

Foreword

This year, the European Union celebrates the 10th anniversary of its pioneering emissions trading system, the EU ETS. This experiment put the EU at the forefront of global climate policy. At that time, it was uncertain if others would follow. A decade on, the picture has changed dramatically. Although the EU ETS remains the largest carbon market, the idea of using Cap-and-Trade to tackle climate change has spread across the globe, maturing and adjusting to diverse national and local circumstances.

Today, there are 17 emissions trading systems (ETS) in force across four continents, covering 35 countries, 12 states or provinces, and seven cities. Together, these jurisdictions produce about 40 % of global GDP.

The past year has also seen significant milestones in the growth and development of emissions trading. California and Québec's joint auctions constitute the first example of two directly linked systems with fully fungible carbon units. Other ETS are considering linking, such as Switzerland and the EU. Additionally, ETS is expanding in the world's most populous continent, Asia: Nine systems were launched in the past three years, including Asia's newest ETS, which started in the Republic of Korea in January. Furthermore, the seven Chinese pilot programs — and the planned launch of a Chinese national system in 2016 —represent a significant step forward. Emerging economies, like Mexico and Brazil, are also looking at ETS as an option for developing their climate policy plans.

This report showcases the great diversity of economic and political contexts in which ETS has been applied. Such systems currently operate in smaller jurisdictions, such as Québec and Vermont, in sub-national entities such as Tokyo and California with economies larger than some coutries, and in large regions like the EU. ETS have been adapted for economies that rely on heavy industry, advanced service sectors, or large agriculture and forestry sectors. They exist in countries with a high level of renewable energy, as well as those which predominantly rely on coal. Experience shows that in designing and implementing an ETS, there is no one-size-fits all approach, and flexibility is certainly one reason why emissions trading has become such an appealing tool for policymakers. The aim of the ICAP Status Report 2015 is to take stock and make sense of this diversity. It combines up-to-date factsheets on existing and planned ETS worldwide with contributions from policymakers and carbon market experts. These contributions outline the latest ETS developments in their jurisdictions, and the role of ETS in their climate policy mix. A compact visual summary of key trends in ETS worldwide is also included.

This report comes at the beginning of a critical year for international climate policy. In December, policymakers, business representatives and civil society will gather in Paris at the UNFCCC's COP21 with the aim of producing a global climate agreement that sets the world on a trajectory to a low-carbon future. The ICAP Status Report seeks to **inform this process and highlight the crucial role of carbon markets in the fight against climate change**.

The **growth and diversification of carbon markets is a success story**. It was made possible through the dedication of policymakers in an ongoing process of dialogue and consultation, including in the International Carbon Action Partnership (ICAP). We hope that the hard-won experience on ETS can inform the global community in the upcoming negotiations, and that the outcome of the Paris COP will provide further momentum for the establishment of a global carbon market.

Jean-Yves Benoit
Co-Chair of the International Carbon Action Partnership, Steering Committee Director, Carbon Markets Division, Québec Ministry of Sustainable Development, Environment and the Fight Against Climate Change

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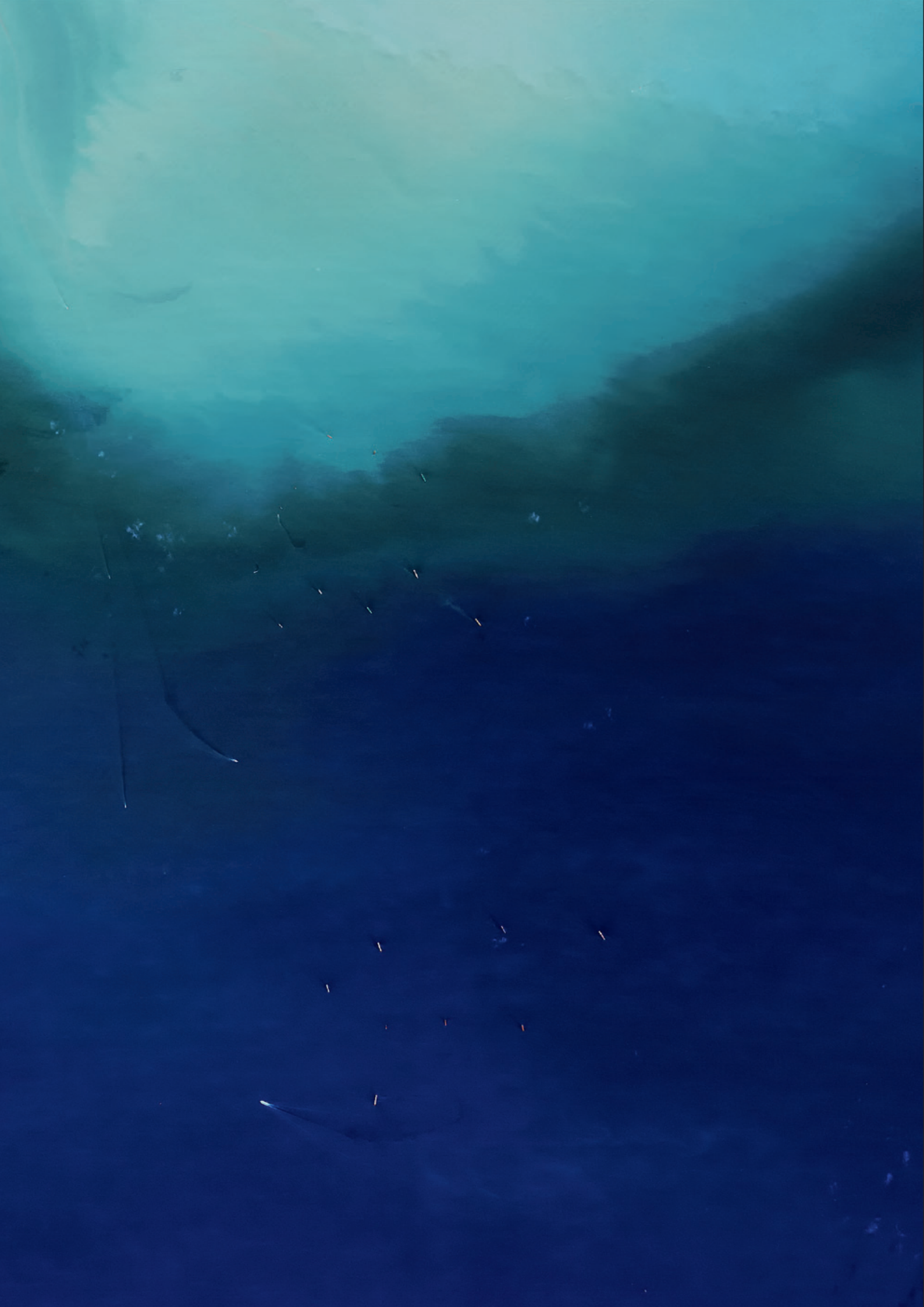


Practitioner Insights
designing Cap-and-Trade

In this section, ETS practitioners share the latest developments in their systems, as well as provide insight into the role that emissions trading plays in their climate and energy policy mix. Dirk Weinreich and Angelika Smuda provide a German perspective on the reform of the European ETS. Lois New and Justin Johnson then discuss the-Regional Greenhouse Gas Initiative and the impact of the Federal Clean Power Plan. The Québec Environmental Ministry shares their experience of the linking process to create a single carbon market with the California Cap-and-Trade program. Masahiro Kimura gives an overview of Tokyo's experience with their city-wide Cap-and-Trade program, while Qian Guoqiang and Yu Siyang from SinoCarbon report on China's efforts to transition from a series of pilot systems to a national ETS in 2016. Kay Harrison from the Ministry of Environment in New Zealand gives an overview on the evolution of their ETS and its transition to a purely domestic system.

The EU ETS
setting the stage for an effective climate and energy policy framework 2030

Dirk Weinreich Head of Emissions Trading Division
Angelika Smuda Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety of Germany

Establishing the EU ETS

It is now ten years ago that the European Union (EU) implemented emissions trading as its main instrument to reduce greenhouse gas emissions (GHG) and comply with its commitments under the Kyoto Protocol. Many lessons were already learned during the pilot phase and improvements were made during the second trading period. On the basis of a major review in 2009, the emissions trading system (ETS) was overhauled as part of a comprehensive Climate and Energy Package.

> "Surveys show that the EU ETS has raised companies' awareness of their carbon costs and mitigation potential, which has led to behavioral changes. From 2005 to 2013, the sectors covered by emissions trading have reduced their emissions by 13%."

The beginning of the third trading period started in 2013. Operators, verifiers, and competent authorities are now all well-practiced in their respective tasks, and the institutional infrastructure is working smoothly. Instead of national allocation plans, we now have unified the system under a common cap. With harmonized regulations for the monitoring, reporting and verification of emissions, as well as a single Union Registry with enhanced safety precautions, we now operate on the basis of robust data ensuring that a ton is a ton across the entire system. Surveys show that the EU ETS has raised companies' awareness of their carbon costs and mitigation potential, which has led to behavioral changes. From 2005 to 2013, the sectors covered by emissions trading have reduced their emissions by 13% (scope corrected for the third trading period).

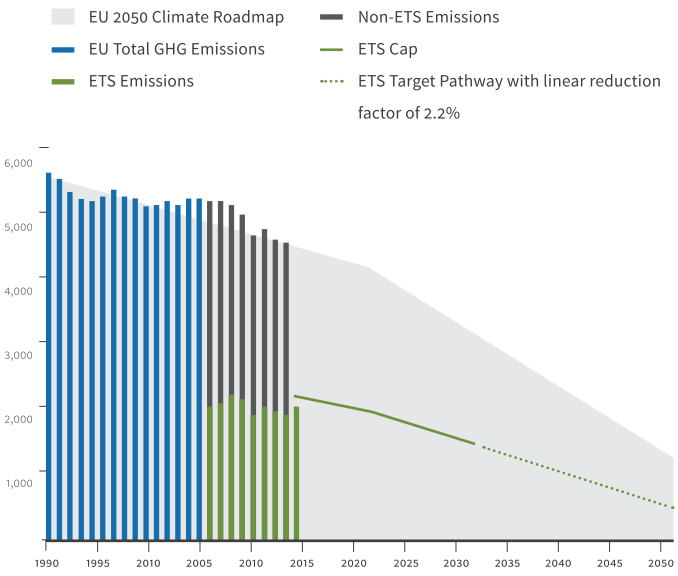
But all is not well. While a share of the reduction can surely be attributed to the EU ETS, an adequate incentive was only given when the relation between the emissions cap and (verified) emissions ensured a scarcity of allowances. This was the case in the spring of 2008, at the beginning of the second trading period, when prices reached peaks of around EUR 30. With the global financial and economic crisis unfolding in 2008, the repercussions of which are still being felt today, industrial output and emissions were reduced to an extent not foreseeable in any projection. The ex-ante cap has prevented adjustments to the flagging demand, which has so far resulted in an accumulated surplus of 2.2 billion allowances[1]. Accordingly, prices went down. Although we will reach the emissions reduction targets set out in the 2020 Climate and Energy Package, incentives for low-carbon investments are currently too low to ensure the dynamic efficiency of the system in the long run and may result in stranded investments.

The 2030 Climate and Energy Policy Framework

Meanwhile, the EU is about to revitalize its key climate policy instrument and pave the way toward a low-carbon society. On 23 October 2014, the European Council decided on the basic cornerstones of the EU's climate and energy policy framework until 2030. This sent an important message to investors, the European public and the international community, signaling that climate change will remain a priority for Europe. The main targets outlined are:

- A domestic reduction of GHG emissions by at least 40% in 2030 compared to 1990 levels. This will be delivered by a 43% reduction in ETS sectors and a 30% reduction in non-ETS sectors, compared to 2005 levels.
- A share of at least 27% of renewable energy consumed in the EU by 2030.
- An indicative target at the EU level of at least a 27% improvement in energy efficiency in 2030 compared to business-as-usual projections. This target will be reviewed by 2020 with a view to increasing the ambition of the target to 30%.

The illustration below shows how the 2030 targets ensure that the EU follows the long-term GHG reduction path in line with its 2050 targets:



Source: BMUB based on EEA data

1 Calculated as the difference between allowances issued and verified emissions.

Although the third trading period started in 2013, it is time to start envisioning the design of the EU ETS in the fourth trading period starting from 2021. The conclusions of the European Council have already set some cornerstones for the upcoming deliberations:

- The annual reduction factor will be raised from 1.74% to 2.2% from 2021 onward.
- As long as there are no comparable efforts undertaken in major economies, free allocation will remain the instrument of choice to prevent carbon leakage for industry. Measures also include indirect carbon costs, i.e., the pass through of allowance costs to electricity tariffs. Benchmarks will be reviewed periodically.
- The framework conditions for allocation to industry are to be further specified.

In addition to these structural elements, several decisions were taken that aim to ensure fairness and solidarity among Member States with varying economic circumstances, similar to the formulation of the 2020 Package. These decisions mainly focus on the distribution of allowances and auction revenues:

- Two provisions target Member States with a GDP per capita below 60% of the EU average, i. e., the new Member States from Eastern Europe:
  - These states can continue to transitionally give free allowances to the energy sector, albeit under stricter conditions regarding transparency and limited to 40% of the national auction volumes.
  - Additionally, a new reserve of two percent of EU ETS allowances will be set aside. When they are auctioned, the revenue is to be used to improve energy efficiency and modernize the energy systems in these states.
- The existing NER300 facility (part of the New Entrants Reserve) will be increased to 400 million allowances to fund innovative projects in all Member States in the fields of renewable energy, carbon capture and storage, and projects promoting low-carbon innovation in industrial sectors.
- Of the remaining allowances, 10% will be distributed among countries with a GDP per capita below 90% of the EU average in 2013, and 90% on the basis of verified emissions.

The Market Stability Reserve

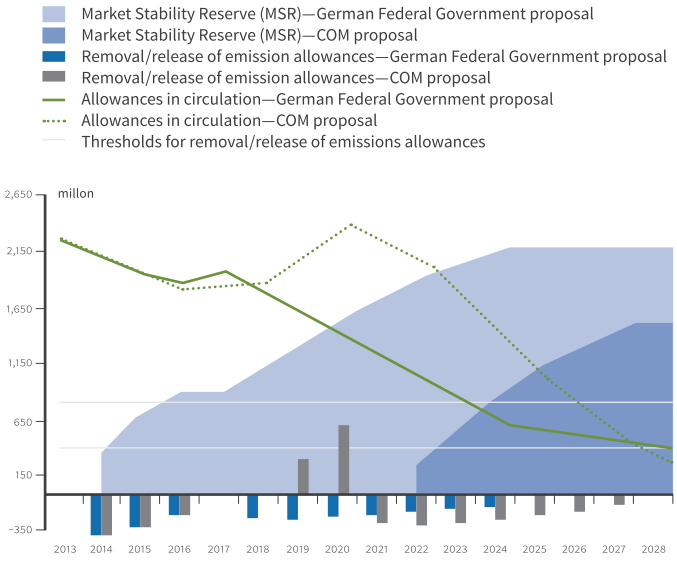
The Council stressed that emissions trading will remain the main European instrument to achieve the 40% emissions reduction target and that the instrument will be reformed in line with the Commission proposal for a Market Stability Reserve (MSR). The Commission proposed a MSR to enable the supply of allowances to be adjusted in response to significant demand fluctuations, without endangering the integrity of the cap. For this purpose, allowances can be withdrawn from the market in times of substantial surplus, kept in the MSR and released in times of extreme scarcity. When defining the thresholds at which to withdraw or release allowances, the Commission took into consideration the needs of power producers to hedge their electricity sales by buying allowances in advance. Therefore, a certain surplus of allowances needs to be in circulation.

The MSR can reduce the current huge surplus of allowances while avoiding extreme supply fluctuations. It has several advantages:

- The application of the MSR is strictly rules-based and does not offer room for political intervention. This results in transparency and predictability for market participants.
- The MSR is based on quantities, which fits a quantitative instrument like emissions trading, and still allows the market to find the right price.
- The MSR will enhance the flexibility of the EU ETS, ensuring that the instrument becomes more resilient to external shocks and other developments that cannot be precisely quantified ex-ante. These not only include economic up- and downswings, but also the emissions reductions achieved by other policies that promote renewable energies and energy efficiency. Thus, a well-balanced policy mix is guaranteed.

However, there are two main points where Germany and a growing number of Member States and other stakeholders propose an amendment.

- Early introduction of the MSR: The Commission proposed to introduce the MSR only in the fourth trading period in 2021. However, Germany advocates its introduction in 2017 in order to provide an earlier incentive.
- Direct transfer of backloaded allowances into the MSR: Germany calls for the 900 million backloaded EU allowances (EUAs) to be transferred directly into the MSR. If these allowances come back onto the market in 2019 and 2020 as currently called for in the regulation, this would result in significant volatility in both supply and price. The figure below illustrates the differences between the German and the Commission's proposal:



Source: German Emissions Trading Authority (DEHSt)

We believe that an early implementation of the MSR and a direct transfer of the backloaded allowances into the reserve will give the right signal to the market and thus restore the ability of the EU ETS to provide an incentive for low-carbon investment. Also, it will make the instrument more resilient in the long term. Embedded in the 2030 Climate and Energy Policy framework, the EU ETS will be future-proof and well designed for the next decade.

Québec Cap-and-Trade System
pioneering the linking of a regional carbon market

Ministère du Développement durable, de l'Environnement et de la Lutte contre les changements climatiques
Ministry of Sustainable Development, Environment and the Fight Against Climate Change, Government of Québec

Establishing a Cap-and-Trade system

When the Québec government joined the Western Climate Initiative (WCI) in 2008, it had already chosen to make the fight against climate change a top priority. Its 2006–2012 Climate Change Action Plan was financed by a levy on fossil fuels, demonstrating that Québec understood the importance of putting a price on carbon in order to change behavior and drive down greenhouse gas (GHG) emissions. However, the government realized that, in order for Québec to reduce its emissions even further, a stronger, more robust tool was needed to integrate the hidden economic, social and environmental costs of GHG emissions into the economy and the decision-making of businesses and citizens.

The WCI's intention to establish an economy-wide market-based mechanism to tackle GHG emissions was deemed to be the best and most attractive choice to this end. The organization, which consists of nine American states and three Canadian provinces, started the process of designing a regional Cap-and-Trade (C&T) system in order to encourage their respective federal governments to follow suit and implement national systems. Québec and California were the first WCI partners to follow through with that project and, on 1 January 2013, both started operating their own system.

Supporting Québec's Climate Change Action Plan

Québec's C&T system is the centerpiece of its climate change policy. Revenues from auctions and reserve sales under the system are used to finance the initiatives of the 2013-2020 Climate Change Action Plan (CCAP 2020). As a result, an estimated CAD 3.3 billion (EUR 2.36 billion), largely from the C&T system, will be available to fund this plan. The CCAP 2020 contains initiatives that will support GHG mitigation and adaptation programs in partnerships with businesses, municipalities, and citizens. It also promotes investments in research and innovation, aims to raise awareness on climate change, and seeks to lower the public sector's carbon footprint. Transportation is a prime concern since more than 44 % of Québec's GHG emissions stem from that sector alone. Thus, most of the planned expenditure in the CCAP 2020 focuses on initiatives aimed, among other things, at increasing public transit use, electrifying public and private transport fleets, and improving the energy efficiency of industry, buildings and freight transport. In the long-term, Québec's aim is to provide incentives to move the economy toward sustainable modes of production, consumption and organization in ways that will significantly decrease its dependency on fossil fuels. Investments in a greener economy will provide a comparative advantage to Québec businesses, spur new technological development, and create high-quality jobs. Improved air quality will also translate into several health benefits for our communities.

Creating a joint market with California

The linking of the Québec and California systems seemed a natural and logical choice as both governments knew that a broader, more liquid carbon market would induce greater GHG emissions reductions and drive down the overall cost of mitigation. The conceptual foundations for the two systems are similar because they are based on the WCI design guidelines and operating rules for a regional C&T system that have been elaborated from 2008 to 2010. A link was even more crucial for Québec because of the relatively smaller size of its economy compared to California's. Linking their carbon markets would also allow the jurisdictions to share some of the operating costs of their systems, for instance, relating to market monitoring, development, management and maintenance of the electronic GHG emission allowance registry (CITSS), and the auction platform.

Québec and California's C&T systems shared several commonalities, but were also unique in their own ways, and there was no precedent for their linking. From the outset, both jurisdictions intended to fully link their systems since a regional C&T system was the original aim of the WCI partners. However, before they could accomplish that goal, they first had to identify the legal and regulatory requirements and barriers that were impeding a complete link and then had to devise a process on how to overcome them. Even though the two systems and the conditions under which they operated were similar, some differences needed to be assessed and resolved in order to create a single market. For almost two years, Québec and California worked hand-in-hand to that effect.

Negotiating the link

Québec and California did not negotiate their link in the traditional sense. Neither party tried to exert concessions or compromises from the other. The process was very collegial, but also fastidious due to the great number of details involved and the complexity associated with some of them. Regulatory provisions on both sides were scrutinized to make sure that both partners were comfortable with their meaning and outcome. Both partners also took the opportunity to try to improve their systems and learn from each other.

In order to facilitate this harmonization process, Québec and California divided their C&T provisions into three categories:

- Provisions that had to be identical: for example, the joint auction of allowances and the purchase and holding limits that protect against market manipulation. Furthermore, all transfers of allowances between systems had to take place within a common registry and the rules surrounding such transfers had to be identical.
- Provisions that had to produce similar outcomes but did not need to be identical: for example, the monitoring, reporting

and verification (MRV) processes, which ensure that a ton of GHG emitted and verified in a partner jurisdiction equals a ton of GHG emitted and verified everywhere in the partnership.

- Provisions that could remain different: for example, the recognition of GHG emission reductions from a voluntary offset program that started several years before the C&T system in California, and the recognition of voluntary GHG mitigation efforts by industry prior to the implementation of the C&T system in Québec.

"The collaboration of Québec and California within the WCI framework is an excellent example of North American regional cooperation that is economically and environmentally beneficial for both partners."

Québec and California also had to cope with two very different linguistic and legal environments. The Québec C&T regulation was drafted in French, while California's was written in English. This meant that every word, expression, sentence, article and legal terminology in the regulations, once translated, had to be scrutinized to achieve agreement on its conceptual and practical meaning. Similarly, we had to reconcile two different legal approaches, civil law for Québec and common law for California. The two systems were also operating under different broader sets of environmental regulations and public consultation processes, and those had to be respected.

In the summer of 2013, Québec and the California Air Resources Board drafted a linking agreement which codified Québec and California's intention to finalize the process. It was signed by both parties on 1 October 2013. The agreement was not only mandatory under Québec law; it also represented a milestone in Québec international relations and was unanimously approved by the Québec National Assembly.

The harmonization of Québec and California's C&T regulations is an ongoing process and staff from both jurisdictions are constantly in contact with each other. Both partners are coordinating and fine-tuning their regulations to perfect their systems in order to increase their efficiency and performance. A high-level management working group with representatives from both jurisdictions oversees the well-being of the linked carbon market.

Lessons on linking and looking ahead

Building an excellent relationship based on trust and constant communication is the best advice we can give to governments interested in linking their C&T systems. Starting in 2008, Québec and California were able to build that relationship when they joined the WCI and began collaborating on the design guidelines and operating rules for a regional C&T system.[1]

It is also quite useful for a jurisdiction who wishes to establish a C&T system to identify its potential partners at the outset and request their assistance in drafting the legislation and regulations, or to at least use the legislation and regulations of its potential partners as the basis for its own. The Québec government has offered to lend its experience and expertise in the development and linking of carbon markets with potential partners.

The collaboration between Québec and California in the WCI framework is an excellent example of North American regional cooperation that is economically and environmentally beneficial for both partners. Having successfully collaborated with California to create a winning partnership model, Québec is reaching out to other Canadian provinces and American states interested in carbon market solutions as a way to make the transition toward a green, low-carbon economy. The WCI C&T model has a proven track record demonstrating that it can provide the required flexibility to facilitate linking.

As long as potential partners are willing to set an ambitious cap on their GHG emissions, the WCI model can accommodate their economic circumstances and priorities, as well as their GHG emissions and industrial profiles. The WCI model is, in fact, flexible to the point of allowing different types and degrees of linking, from the partial linking of a particular economic sector to full linking. Québec and California laid the groundwork and established an extensive process for linking two C&T systems from two different countries. Their work will make it easier and quicker to link the WCI carbon market with other markets in North America. In the future, Québec sees its market expanding even more by linking with similar markets around the globe. The larger the reach of carbon markets, the more effective and better positioned they will be to contribute to the global effort to combat climate change.

Influencing the federal debate on climate change in Canada

Other Canadian provinces and American states are also considering C&T systems. The governor of the state of Washington has recently submitted a bill to that effect to the legislature. In November 2014, Québec also signed a memorandum of understanding with Ontario, where it agreed to share its experience on the development and linking of a C&T system. Both Ontario and Washington state collaborated in the development of the WCI regional C&T program.

The Québec government, through its leadership on climate change, is also changing the intensity and level of climate change discourse in Canada. After years on the backburner, climate change mitigation and adaptation are back on the agenda of the Canadian Council of Ministers of the Environment. Additionally, Québec Premier Philippe Couillard has invited his provincial and territorial counterparts to a pan-Canadian Summit on climate change to be held on 14 April 2015 in Québec City. The objective of the Summit is to foster dialogue among provinces and territories about climate and energy challenges and solutions, including carbon pricing. This is particularly timely, as subnational and national states alike are reflecting upon their long-term climate change strategies in the wake of the 2015 Paris climate change conference that should produce an international accord for the post-2020 era.

1 These rules and guidelines are available on the WCI website (http://www.wci-inc.org).

The Regional Greenhouse Gas Initiative (RGGI)
a successful model for state climate action

Lois New, Director, Office of Climate Change, New York State Department of Environmental Conservation
Justin Johnson, Secretary of Administration, Office of the Governor, State of Vermont[1]

Rationale, accomplishments and benefits of RGGI

RGGI is the first mandatory market-based emissions trading system (ETS) for carbon in the United States. RGGI is also the first ETS in the world to auction the allowances and reinvest the auction proceeds in energy efficiency and renewable energy, further driving greenhouse gas (GHG) reductions while boosting the regional economy. The program arose when a bipartisan group of governors from the Northeastern and Mid-Atlantic states committed to leadership on reducing GHG emissions from the power sector in the absence of federal action. Currently nine states participate in RGGI: Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New York, Rhode Island and Vermont. What started as a modest program has evolved into an environmental and economic success. Collectively in 2012, the RGGI states reduced power plant GHG emissions by 40% from 2005 levels, while the regional economy grew seven percent.[2] A 2012 program review by the states resulted in regulatory changes that took effect on 1 January 2014, including a revised cap that ensures emissions from the power sector will be 50% below 2005 levels by 2020.[3]

The role of ETS in the climate policy mix

Subnational leadership is crucial to achieving the GHG emissions reductions needed to avoid the worst impacts of climate change. As the need to address climate pollution became more evident, Northeastern states developed comprehensive climate and energy action plans that rely on a variety of approaches to reduce carbon emissions from different sources, including RGGI for power plants, clean car standards, commitments to increase the percentage of renewable energy used to produce electricity (Renewable Portfolio Standard or RPS), investments in energy efficiency programs for buildings, and financial incentives to stimulate technological innovations to reduce carbon. The diversity of approaches in our state plans reflects each state's economy and stakeholders.

The unique element of auctioning RGGI allowances and investing the proceeds to create incentives for more renewable energy and energy efficiency shows how an ETS can complement other climate policies. The RGGI states achieved the 40% reduction in emissions from the power sector from 2005 levels by 2012 through a combination of climate-friendly programs. As RGGI states continue to implement other climate and energy measures, they will use what they have learned and may consider the potential for market-based approaches in order to promote changes in other sectors of the economy, including the transportation, industry, and building sectors.

> "RGGI is the first ETS in the world to auction the allowances and reinvest the auction proceeds in energy efficiency and renewable energy, further driving greenhouse gas (GHG) reductions while boosting the regional economy."

RGGI and the potential role of ETS in the federal clean power plan

As President Obama and the United States Environmental Protection Agency (US EPA) move forward to limit carbon pollution through its proposed Clean Power Plan (CPP), the RGGI states are providing guidance to help shape a strong and effective national program. In particular, the RGGI states demonstrate the effectiveness of a multi-state ETS as a least-cost and highly effective way to reduce emissions while emphasizing that investments in energy efficiency and renewable energy can also further reduce emissions and boost the economy.

In June 2014, the EPA released its proposed CPP regulation for public comment. The regulation is projected to achieve a nationwide power sector carbon emissions reduction of about 30% from 2005 levels by 2030. The proposal sets individual rate-based carbon intensity goals for each state based on a state's mix of power plants and opportunities to achieve reductions. The CPP allows each state to choose how it meets its goals. States can use existing programs, such as RGGI, as their compliance pathway. The EPA's flexible, cost-minimizing approach to setting performance standards for existing power plants is consistent with over 30 years of EPA Clean Air Act practice under the administrations of both political parties and is based on strong precedent.

1 Written on behalf of the RGGI participating states that are members of ICAP: Maine, Maryland, Massachusetts, New York and Vermont.

2 Growth rate is adjusted for inflation; emission reductions were due to a combination of factors, including lower prices for natural gas, increased renewable energy and energy efficiency, mild weather, and the market signal resulting from the RGGI cap.

3 See the 2014 ICAP report for additional background, benefits and lessons from the successful RGGI cap-and-invest model. Additional information on the benefits of states' investment of RGGI auction proceeds can be found at: http://www.rggi.org/rggi_benefits

In commenting on the proposed rule, the RGGI states commended the EPA for setting the nation on a clear path toward achieving significant carbon reductions from the power sector and supported the general framework of the proposal, which allows the RGGI states to continue to rely on RGGI to achieve emission reductions from the power sector. In addition, the RGGI states recommended changes to further strengthen the CPP, based on the RGGI states' demonstration that even more substantial cost-effective emission reductions are possible nationally, particularly from those states that have not yet developed robust energy efficiency and renewable energy programs.

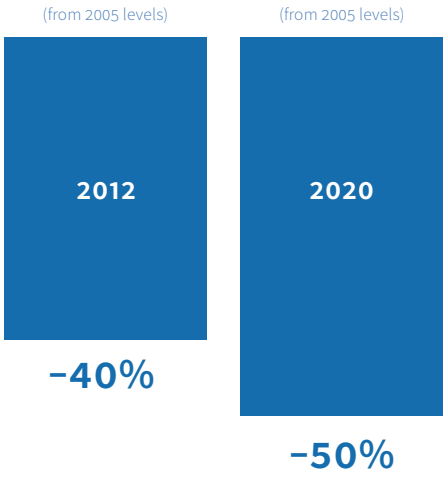


Figure 1 Collective reduction in power plant GHG emissions

The RGGI program also represents a viable model for other states, which need to develop plans in order to meet the new federal requirements. Emissions trading systems, like RGGI, provide a simple, transparent, and verifiable system for compliance that allows states to work within the existing regional nature of the electricity grid and the RGGI states recommended that the EPA facilitate this compliance pathway for other states. By providing an equitable and transparent process for converting states' rate-based targets to equivalent mass-based targets, the EPA can promote the choice of emissions trading as a least cost compliance pathway for states across the US.

"The RGGI program represents a viable model for other states, which need to develop plans in order to meet the new federal Clean Power Plan requirements."

"What started as a modest program has evolved into an environmental and economic success … RGGI states reduced power plant GHG emissions by 40 % from 2005 levels, while the regional economy grew seven percent."

The EPA is due to release the final rule in June 2015. States will be required to submit compliance plans by June 2016, although states committing to participate in a multi-state approach are expected to have an additional two years to submit their plans. The RGGI states are willing to share lessons learned and insights for program design with any states considering an ETS approach in order to comply with the CPP.

"Emissions trading systems, like RGGI, provide a simple, transparent, and verifiable system for compliance that allows states to work within the existing regional nature of the electricity grid."

The possibility of an increased use of ETS in the US raises the potential for linking systems into a larger carbon market for North America. States could participate in a linked market, whether they are implementing an ETS individually or together with other states as RGGI has done. ICAP can help identify the elements of program design that will facilitate the linking of ETS in order to better inform states' choices as they develop their CPP compliance plans. Having proved the environmental, social and economic benefits of reducing carbon pollution through an emissions trading and clean energy reinvestment program, the RGGI states look forward to the possibility of more states participating in a growing carbon market.

China ETS
preparation for national system speeds up

Qian Guoqiang, Strategy Director, SinoCarbon Innovation & Investment Co. Ltd. Board Director, the Gold Standard Foundation
Yu Siyang, Analyst, SinoCarbon Innovation & Investment Co. Ltd.

With the official announcement of a new timeline to establish a national emissions trading system (ETS) in 2016, carbon markets in China have been moving forward at an unprecedented pace. Since China's public announcement to lower its greenhouse gas (GHG) emissions per unit of GDP by 40–45 % from 2005 levels by 2020, the establishment of a carbon market has been embraced as the key policy for achieving this target, and more broadly, a low-carbon transformation. Within two years, seven pilot ETS schemes were launched. The rapid development of emissions trading in China is largely the result of the strong political will of the government. More importantly, ETS has proven to be a cost effective policy instrument to mitigate GHG emissions in other countries. The market-based approach of the Cap-and-Trade system was also a reason in favor of adopting it as a key policy of the climate package.

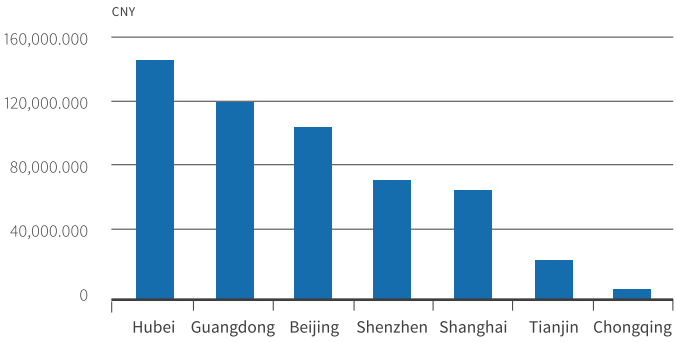


Figure 1 Accumulated market value of China's ETS pilots in 2014

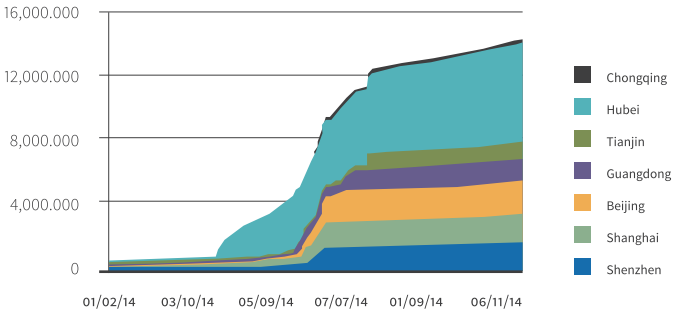


Figure 2 Trading volumes in China's ETS pilots in 2014

Pilot schemes

In 2014, the final two of the seven pilot schemes, Hubei and Chongqing, launched trading on 2 April and 19 June respectively, marking the commencement of the pilot scheme as a whole. The pilots are located in regions at varying stages of development, which is also echoed in the design and trading status of the pilot ETS.

Although all pilot schemes have now been launched, some details of their design have yet to be finalized. While all pilots have issued administrative regulations providing a legal basis for their ETS, only Beijing and Shenzhen have passed the legislation through their local congress. As a prerequisite to launching an ETS, all pilot schemes have completed their allowance allocation. However, the level of transparency varies among the schemes. For instance, all pilots except Beijing and Chongqing have released a list of ETS participants. As for the monitoring, reporting and verification (MRV) guidelines and regulations, Guangdong, Hubei and Chongqing are yet to make the relevant documents public.

The pilot schemes launched last year (Shenzhen, Shanghai, Beijing, Guangdong and Tianjin) have now completed a first compliance cycle. These pilot schemes have demonstrated a high level of compliance, with only a handful of enterprises failing to comply.

As of 1 December 2014, the combined market value of Chinese pilot schemes had reached CNY 536 million (EUR 64 million), and the combined trading volume reached 14.4 $MtCO_2$. The Hubei pilot leads with the largest share in terms of a market value of CNY 148 million and a trading volume of 6 $MtCO_2$.

Figure 3 illustrates the trend in the carbon price in the different pilot schemes. The various trading products (emission allowances) are indicated with the pilots' initials. For some pilots, trading products are distinguished by their vintage year. In the seven months leading up to November 2014, the average carbon price has fallen, and the price range has narrowed to between 24 and 51 CNY/tCO_2 (EUR three and six/tCO_2). Among the pilots, Guangdong has witnessed the most dramatic plunge from 68 to CNY 24/tCO_2 (EUR eight to three/tCO_2). Here, the decrease in price is probably due to changes in Guangdong's allocation policy and a possible over-allocation. In July 2014, prices in Beijing also took a sharp jump followed by an immediate drop, mainly due to the sudden increase in trading by covered enterprises under pressure to meet their compliance deadline.

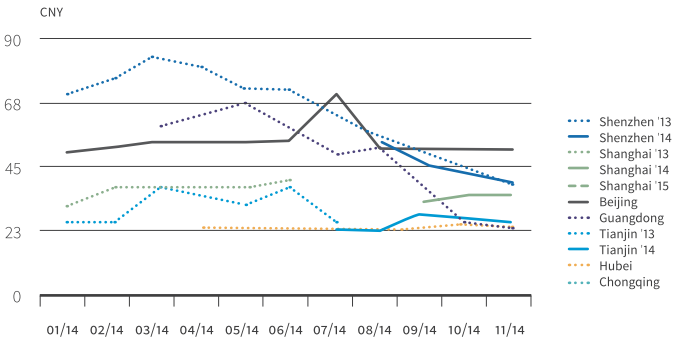


Figure 3 Carbon price development in China's ETS pilots over the course of 2014

Moving to a national ETS

In parallel with the pilot schemes, momentum has been growing in China toward a national ETS. It was clear from the start that the establishment of the domestic ETS would follow a step-by-step process: The pilot schemes were intended to test various ETS designs, before transitioning to a national system. The question now

is whether this process should follow a top-down or bottom-up approach. While discussion of this question is still ongoing, the National Development and Reform Commission (NDRC) has already taken up the development of a national system via a top-down approach. Although a road map for a national system has not yet been formally announced, it has become increasingly clear from the statements of NDRC officials that the top-down approach is favored. The World Bank is currently supporting policymakers in China in designing a national ETS through its Partnership for Market Readiness (PMR) program.

So far, substantial progress has been made in the development of an institutional ETS framework, especially regarding the legislative basis, the MRV mechanism, the national registry, and the establishment of China Certified Emissions Reductions (CCER), a domestically managed offset program similar to the Clean Development Mechanism (CDM) and eligible for both the pilot schemes and the national ETS. As of 1 December 2014, there are already 453 CCER projects in the pipeline (*see Figure 4*), out of which 90 projects have been approved for registration, and about 6.5 million tons of CCERs have been issued.

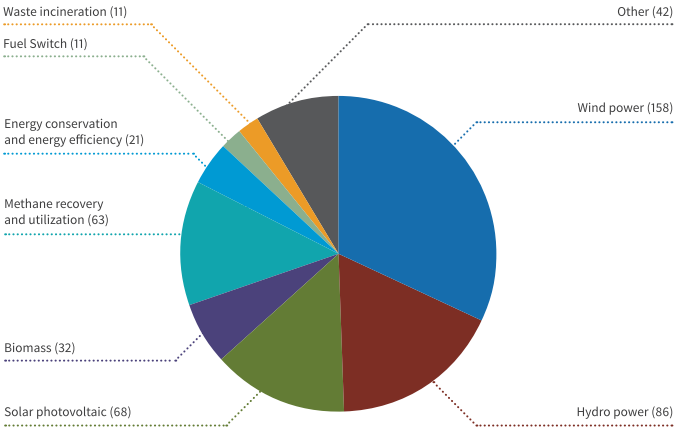


Figure 4 Distribution of CCER projects by type as of 1 December 2014

China's national ETS requires the adoption of national regulations by the State Council and the NDRC. The draft national regulation is anticipated to be submitted to the State Council for review and approval in 2015. The NDRC released the regulation for a national ETS in December 2014, which lays down the framework and ground rules for the national ETS, and mainly focuses on the division of responsibilities between the national and provincial authorities. Additionally, a formal resolution or law, to be passed by the National People's Congress (NPC), will set an important legislative basis for the long term. However, this is not instrumental for starting the national system in 2016. A formal law is not anticipated in the near future, since it is procedurally more cumbersome.

Regarding the MRV mechanism, the first ten sector guidelines have been released, with an additional four sector guidelines awaiting release. Another eight are currently being drafted, and are expected to be completed in 2015. These MRV guidelines, formulated under the auspices of the NDRC, will form the basis of a national MRV system. Additionally, the NDRC is establishing electronic reporting systems to support efficient reporting. In January 2014, the NDRC also circulated a notice to commence the MRV program for large enterprises with annual GHG emissions of more than 13,000 tCO_2e. Such enterprises are requested to report their emissions annually to the competent authorities. However, due to capacity constraints, the progress of reporting in non-pilot regions is not yet ideal. Nevertheless, with an increasing number of capacity building projects underway, a functional MRV system is emerging, although it is a typical learning by doing process.

Another piece of essential ETS infrastructure, the national registry, has already been constructed, and is currently undergoing a test phase. The NDRC is preparing to open the registry first to CCER developers and traders, and it will eventually be open to all ETS participants once the national ETS is in operation.

Considerable effort has been put into capacity building activities to facilitate the establishment of a national ETS. Besides ETS training programs in the pilot regions, which help to reinforce the design, operation and management of the pilot schemes, extensive training is also being held in the non-pilot regions in order to disseminate the basic knowledge of ETS and its operation and management know-how. Past and on-going cooperation between the NDRC and international/foreign entities, such as the UNDP, World Bank, Asian Development Bank, European Union, United Kingdom, Norway, Australia, and others, have been contributing to the development of a successful national ETS.

There are still many questions surrounding the implementation of the national system. Three issues deserve special attention. Firstly, the exact roles of, and the relationship between the NDRC and the local Development and Reform Commissions (DRC), in terms of managing the future national carbon market are still unclear. Secondly, the transition from regional pilot schemes to a national unified carbon market has yet to be specified. In particular, given that the seven pilot schemes have adopted different rules, it is still unclear as to how they can be integrated into a national unified market. Thirdly, the readiness of the non-pilot regions, in terms of joining the national carbon market and implementing national climate policy, will also play a key role.

ETS in the Chinese climate policy mix

China's decision to pursue a low-carbon green development path stems from a mixture of domestic and international imperatives, in particular, the need to upgrade its economic infrastructure while at the same time meeting unprecedented environmental and energy challenges. The new cabinet is giving climate policy a guiding role in terms of social and economic development planning and related policy making, most notably by integrating it into the new round of economic reform, in order to pursue broader socio-economic objectives. China's recent announcement that it will peak its CO_2 emissions by around 2030 further reinforces the role of climate policy in propelling economic reform.

Upgrading economic infrastructure, promoting energy efficiency, and developing and deploying renewable energy are the three main pillars for achieving China's climate policy. ETS has been widely recognized in China as an effective tool for achieving the targets set forth in these three pillars. At the top political level, a market-based approach is considered to be much more cost effective than the traditional command and control measures, and enhancing the role of markets is also in line with the objectives of the new round of economic reform. This resonates with the repeated informal announcements of NDRC officials that the national carbon market will be launched in 2016. With the accelerating development of a national unified carbon market now apparent, it is only fair to say that ETS is expected to become a flagship instrument in China's climate policy mix.

The Tokyo Cap-and-Trade Program
A city-level initiative toward a low carbon society

Masahiro Kimura, Director of the Tokyo Cap-and-Trade Program
Urban and Global Environment Division
Bureau of Environment, Tokyo Metropolitan Government

The Tokyo Cap-and-Trade Program is the world's first urban, and Japan's first mandatory, emissions trading system. It was launched in 2010 and focuses on regulating emissions from urban facilities such as office buildings. A significant share of CO_2 emissions in Tokyo stem from the commercial sector (*Figure 1*), which have substantially increased since 1990. Under the Tokyo Cap-and-Trade Program, large offices and factories were required to reduce emissions by six to eight percent in the first phase (FY2010–2014); in the second phase (FY2015–2019), the target was increased to 15–17%. Facilities can reduce emissions themselves or buy credits to meet their obligations. By the end of FY2012, average emissions had been reduced by 22% compared to base-year emissions.[1]

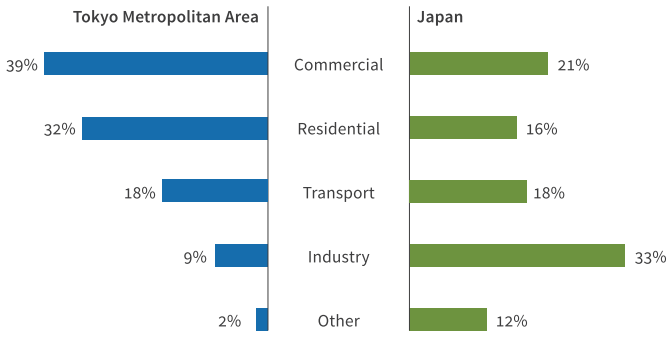


Figure 1 CO_2 emissions in the Tokyo Metropolitan Area and Japan by sector in FY2012 (%)

Enabling factors in introducing a city-wide Cap-and-Trade program

Two main factors were critical in making the Tokyo Cap-and-Trade Program possible. Firstly, the Tokyo Metropolitan Government (TMG) Bureau of Environment has a lot of experience in taking the initiative on emerging environmental issues ahead of the national government, such as air pollution from factories, waste problems, and car-exhaust pollution. Greenhouse gas (GHG) emissions in Tokyo totaled 69.6 million tons in FY2012. This volume is comparable to the national emissions of some countries in Northern Europe. The emissions in Tokyo are therefore significant. Consequently, we think it is our responsibility to reduce CO_2 emissions, and to take decisive action against global warming.

The second factor is the leadership of the governor at the time of the program's establishment, and the understanding and cooperation of the Tokyo Metropolitan Assembly. The governor had a good track record of introducing strict environmental measures on vehicle emissions, despite strong opposition. Passionate about addressing climate change, he was instrumental in submitting a bill introducing the emissions trading system to a meeting of the Assembly in June 2008. The Tokyo Metropolitan Assembly unanimously passed the bill after constructive discussion.

Our experience with introducing the Tokyo Cap-and-Trade Program also demonstrates the importance of involving major stakeholders and corporate decision makers as early in the process as possible. By engaging them at the design stage, there is a much higher chance that they will get on board. Collecting as much data as possible about facility energy usage is of huge importance as well. In our case, the Tokyo CO_2 Emission Reduction Program, launched in 2002 (later revised in 2005), laid the ground work for the Tokyo Cap-and-Trade Program. It required large facilities in the commercial and industrial sectors to report their emissions data to TMG, and to develop an emissions reduction plan. This program played a crucial role in the development of the cap-and-trade program by accumulating data and experience, and also building relationships with facility managers. All this enabled TMG to set fair and effective emission caps, and to equitably allocate emission allowances.

The role of the Tokyo Cap-and-Trade Program in the national and metropolitan climate policy mix

Tokyo is one of the world's largest and most influential global cities, comparable with New York and London. The TMG is also the largest sub-national government in Japan, serving a population of approximately 13 million and accounting for 19 % of Japan's GDP in 2012. The Tokyo Cap-and-Trade Program has therefore been introduced into the heart of Japan's largest economic center, which is at the same time the heart of the Japanese economy. The impact that the Tokyo Cap-and Trade Program will have on Japan's measures to counter climate change is therefore even greater than Tokyo's share of the national economy.

The introduction of the Tokyo Cap-and-Trade Program and its subsequent achievements has had a great impact on domestic public opinion. The program has received numerous awards for best practices in urban policy, including the Government Leadership Award from the World Green Building Council in 2011 and the C40 & Siemens City Climate Leadership Award in 2013. It has also been the subject of various media reports and is highly esteemed within the Tokyo Metropolitan Assembly.

The Tokyo Cap-and-Trade Program is at the core of Tokyo's climate policy. This program covers 20 % of CO_2 emissions in Tokyo and is the only mandatory reduction measure across all sectors. Several additional policies complement and support the Tokyo Cap-and-Trade Program. The “Small and Mid-Size Facility Credits” system features a simplified monitoring, reporting and verification procedure, designed to encourage small and mid-size facilities to participate in the Tokyo Cap-and-Trade Program. Small and mid-size

1 Base-year emissions are calculated for every facility individually based on the average emissions of three consecutive fiscal years. Covered facilities are required to select consecutive years between FY2002–FY2007.

facilities in Tokyo can implement their reduction programs by updating to energy-efficient equipment following certification standards set by the TMG. To date, 20,000 "Small and Mid-Size Facility Credits" have been issued across 367 cases. In addition, the Tokyo Cap-and-Trade Program puts priority on offset credits generated from renewable energy in order to increase the renewable energy supply. Credits for 230,000 tons of CO_2 have been issued so far.

Another program that plays an important role in the transition toward a low-carbon society is Tokyo's Green Building Program. It is independent from the Tokyo Cap-and-Trade Program, and requires the submission of environmental plans for any new building construction or extension of existing buildings with a total floor area exceeding 5,000 square meters.

The main accomplishments of the Tokyo Cap-and-Trade Program

The results from FY2011 and FY2012 were very encouraging. In 2012, CO_2 emissions from entities under the Tokyo Cap-and-Trade Program had been reduced by 22 % below base-year levels (*Figure 2*). We had been expecting a large drop in emissions during 2011 due to the Great East Japan Earthquake and the resulting power crisis, but the fact that these savings continued into 2012, while business activity returned to normal, is very positive news. It shows that companies have continued to implement and improve on the measures and recommendations that we had in place before the crisis. In addition, since many companies had already begun to take efforts toward reducing energy usage, they could overcome the power shortage after the earthquake more easily.

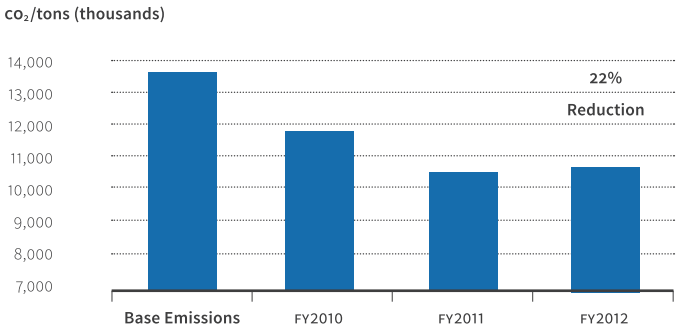


Figure 2 GHG emissions from facilities covered by the Tokyo Cap-and-Trade Program

Looking at the data from another point of view, we can compare CO_2 emissions under the Tokyo Cap-and-Trade Program with average emissions in Japan. Compared to the national average, buildings in the Tokyo area have achieved considerably greater reductions in the period after the Tokyo Cap-and-Trade Program was implemented (*Figure 3*).

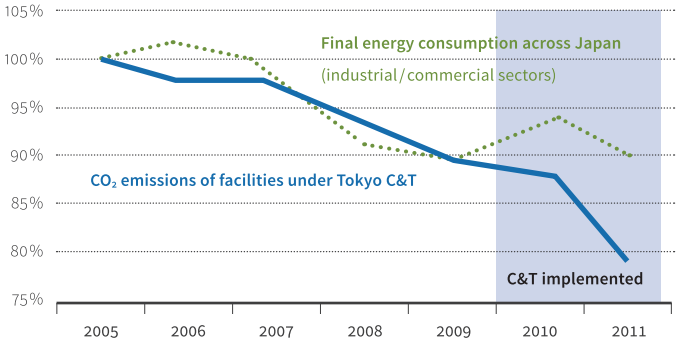


Figure 3 Comparison of CO_2 emissions by facilities under the Tokyo Cap-and-Trade Program and national energy consumption trends

Future prospects of the Tokyo Cap-and-Trade Program

Looking to the future, the Tokyo Cap-and-Trade Program will continue playing a prominent role in Tokyo's climate change policy. In 2015, the second compliance period starts with a cap that is significantly more ambitious than in the previous period. To achieve this goal, we set the compliance factors during this period as shown in *Figure 4*.

CATEGORY		COMPARED TO BASE-YEAR EMISSIONS	
		FIRST COMPLIANCE PERIOD (FY2010–2014)	SECOND COMPLIANCE PERIOD (FY2015–2019)
I-1	Office buildings, etc. and district heating and cooling plant facilities (excluding facilities which fall under category I-2)	–8%	–17%
I-2	Office buildings, etc. facilities which are heavy users of district heating and cooling plants, etc.	–6%	–15%
II	Facilities other than those which fall under category I-1 or category I-2 (factories, etc.)	–6%	–15%
TOP LEVEL	High energy efficiency facility as a Top Level/Near-Top Level Facility	½ or ¾ of the compliance factor	

Figure 4 Compliance factors for the Tokyo Cap-and-Trade Program-covered entities

In return for these stringent compliance factors, we will offer several concessions starting from the second compliance period. The first concession is for small and medium-sized enterprises, which will not be subject to emissions reduction obligations. Also, some facilities that require a constant temperature, such as hospitals, water supply infrastructure facilities and warehouses, will receive reduced compliance factors. Furthermore, compliance factors from the first compliance period will apply for facilities that become compliance entities starting from the second period.

Finally, we have created a new mechanism, which encourages covered entities to use low-carbon electricity. It will introduce a new framework where the emission factors of the contracted electricity suppliers are reflected to a certain extent in the calculation of the emissions of the covered facilities. Therefore, if a facility uses low-carbon electricity, the resulting emissions reduction will be calculated and subtracted from their emissions. We believe that this mechanism will lead to an increase in the supply of low-carbon electricity.

In 2020, Tokyo will host the Summer Olympic and Paralympic Games. As this implies a significant amount of development for the host city, we are now preparing to make the Games environmentally friendly, which will further promote the introduction of high-efficiency and energy-saving equipment, and ensure that large developments comply with advanced environmental requirements.

New Zealand's ETS
Design principles and evolution

Kay Harrison, Director, Climate Change
Ministry for the Environment, New Zealand

The New Zealand Emissions Trading Scheme (NZ ETS) is the primary policy tool for climate change action. It sits alongside a number of other policies and measures that support the reduction of our greenhouse gas emissions. The NZ ETS has evolved over the past six years of its operation. With a number of key milestones expected over the next 18 months, such as a transition to a domestic-only scheme from June 2015, this trend looks set to continue. The NZ ETS will continue to evolve in light of the role it plays in New Zealand's Intended Nationally Determined Contribution. Additionally, preparations for a review of the NZ ETS, and an exploration of options to auction allowances, could also pave the way for further changes.

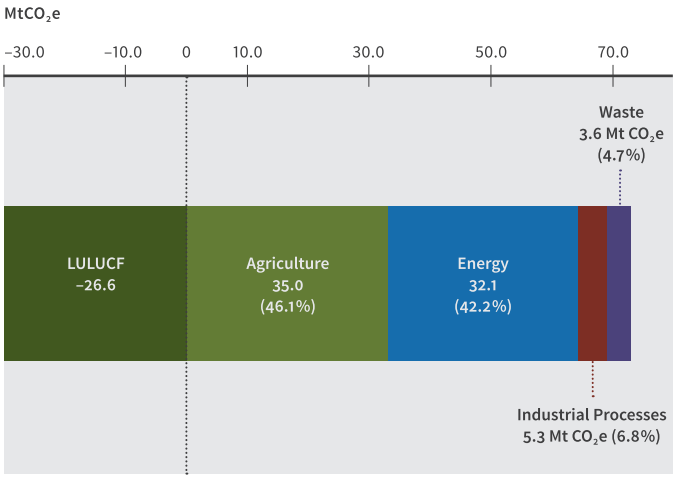


Figure 1 New Zealand's 2012 Emissions Profile

"We have a unique emissions profile, with almost 50 % of our emissions coming from on-farm methane and nitrous oxide, a large number of forest sinks and an already high percentage of renewable electricity generation (75 %)."

Rationale for introducing the NZ ETS

We have a unique emissions profile for a developed country, with almost 50 % of our emissions coming from on-farm methane and nitrous oxide (where there are limited abatement opportunities currently available), and a large amount of forest sinks.

When considering our options for the best-fit policy, we looked into both an emissions trading scheme (ETS) and a carbon tax. The government decided to implement the NZ ETS instead of a carbon tax for a number of reasons including:

- The ability to incorporate the cyclical nature of our forestry emissions;
- The flexibility for New Zealand firms to reduce or offset their emissions;
- Easy links into global emission reduction efforts; and
- Support for the instrument during public consultation.

Successes of the NZ ETS

The NZ ETS has enabled us to meet our emissions reduction target for the first commitment period of the Kyoto Protocol, primarily through our forestry sector. It has also placed us on track to meet our 2020 emissions reduction target under the UNFCCC. The NZ ETS covers all sectors of our economy, with agriculture facing reporting obligations, and has relatively broad political and business support.

The lessons we have learned through the past six years of NZ ETS operation have provided us with unique knowledge and expertise for input into carbon market conversations around the world. Particular areas of expertise include:

- Factoring agriculture and forestry into an ETS;
- Establishing, running and reviewing unit registries;
- Assisted compliance, to help reduce the cost burden of ETS on businesses; and
- Experience with international carbon markets.

We also have a number of in-country UNFCCC expert reviewers.

NZ ETS design features

The NZ ETS has a number of key design features, tailored to suit our national circumstances, which make it a unique scheme. Given New Zealand's unique emissions profile, forestry has been included to help manage New Zealand's fast growing forestry cycles (28 years on average). It is treated as both a source of offsets for carbon sequestration and as a source of liabilities when these forests are harvested. Equally, agriculture also faces reporting, although

no surrender obligations, making New Zealand the first country to include agriculture within an ETS. In addition, the point of obligation is placed high up the supply chain to minimize administrative costs and reduce complexity.

The NZ ETS has no fixed cap, although the total issuance of New Zealand Units (NZUs) still remains well below New Zealand's Kyoto carbon budget. There are three main reasons why the NZ ETS has no fixed cap:

- The NZ ETS provides a price incentive for planting trees and promotes carbon sequestration. It therefore does not make sense for us to place a cap on the number of units in the NZ ETS, and thereby a cap on carbon sequestration.
- The NZ ETS has been designed around the principles of the Kyoto Protocol, including the principle of supplementarity, as well as the idea that emissions reductions sourced overseas are worth as much as domestic emissions reductions.
- The New Zealand government wants to ensure that the cost of emissions reductions is similar to that in other countries, so that it does not unreasonably affect our citizens. Due to New Zealand's small market and emissions profile (a high share of agricultural emissions for which there are few cost-effective mitigation options currently available, and an already high percentage of renewable electricity generation, which was at 75 % in 2013), access to international carbon markets is integral to the NZ ETS design.

Finally, transitional measures were implemented to assist firms with the transition to having a price placed on carbon. These include one unit for two tons of emissions surrender obligation for non-forestry sectors and a NZD 25 (EUR 16) fixed price option, which effectively acts as a price ceiling. These measures were extended following the 2011 NZ ETS Review to allow households and businesses to manage the effects of the global financial crisis.

"NZ ETS is New Zealand's primary policy tool for climate change action, placing us on track to meet our 2020 emissions reduction target."

Evolution of the NZ ETS

The role the NZ ETS has played in New Zealand's climate change policy mix has evolved in response to a number of domestic and international developments over the past six years. More broadly, regular reviews of the NZ ETS, which ensure it remains fit-for-purpose, have contributed to changes in its design. The first review took place in 2011 and the scope of the next review will be decided in 2015. Specifically, the entry of different sectors into the NZ ETS has taken account of the availability of options for achieving emissions reductions and the complexity of reporting requirements for each sector.

Furthermore, from 31 May 2015, NZ ETS participants will have restricted access to importing Kyoto units, and will not be allowed to carry-over units from the first Kyoto commitment period for use in the NZ ETS after that date. This will effectively transition the NZ ETS to a domestic-only scheme from June 2015. The government took this decision due to a combination of:

- The change in international rules regarding access to Kyoto units for countries like New Zealand who are taking a 2013-2020 target under the UNFCCC rather than a second commitment period target under the Kyoto Protocol;
- The significant price difference between New Zealand Units (NZUs) and Kyoto units; and
- The number of NZUs (mostly from the forestry sector) banked in private accounts in the NZ ETS.

There are currently sufficient NZUs banked to ensure the efficient operation of the NZ ETS for several years. The government will review the use of international units to ensure market liquidity, should the need arise, or when international market conditions are better suited to New Zealand's domestic circumstances. We are also currently investigating auctioning units as an option to increase the liquidity of the NZ ETS.

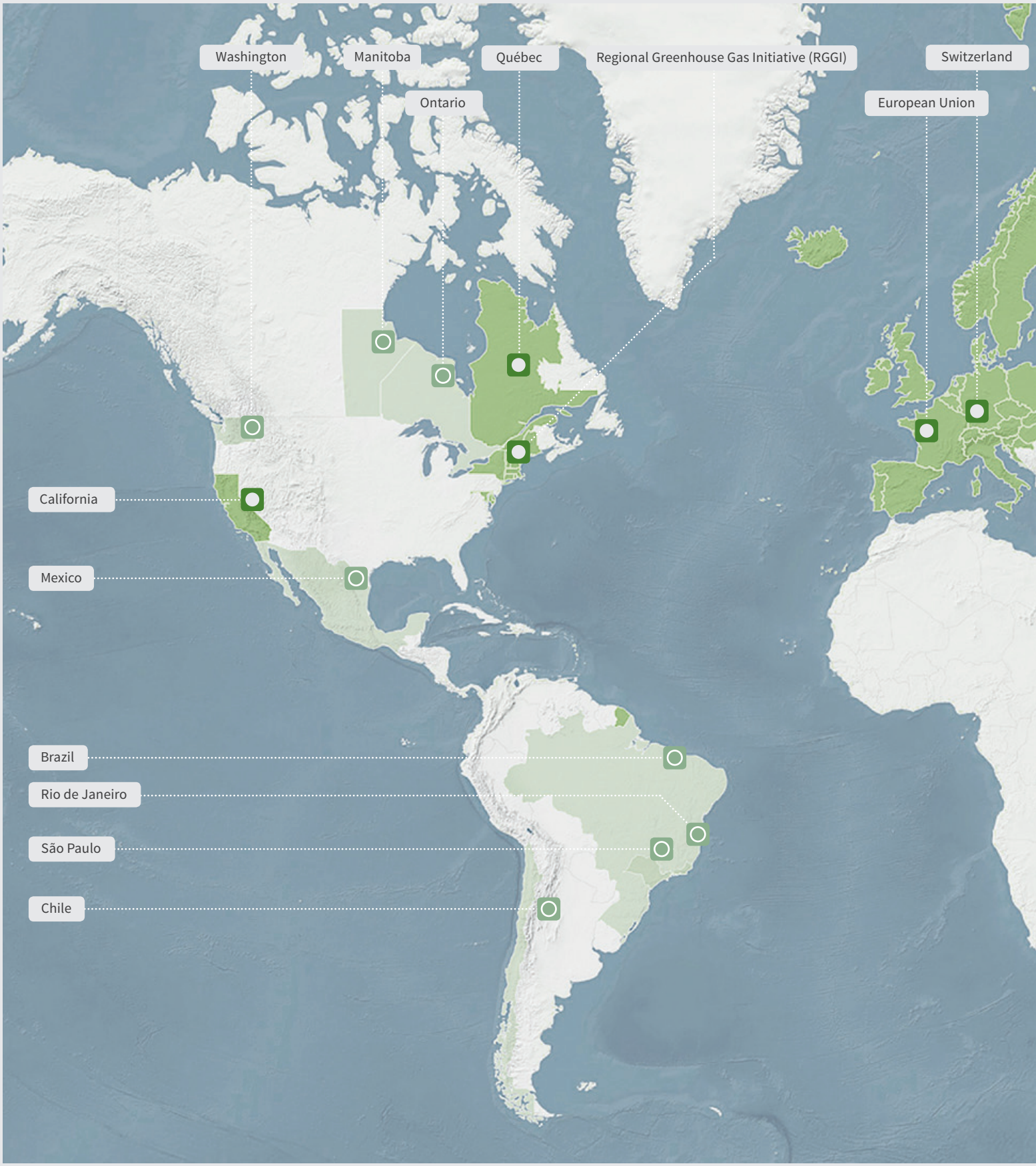
"We see international carbon markets as a crucial part of a successful post-2020 UNFCCC agreement"

Due to the cyclical nature of our forestry sector, the small size of our market and our commitment to achieving an inclusive and robust new international agreement, we see international carbon markets as a crucial part of a successful post-2020 UNFCCC agreement.

ETS Map

state of play of cap-and-trade worldwide

The ICAP ETS map depicts emissions trading systems (ETS) for greenhouse gases (GHG) in force, scheduled or under consideration around the world. 17 systems are in force to date, with China making rapid progress on its national ETS, expected to launch as early as 2016. Last but not least, 14 governments at various levels are considering an ETS to mitigate their GHG emissions, including Brazil, Turkey and Washington state.

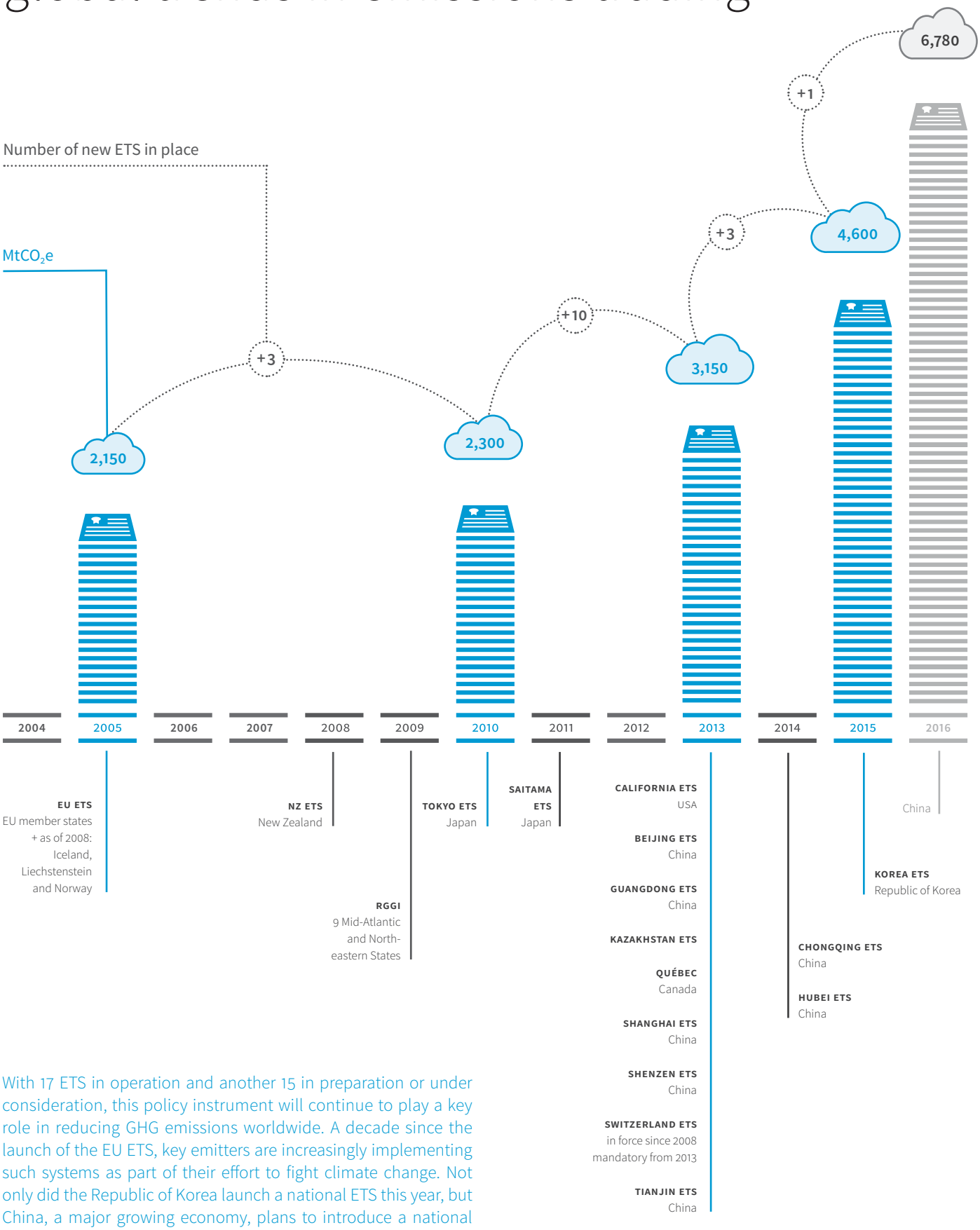


A continuously updated, interactive version of the ETS map with detailed information on all systems is available at:

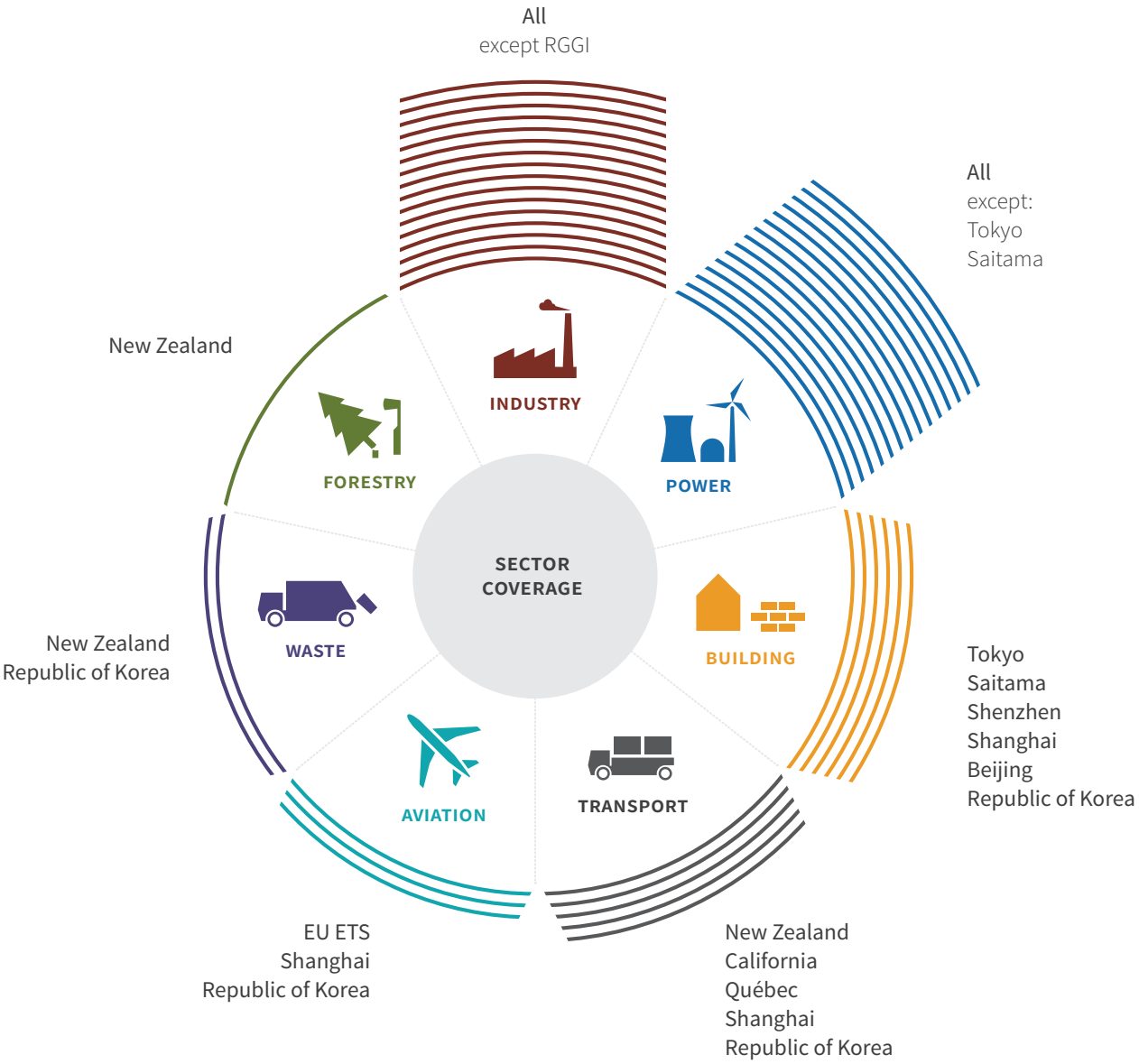
www.icapcarbonaction.com

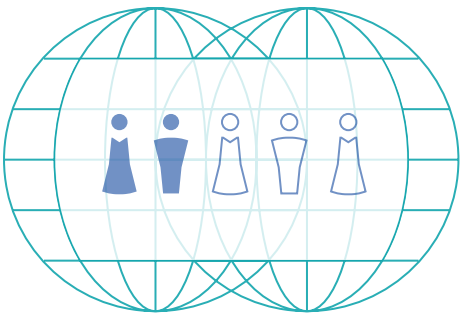
ETS in force
ETS scheduled
ETS considered

At a Glance
global trends in emissions trading



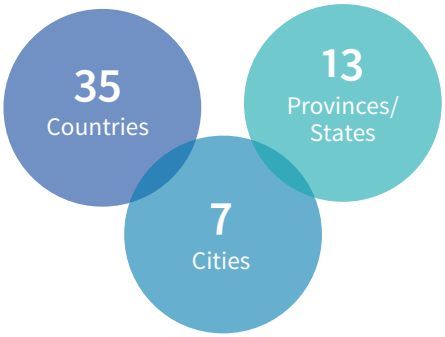
With 17 ETS in operation and another 15 in preparation or under consideration, this policy instrument will continue to play a key role in reducing GHG emissions worldwide. A decade since the launch of the EU ETS, key emitters are increasingly implementing such systems as part of their effort to fight climate change. Not only did the Republic of Korea launch a national ETS this year, but China, a major growing economy, plans to introduce a national carbon market as early as 2016. Together with the expanded coverage of existing schemes, this has contributed to a continued growth in the volume of global emissions regulated by Cap-and-Trade systems.



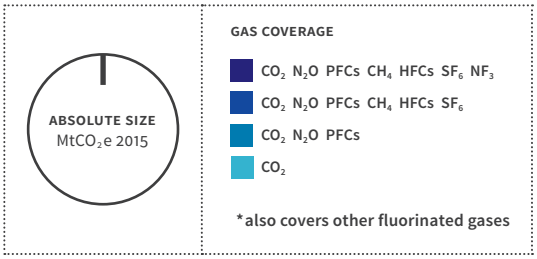


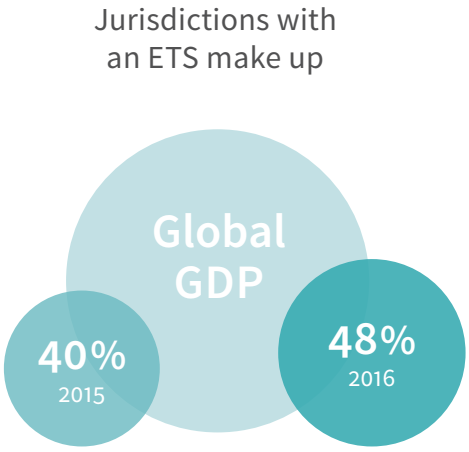
2 out of 5 people worldwide
live in a jurisdiction either considering, preparing or operating an ETS.

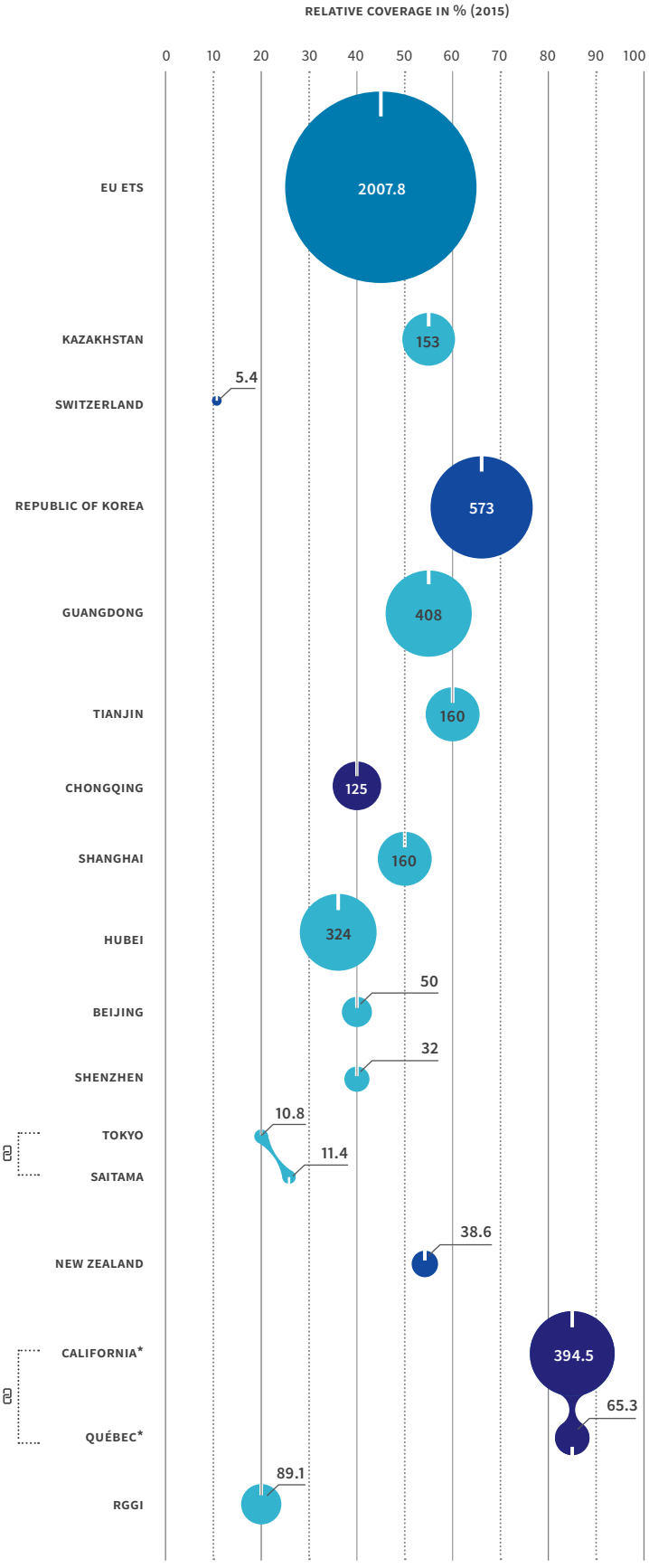
ETS can be found across
4 continents



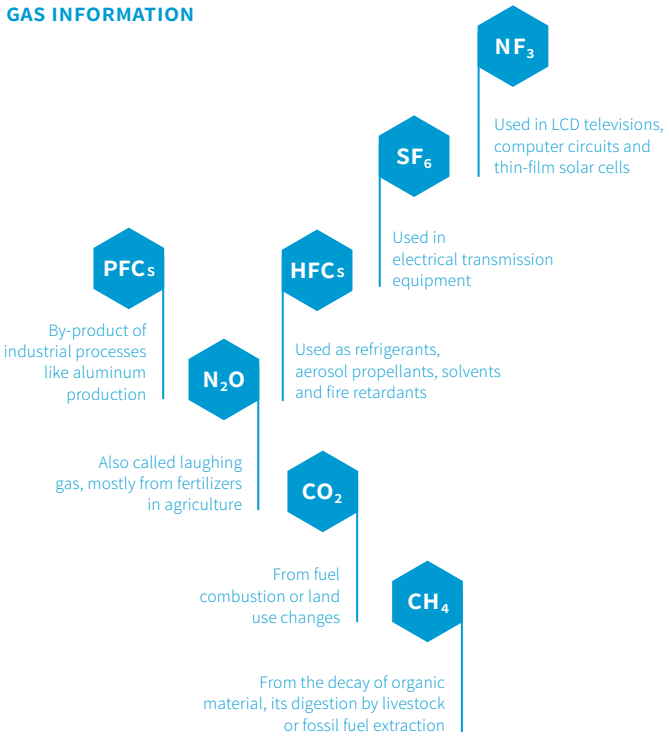
There is no one-size-fits-all answer in designing and implementing an ETS. This policy instrument can be tailored to fit a variety of economic and policy contexts. They can be successfully applied to smaller jurisdictions, like Québec and Delaware, to megacities or provinces that are economically the size of countries, like Tokyo and California, and to large and diverse regions like the EU. As the graphics on this double page illustrate, an ETS has considerable flexibility in terms of system size, gas and sector coverage. Programs can be adapted to suit rapidly developing economies with large industrial sectors, as well as stable and diversifying economies with significant residential and commercial sectors.







GAS INFORMATION



Diving into the Details

planned and operating emissions trading systems around the world

Europe and Central Asia

The EU ETS is turning ten in 2015. It is going through a reform and in parallel, a link with the Swiss ETS is being negotiated. Meanwhile, neighboring countries are increasingly considering the introduction of Cap-and-Trade systems.

ETS in force
ETS scheduled
ETS considered

European Emissions Trading Sytem

in force

28 EU MEMBER STATES AND THREE EUROPEAN ECONOMIC AREA-EUROPEAN FREE TRADE ASSOCIATION (EEA-EFTA) STATES: ICELAND, LIECHTENSTEIN AND NORWAY

EMISSIONS COVERAGE ($MTCO_2E$, 2015)	LIABLE ENTITIES
2,007.8	11,500 +

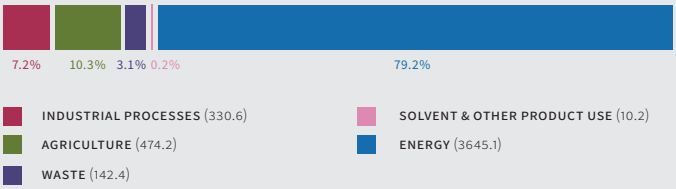
GAS COVERAGE	ALLOCATION	OFFSETS & CREDITS
SEVERAL GASES	AUCTIONING & FREE ALLOCATION	INTERNATIONAL OFFSETS

The European Emissions Trading System (EU ETS) is the world's largest and oldest emissions trading system, and plays a major role in the EU's efforts to reduce GHG emissions. Following a significant allowance surplus and a subsequent price drop as a result of the economic crisis, there has been extensive debate on the need for, and nature of, EU ETS reform. In October 2014, European leaders adopted a 43% GHG emissions reduction target from 2005 levels for EU ETS sectors by 2030 and agreed to stabilize the EU ETS in line with the European Commission's proposal to establish a Market Stability Reserve. This would address the current surplus of allowances and strengthen the ETS' resilience to external shocks in the long term.

BACKGROUND INFORMATION

OVERALL GHG EMISSIONS (EXCL. LULUCF) 4611.6 $MtCO_2e$ (2012)

OVERALL GHG EMISSIONS BY SECTOR $MtCO_2e$ (2012)



OVERALL GHG REDUCTION TARGET **BY 2020:** 20% below 1990 GHG levels; **BY 2030:** at least 40% below GHG 1990 levels; **BY 2050:** aspirational target 80 to 95% below 1990 GHG levels.

ETS SIZE

ETS CAP **PHASES I AND II (2005–2012):** Decentralized cap-setting, the EU cap resulted from the aggregation of National Allocation Plans of each Member State. **PHASE III (2013–2020):** Centralized EU-wide cap for stationary sources: 2,040 $MtCO_2e$ in 2013, reduced by 1.74% annually. Aviation sector cap: 210 $MtCO_2e$/year for 2013–2020 (not decreasing). **PHASE IV (2021–2028):** The Commission proposal calls for the annual reduction factor for EU-wide stationary sources to be increased to 2.2%.

EMISSIONS COVERAGE

GHG COVERED CO_2, N_2O, PFCs

SECTORS & THRESHOLDS **PHASE I (2005–2007):** Power and heat generation (>20 MW annual thermal capacity per installation), industry (various thresholds): oil refineries, coke ovens, iron and steel plants and production of cement, glass, lime, bricks, ceramics, pulp, paper and board. **PHASE II (2008–2012):** In addition to Phase I sectors, commercial aviation starting in 2012 (>10,000 t CO_2/year) (see below). **PHASE III (2013–2020):** In addition to Phase II sectors, CCS installations, production of petrochemicals, ammonia, non-ferrous metals, gypsum and aluminum, nitric, adipic and glyoxylic acid (various thresholds). **INTERNATIONAL AVIATION:** Emissions from international aviation have been included in the EU ETS since 2012. In April 2013, the EU temporarily suspended enforcement of the EU ETS requirements for flights operating from or to non-European countries, while continuing to apply the legislation to flights within and between countries in the EEA. EU institutions will decide on how to regulate aviation emissions within the EU ETS after 2016 based on progress within the International Civil Aviation Organization (ICAO) on developing a global market-based mechanism to address international aviation emissions from 2020.

POINT OF REGULATION Downstream

NUMBER OF ENTITIES More than 11,500 heavy energy-using installations in power generation and the manufacturing industries. Aircraft operators are covered for all flights. However, a temporary exemption applies to flights between the EEA and a third country.

PHASES AND ALLOCATION

TRADING PERIODS **PHASE I:** three years (2005–2007); **PHASE II:** five years (2008–2012); **PHASE III:** eight years (2013–2020); **PHASE IV:** eight years (2021–2028).

ALLOCATION **PHASE I (2005–2007):** Nearly 100% free allocation through grandfathering. Some Member States used auctioning and some used benchmarking. **PHASE II (2008–2012):** Similar to Phase I with some benchmarking for free allocation and some auctioning in eight EU Member States (about three percent of total allowances). **PHASE III (2013–2020)**: In 2013, about 40% of total allowances were auctioned, with different allocation rules for the electricity sector, manufacturing and aviation: **ELECTRICITY SECTOR:** 100% auctioning with optional derogation for the electricity sector in new Member States. According to the European Council conclusion, Member States with a GDP per capita below 60% of the EU average may also continue giving free allowances to the energy sector up to 2030. **MANUFACTURING SECTOR:** Free allocation is based on benchmarks. Sub-sectors deemed not at risk of carbon leakage will have free allocation phased out gradually from 80% of the benchmarks in 2013 to 30% by 2020. Sub-sectors deemed at risk of carbon leakage will receive free allocations at 100% of the pre-determined benchmarks. According to the Commission proposal for Phase IV, this will continue after 2020, as long as no comparable efforts are undertaken in other major economies.

AVIATION SECTOR: In 2012, 85% of allowances were allocated for free based on

benchmarks. For Phase III (2012–2020): 15% of allowances are auctioned and 82% allocated for free based on benchmarks. The remaining three percent constitutes a special reserve for new entrants and fast growing airlines.

BACK-LOADING: As a short-term measure to counter the current oversupply of allowances in the EU ETS, the Commission is postponing the auctioning of 900 million allowances until 2019–2020 to allow demand to pick up. Back-loading does not reduce the overall number of allowances to be auctioned during phase III, only the distribution of auctions over the period. In 2014, the auction volume will be reduced by 400 million allowances, in 2015 by 300 million, and in 2016 by 200 million.

NEW ENTRANTS RESERVE: Five percent of the total allowances are set aside to assist new installations coming into the EU ETS or covered installations whose capacity has significantly increased since their free allocation was determined.

COMPLIANCE PERIOD One year, from May to April

FLEXIBILITY

BANKING AND BORROWING Unlimited banking allowed since 2008. Borrowing is not allowed.

OFFSETS AND CREDITS **PHASE I (2005–2007):** Unlimited use of Clean Development Mechanism (CDM) and Joint Implementation (JI) credits.

PHASES II (2008–2012) AND III (2013–2020):

QUALITATIVE LIMIT: Most categories of CDM/JI credits are allowed (restrictions vary across different EU Member States), no credits from the land use, land-use change and forestry (LULUCF) and nuclear power sectors. Strict requirements apply for large hydro projects exceeding 20 MW.

Since the start of Phase III (1 January 2013), additional restrictions apply for CDM: Newly generated (post-2012) international credits may only come from projects in Least Developed Countries (LDCs). Projects from industrial gas credits (projects involving the destruction of HFC-23 and N_2O) are excluded regardless of the host country.

Credits issued for emission reductions that occurred in the first commitment period of the Kyoto Protocol will only be accepted until 31 March 2015.

QUANTITATIVE LIMIT: In Phase II (2008–2012), 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 III (2013–2020).

The total use of credits for Phase II and III may amount up to 50% of the overall reduction under the EU ETS in that period (ca. 1.6 billion tons CO_2e). (See ETS map on ICAP website for further details).

PHASE IV (2021–2028): On 22 January 2014, the Commission proposed to exclude international credits from the EU ETS starting in Phase IV.

PRICE MANAGEMENT PROVISIONS The EU ETS Directive provides for measures in the event of excessive price fluctuations.

In October 2014, the European Council agreed to adopt an instrument to stabilize the market in line with the Commission's proposal for a Market Stability Reserve at the beginning of 2021. This would address imbalances in supply and demand on the European carbon market by adjusting volumes for auctions, rather than directly managing prices. The Reserve would operate on pre-defined rules with no discretion for Member State or Commission intervention. A decision on the Reserve is expected in 2015.

COMPLIANCE

MRV A monitoring plan is required for every installation (approved by competent authority). Annual self-reporting based on harmonized electronic templates prepared by the Commission. Verification by independent accredited verifiers required before 31 March each year.

In addition, the Commission has developed specific monitoring and reporting guidelines for aircraft operators, as well as EU ETS verification guidelines for the aviation sector. MRV will take place on the basis of ton-kilometers.

A regulation for the MRV of emissions from shipping is expected to be adopted shortly by the Council and Parliament.

ENFORCEMENT 100 EUR / tCO_2e for each excess ton of GHG emitted. The name of the non-compliant entity is published.

OTHER INFORMATION

INSTITUTIONS INVOLVED The European Commission and the relevant authorities of the 28 Member States, Iceland, Liechtenstein and Norway

LINKAGE WITH OTHER SYSTEMS Based on a mandate from the Council, the Commission is negotiating with Switzerland on linking the EU ETS with the Swiss ETS.

Swiss Emission Trading System

in force

EMISSIONS COVERAGE ($MTCO_2E$, 2015)	LIABLE ENTITIES
5.4	55

GAS COVERAGE	ALLOCATION	OFFSETS & CREDITS
SEVERAL GASES	AUCTIONING & FREE ALLOCATION	INTERNATIONAL OFFSETS

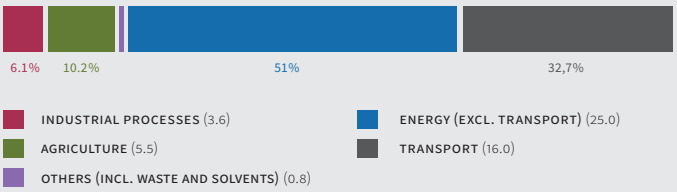
The Swiss ETS started in 2008 with a five year voluntary phase as an alternative option to the CO_2 levy on fossil fuels. Revised regulations entered into force on 1 January 2013. The system subsequently became mandatory for large, energy intensive industries. It now covers about 10% of the country's total GHG emissions. In the 2013–2020 mandatory phase, participants in the ETS are exempt from the CO_2 levy.

Switzerland is currently negotiating with the EU on linking the Swiss ETS with the EU ETS. While many elements of the Swiss ETS have been designed to match provisions in the EU ETS (e.g., allocation benchmarks), current negotiations may have further impact on the Swiss ETS.

BACKGROUND INFORMATION

OVERALL GHG EMISSIONS (EXCL. LULUCF) 51 $MtCO_2e$ (2012)

OVERALL GHG EMISSIONS BY SECTOR $MtCO_2e$ (2012)

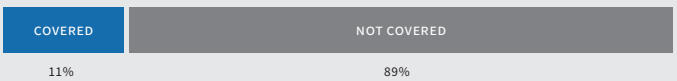


OVERALL GHG REDUCTION TARGET BY 2020: At least 20% reduction below 1990 GHG levels (unconditional, domestic target). Switzerland may commit to reduce its emissions by 40% depending on future international agreements.

ETS SIZE

ETS CAP VOLUNTARY PHASE (2008–2012): Each participant received its own entity-specific reduction target. **MANDATORY PHASE (2013–2020):** Overall cap of 5.63 $MtCO_2e$ (2013), to be reduced annually by 1.74%, to 4.9 $MtCO_2e$ in 2020. In 2015, the cap therefore amounts to about 5.44 $MtCO_2e$.

EMISSIONS COVERAGE



GHG COVERED CO_2, NO_2, CH_4, $HFCs$, NF_3, SF_6 and theoretically $PFCs$ (but there is no production of primary aluminum in Switzerland).

SECTORS & THRESHOLDS MANDATORY PARTICIPATION: Industries listed under annex 6 of the revised CO_2 Ordinance (25 sub-sectors). They generally have a total rated thermal input of >20MW. **POSSIBLE VOLUNTARY OPT-IN:** Industries a) listed under Annex 7 of the revised CO_2 Ordinance (20 sub-sectors) and b) with a total rated thermal input of >10MW. One-time binding notification must be given before 1 June 2013 for industries currently above the threshold. Industries that may become eligible for participation in the future must then register within six months after they have reached the threshold. **POSSIBLE OPT-OUT:** Industries with a total rated thermal input of >20MW, but yearly emissions <25,000 tCO_2e/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.

POINT OF REGULATION Downstream

NUMBER OF LIABLE ENTITIES 55

In the Swiss ETS, liable entities are defined at the business level.

PHASES AND ALLOCATION

TRADING PERIODS VOLUNTARY PHASE: five years (2008–2012)
MANDATORY PHASE: eight years (2013–2020).

ALLOCATION VOLUNTARY PHASE (2008–2012): Each participant was granted free allocation of allowances covering emissions up to their own entity-specific emissions target. **MANDATORY PHASE (2013–2020):** 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, 80% free allocation and in 2020 this will be reduced to 30% free allocation. There is no free allocation for the power sector. An overarching correction factor will be applied if the benchmarked allocation exceeds the overall emissions cap. Allowances that are not allocated for free are auctioned. Five percent of the allowances are set aside in the New Entrants Reserve.

COMPLIANCE PERIOD One year (May to April)

FLEXIBILITY

BANKING AND BORROWING Surplus of allowances from the voluntary phase (2008–2012) have been converted into 2013–2020 allowances.

OFFSETS AND CREDITS QUALITATIVE LIMIT: Most categories of credits from CDM projects in projects in LDCs are allowed. Credits from CDM and JI projects from other countries are eligible only if registered and implemented before 31 December 2012. **QUANTITATIVE LIMIT:** Industries that participated in the voluntary phase (2012–2020): For the whole period, the maximum amount of offsets allowed into the system equals 11% of emissions allowances allocated in the voluntary phase (2008–2012) minus offset credits used in that same time period.

In exceptional cases, companies may submit a request to the Federal Office of the Environment to increase this limit. They must prove that they would otherwise not be able to comply with their liability without major economic impairment and commit to acquire as many European allowances as the additional international ones.
Industries entering the Swiss ETS in the mandatory phase (2013–2020): 4.5% of their actual emissions in 2013–2020.

COMPLIANCE

MRV Monitoring plans are required for every installation (approved by a competent authority) no later than three months after the registration deadline. Entities have to submit an annual monitoring report, based on self-reported information (by 31 March). The Federal Office for the Environment may order third-party verification of the monitoring reports.
ENFORCEMENT Fine of 125 CHF/tCO_2 (103.89 EUR/tCO_2). In addition to the fine, entities must surrender missing allowances and/or international credits in the following year.

OTHER INFORMATION

INSTITUTIONS INVOLVED The Federal Office of the Environment and the National Emissions Trading Registry
LINKS WITH OTHER SYSTEMS Switzerland is currently negotiating with the EU on linking the Swiss ETS with the EU ETS. Linking talks were put on hold due to the vote for the reintroduction of immigration quotas in Switzerland in February 2014, however, a sixth round of negotiations between the Swiss ETS and EU ETS took place in September 2014. While many elements of the Swiss ETS have been designed following the EU ETS (e.g. allocation benchmarks), current negotiations may have further impact on the Swiss ETS.

Kazakhstan Emission Trading System

in force

EMISSIONS COVERAGE ($MTCO_2E$, 2015)	LIABLE ENTITIES
153.0	166

OFFSETS & CREDITS	GAS COVERAGE	ALLOCATION
DOMESTIC OFFSETS	CO_2 ONLY	FREE ALLOCATION

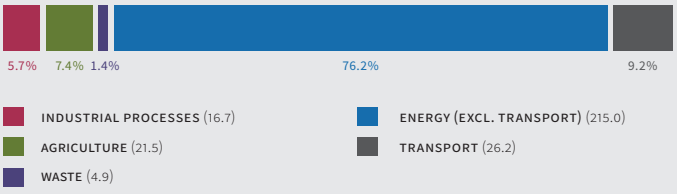
Kazakhstan launched an emissions trading system in January 2013. After a one-year pilot phase, the program entered its second two-year phase in January 2014.

The groundwork for the development of a Cap-and-Trade program was laid out in 2011 through amendments and additions to Kazakhstan's environmental legislation. Kazakhstan is currently working on improving these underlying laws. Amendments to the Environmental Code and additional supporting regulations are expected to enter into force this year.

BACKGROUND INFORMATION

OVERALL GHG EMISSIONS (EXCL. LULUCF): 284.4 $MtCO_2e$ (2012)

OVERALL GHG EMISSIONS BY SECTOR $MtCO_2e$ (2012)



OVERALL GHG REDUCTION TARGET BY 2020: 15% below 1992 GHG levels

ETS SIZE

ETS CAP PHASE I (2013): 147 $MtCO_2$ (+ a reserve of 20.6 $MtCO_2$). This equals a stabilization of the capped entities' emissions at 2010 levels. **PHASE II (2014–2015):** 2014: 155.4; 2015: 153 $MtCO_2$. This represents reduction targets of 0% and 1.5% respectively, compared to the average CO_2 emissions of capped entities in 2011–2012.

EMISSIONS COVERAGE

GHG COVERED CO_2

SECTORS & THRESHOLDS Energy sector (including oil and gas,) mining and chemical industry (>20,000tCO_2/year). **THRESHOLDS:** For Phase I (2013) and Phase II (2014–2015), thresholds are based on 2010 and 2012 emission levels.

POINT OF REGULATION Downstream **NUMBER OF LIABLE ENTITIES PHASE I (2013):** 178 companies **PHASE II (2014–2015):** 166 companies

PHASES AND ALLOCATION

TRADING PERIODS PHASE I (PILOT PHASE): One year (2013) **PHASE II:** Two years (2014–2015) **PHASE III:** Five years (2016–2020).

ALLOCATION PHASE I (2013): 100% free allocation based on emissions data from 2010. **PHASE II (2014–2015):** Free allocation of 155.3 million allowances for 2014 and 152 million allowances for 2015 (0% and 1.5% below 2011/2012 average emissions). As of 2016, the number of permits handed out for free could be limited and some degree of benchmarking introduced.

NEW ENTRANTS RESERVE: 20.6 million units (free allocation depending on planned capacity and energy saving measures) were available in Phase I. In 2013, about 158 million allowances were issued in total. In 2014 and 2015, 18 and 20.5 million were distributed respectively. Additionally, undistributed reserve allowances from 2013 will be reserved for new entrants in Phase II.

COMPLIANCE PERIOD One year

FLEXIBILITY

BANKING AND BORROWING Borrowing is expected to take place in Phase II as it is not prohibited by legislation.

OFFSETS AND CREDITS The system allows domestic offsets. International credits may be allowed in the future.

PRICE MANAGEMENT PROVISIONS Current legislation does not contain carbon price control measures. The first allowance transactions took place on 28 March 2014 via the Caspian Trading Commodity at the price of KZT 455 (EUR 1.98).

COMPLIANCE

MRV Reporting is required for businesses or financial facilities above the threshold of 20,000 tCO_2/year. Aside from CO_2, reporting is also required for CH_4, N_20 and PFCs emissions. Reporting frequency: annually, with reporting due on 1 April. Emission data reports and their underlying data require accredited third-party verification. Installations below the compliance threshold must submit non-verified inventory reports.

ENFORCEMENT In 2013, penalties for non-compliance were waived. Current non-compliance penalty is EUR 40 per ton.

OTHER INFORMATION

INSTITUTIONS INVOLVED Ministry of Energy; JSC Zhasyl Damu, a state-owned joint stock company, is also involved.

Russia

under consideration

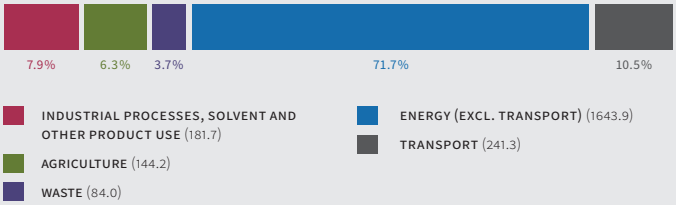
Russia is currently exploring policy options to meet its GHG emissions reduction target of at least 25% below 1990 levels by 2020. In 2014, the Russian government adopted a plan for the development and implementation of a number of emissions reduction activities. The plan includes such important steps as the development and introduction of an MRV system at the company level, assessment of emissions reduction potential, and the development of a concept and an action plan to reach the 2020 emissions reductions target, which could potentially include emissions trading.

The measures will be developed and implemented by the Ministry for Economic Development and other relevant ministries and stakeholders.

BACKGROUND INFORMATION

OVERALL GHG EMISSIONS (EXCL. LULUCF): 2,295 $MtCO_2e$ (2012)

OVERALL GHG EMISSIONS BY SECTOR $MtCO_2e$ (2012)



OVERALL GHG REDUCTION TARGET BY 2020: At least 25% below 1990 GHG levels.

Turkey

under consideration

Turkey's National Climate Change Action Plan (2011) called for studies to be carried out to establish a carbon market by 2015. In April 2012, Turkey adopted a new regulatory framework for a comprehensive mandatory MRV system. Monitoring is expected to start in 2015, and reporting (of 2015 emissions) in 2016.

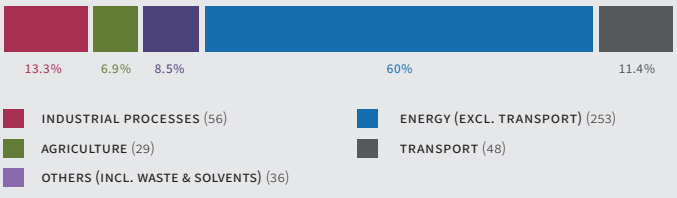
As an implementing country under the Partnership for Market Readiness (PMR), Turkey received funding in May 2013 to help implement the MRV regulation by introducing a pilot MRV system in the energy sector, and to explore options for a market-based instrument. This includes a report on consideration of emissions trading for the electricity sector, Turkey's largest emitting sector.

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).

BACKGROUND INFORMATION

OVERALL GHG EMISSIONS (EXCL. LULUCF): 422 $MtCO_2e$ (2012)

OVERALL GHG EMISSIONS BY SECTOR $MtCO_2e$ (2012)



OVERALL GHG REDUCTION TARGET Turkey is not listed in Annex B of the Kyoto Protocol and has no mandatory GHG reduction target under the UNFCCC.

COMPLIANCE

MRV The Turkish MRV legislation establishes an installation-level system for CO_2 emissions for roughly 1,500 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, chemicals over specified threshold sizes/production levels).
Entities must annually submit monitoring plans and a verified emissions report by June 2014 to the Ministry of Environment and Urbanization. Verifiers will be accredited by the Turkish Accreditation Organization.
The first year for monitoring is 2015, with the first reports due in 2016.

ENFORCEMENT Failing to comply with the Turkish MRV regulation is subject to the generic data reporting requirements and related sanctions under the Turkish Environmental Law No. 2872 and the Ministry has proposed an amendment to the Law to include specific provisons related to the Turkish MRV regulation.

OTHER INFORMATION

INSTITUTIONS INVOLVED Ministry of Environment and Urbanization and other ministries

Ukraine

under consideration

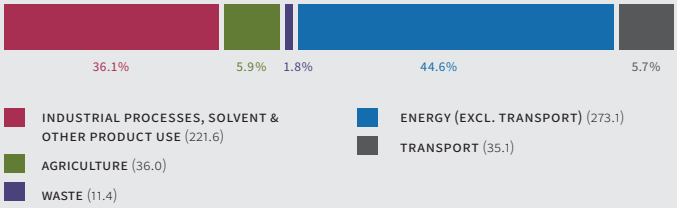
In 2014, Ukraine and the EU signed and ratified the Association Agreement, which requires Ukraine to establish an ETS within two years of the Agreement's entry into force. Initially, the system would be distinct from the EU ETS. The Ukrainian government must adopt the necessary legislation, and establish MRV and enforcement systems. Additionally, it must also develop a national allocation plan to distribute allowances to covered entities, which can then be traded domestically. The Agreement is expected to be implemented in 2016.

Ukraine is working on its ETS plans with the assistance of the PMR, the European Bank for Reconstruction and Development (EBRD), and other institutions. Activities under the PMR focus on the development of an MRV system as a first step to a potential ETS. As of 2014, consultations on a draft MRV law are being held at the national level.

BACKGROUND INFORMATION

OVERALL GHG EMISSIONS (EXCL. LULUCF): 401 $MtCO_2e$ (2012)

OVERALL GHG EMISSIONS BY SECTOR $MtCO_2e$ (2012)



OVERALL GHG REDUCTION TARGET BY 2020: Voluntary target of 20% below 1990 GHG levels. **BY 2050:** Voluntary target of 50% below 1990 GHG levels.

OTHER INFORMATION

INSTITUTIONS INVOLVED Ministry of Ecology and Natural Resources

North America

On 1 January, California and Québec significantly increased the scope of their linked programs, which now form the third-largest carbon market worldwide. In the U.S., the programs in California and RGGI may serve as an example of possible compliance option for other states for upcoming EPA rules for GHG emissions in the power sector.

ETS in force
ETS scheduled
ETS considered

Regional Greenhouse Gas Initiative (RGGI)

in force

CONNECTICUT, DELAWARE, MAINE, MARYLAND, MASSACHUSETTS, NEW HAMPSHIRE, NEW YORK, RHODE ISLAND, VERMONT

EMISSIONS COVERAGE ($MTCO_2E$, 2015)	LIABLE ENTITIES
89.1	168

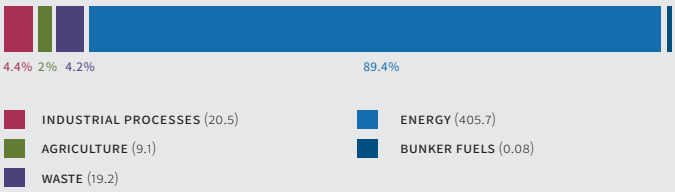
GAS COVERAGE	ALLOCATION	OFFSETS & CREDITS
CO_2 ONLY	AUCTIONING	DOMESTIC OFFSETS

RGGI is the first mandatory GHG emissions trading system in the United States. The program's first compliance period was from 1 January 2009–31 December 2011. It is now in its third compliance period (1 January 2015–31 December 2017). As foreseen by the original Memorandum of Understanding between the participating states, a RGGI program review was conducted in 2012. Based on the program review, each of the states updated its regulations so that a tighter cap and other program changes went into force by 1 January 2014.

BACKGROUND INFORMATION

OVERALL GHG EMISSIONS (EXCL. LULUCF): 454.5 $MtCO_2e$ (2011)

OVERALL GHG EMISSIONS BY SECTOR $MtCO_2e$ (2012)



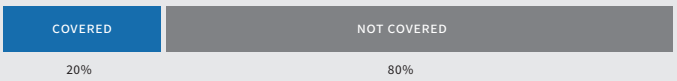
OVERALL GHG REDUCTION TARGET BY 2020: RGGI states have committed to one regional target to reduce GHG emissions from the regulated power sector by more than 50% of 2005 levels.

ETS SIZE

ETS CAP Original cap was stabilized at 149.7 Mt (165 M short tons) CO_2 (2009–2014) with a 2.5% annual reduction factor from 2015 through 2018, totaling 10%. However, by 2012, RGGI had experienced more than a 40% reduction in emissions from the original cap. Because of these reduced emissions, the states lowered the cap to 91 M short tons in 2014 as part of the 2012 program review. The revised regulations extend the 2.5% annual reduction factor through 2020, with a 2020 cap of approximately 78 M short tons.

* RGGI introduced an interim control period with the 2014 revisions. An affected source must cover 50% of its emissions with allowances in each of the first two years of a control period. The affected source must cover 100% of the remaining emissions at the end of the three-year control period.

EMISSIONS COVERAGE



GHG COVERED CO_2

SECTORS & THRESHOLDS Fossil Fuel Electric Generating Units (Threshold:) equal to or greater than 25MW

POINT OF REGULATION Downstream (at installation level)

NUMBER OF LIABLE ENTITIES 211 power plants were covered by RGGI under the first control period. With the withdrawal of New Jersey (effective January 1, 2012), there are 168 entities covered.

PHASES AND ALLOCATION

ALLOCATION The vast majority of CO_2 allowances issued by each RGGI state are distributed through quarterly, regional CO_2 allowance auctions using a "single-round, sealed-bid uniform-price" format. Auctions are open to all parties with financial security, with a maximum bid of 25% of auctioned allowances per quarterly auction.

TRADING/COMPLIANCE PERIOD RGGI's trading period is referred to as a control period and lasts three years: **FIRST CONTROL PERIOD:** 2009–2011, **SECOND CONTROL PERIOD:** 2012–2014 **THIRD CONTROL PERIOD:** 2015–2017*, **FOURTH CONTROL PERIOD:** 2018–2020*.

FLEXIBILITY

BANKING AND BORROWING Banking is allowed without restrictions.
An annual reduction in the number of allowances offered by states at auction accounts for the large surplus of banked allowances currently in the market.

OFFSETS AND CREDITS QUANTITATIVE LIMIT: 3.3% of an entity's liability may be covered with offsets. As part of the 2012 program review, RGGI participating states decided to abolish the price triggers for offsets and some states chose to adopt a new forestry offset protocol based on the California Air Resources Board protocol for US forestry projects. **QUALITATIVE LIMIT:** Offset allowances from five offset types located in RGGI states are allowed: (1) Landfill methane capture and destruction, (2) Reduction in SF_6 emissions, (3) Sequestration of carbon due to reforestation, improved forest management, or avoided conversion (4) Reduction or avoidance of CO_2 emissions from natural gas, oil, or propane end-use combustion due to end-use energy efficiency (5) Avoided methane emissions from agricultural manure management operations.

REGIONAL GREENHOUSE GAS INITIATIVE (RGGI)

COMPLIANCE

PRICE MANAGEMENT PROVISIONS Minimum auction price: USD 2.05 (EUR 1.66) in 2015, increasing by 2.5% per year (to reflect inflation).
As of 2014, RGGI states created a Cost Containment Reserve (CCR). Trigger Prices: USD 6 (EUR 4.87) in 2015, USD 8 (EUR 6.49) in 2016, and USD 10 (EUR 8.11) in 2017. After 2017, the CCR trigger price will increase annually by 2.5%.
MRV Emissions data for emitters is recorded in the U.S. Environmental Protection Agency's (US EPA) Clean Air Markets Division database in accordance with state CO_2 Budget Trading Program regulations and US EPA regulations. Provisions are based on the US EPA monitoring provisions.
Data is then automatically transferred to the electronic platform of the RGGI CO_2 Allowance Tracking System, which is available for public view.
ENFORCEMENT Penalties for non-compliance are set by each state.

OTHER INFORMATION

INSTITUTIONS INVOLVED Each RGGI State has its own statutory and/or regulatory authority. In addition, RGGI's development and implementation is supported by RGGI, Inc., a non-profit corporation.

Western Climate Initiative (WCI)

BRITISH COLUMBIA, CALIFORNIA, MANITOBA, ONTARIO, QUÉBEC

The WCI is an initiative of American state and Canadian provincial governments that aiming to develop a joint strategy to reduce greenhouse gas emissions via a regional Cap-and-Trade program. Currently, British Columbia, California, Manitoba, Ontario, and Québec are members of the initiative. California and Québec independently established Cap-and-Trade systems, their first compliance periods started on 1 January 2013. One year later, on 1 January 2014, California and Québec linked their systems creating the first international Cap-and-Trade system consisting of subnational jurisdictions.

California Cap-and-Trade Program

in force

EMISSIONS COVERAGE ($MTCO_2E$, 2015)	LIABLE ENTITIES
394.5	350

GAS COVERAGE	ALLOCATION	OFFSETS & CREDITS
SEVERAL GASES	AUCTIONING & FREE ALLOCATION	DOMESTIC OFFSETS

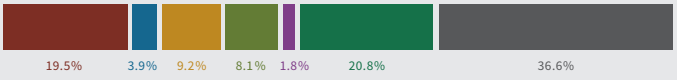
Initiated in 2012, the Californian Cap-and-Trade program began its compliance obligation on 1 January 2013 with the start of its first compliance period (2013–14). California has been part of the WCI since 2007 and formally linked its system with Québec's on 1 January 2014.

The Cap-and-Trade program covers sources responsible for approximately 85% of California's GHG emissions. A key policy pillar in California's climate law, the program will help to meet its mandate of reducing GHG emissions to 1990 levels by 2020 and achieving an 80% reduction from 1990 levels by 2050.

BACKGROUND INFORMATION

OVERALL GHG EMISSIONS (EXCL. LULUCF): 458.7 $MtCO_2e$ (2012)

OVERALL GHG EMISSIONS BY SECTOR $MtCO_2e$ (2012)



- INDUSTRIAL (89.2)
- HIGH GWP (18.4)
- COMMERCIAL AND RESIDENTIAL (42.3)
- AGRICULTURE (37.9)
- RECYCLING AND WASTE (8.5)
- ELECTRIC POWER (95.1)
- TRANSPORT (167.3)

GHG REDUCTION TARGETS BY 2020: Return to 1990 GHG levels

BY 2050: 80% reduction from 1990 GHG levels.

ETS SIZE

ETS CAP FIRST COMPLIANCE PERIOD: ($MtCO_2e$ Allowances) (2013–2014): 2013: 162.8; 2014:159.7 **SECOND COMPLIANCE PERIOD:** (2015–2017): 2015: 394.5; 2016: 382.4; 2017: 370.4 **THIRD COMPLIANCE PERIOD:** (2018–2020): 2018: 358.3; 2019: 346.3; 2020: 334.2.

EMISSIONS COVERAGE

GHG COVERED CO_2, CH_4, N_2O, SF_6, HFC, PFC, NF_3 and other fluorinated GHGs

SECTORS & THRESHOLDS FIRST COMPLIANCE PERIOD (2013–2014): Covered sectors include those which have one or more of the following processes or operations: cement production, cogeneration, glass production, hydrogen production, iron and steel production, lead production, lime manufacturing; nitric acid production, petroleum and natural gas systems, petroleum refining, pulp and paper manufacturing, self-generation of electricity, stationary combustion; CO_2 suppliers. **SECOND COMPLIANCE PERIOD (2015–2017):** In addition to the sectors listed above, first deliverers of electricity, suppliers of natural gas; suppliers of reformulated blendstock for oxygenate blending (RBOB) and distillate fuel oil, refineries that produce liquid petroleum gas in California, facilities that fractionate natural gas liquids to produce liquid petroleum gas; and suppliers of liquefied natural gas.

THRESHOLD: Facilities >25,000 metric tons or more of CO_2e per data year.

POINT OF REGULATION Mixed

NUMBER OF LIABLE ENTITIES Approximately 350 entities

PHASES AND ALLOCATION

TRADING PERIOD California's trading period is referred to as "compliance period" (see “compliance period” below).

Allowances are allocated and auctioned with calendar year vintages. Some allowances from future vintages are offered for sale at each auction and may be traded but not used for compliance until the compliance date for the vintage year.

ALLOCATION Publicly-owned and regulated investor-owned electric utilities receive allowances on behalf of their ratepayers. Investor-owned utilities must consign the allowances they receive to state-run auctions.

Industrial facilities receive free allowances for transition assistance and prevention of leakage. Leakage risk is determined by emissions intensity and trade exposure. Transition assistance declines with each compliance period. Allowances are allocated by benchmarks in each sector. Provisions for new entrants follow established methodologies for vulnerability to leakage.

The remainder of allowances is auctioned. This will be about 10% of allowances in the first compliance period, increasing in subsequent compliance periods.

COMPLIANCE PERIOD Three calendar years (after first compliance period of two years). Allowances for emissions of the whole compliance period must be surrendered by 1 November (or the first business day thereafter) of the year following the last year of a compliance period. Note: California's trading period is referred to as 'compliance period' though a portion of allowances must be submitted for each year's emissions depending on the year of the trading/compliance period. **FIRST COMPLIANCE PERIOD:** 2013–2014, **SECOND COMPLIANCE PERIOD:** 2015–2017, **THIRD COMPLIANCE PERIOD:** 2018–2020.

FLEXIBILITY

BANKING AND BORROWING Banking is allowed. Borrowing across compliance periods is not allowed.

OFFSETS AND CREDITS Currently five domestic offset types are accepted as compliance units originating from projects carried out according to five 'protocols': (1) U.S. forest projects (2) Urban forest projects (3) Livestock projects (methane management) (4) Ozone depleting substances projects (5) Mine methane capture (MMC) projects.

A protocol for rice cultivation projects is currently under consideration.

QUANTITATIVE LIMIT: Up to eight percent of each entity's compliance obligation.

PRICE MANAGEMENT PROVISIONS **AUCTION RESERVE FLOOR PRICE:** USD 12.10 (EUR 9.72) per allowance (The 2014 Auction Reserve Price was USD 11.34 (EUR 9.12)). The auction reserve price increases annually by five percent plus inflation, as measured by the Consumer Price Index.

An Allowance Price Containment Reserve will be allocated allowances from various budgets (one percent for budget years 2013–2014; four percent for budget years 2015–2017; and seven percent for budget years 2018–2020).

The reserve sale administrator can sell accumulated allowances on a regular basis in three equal price tiers at USD 45.20, 50.86, and 56.51 (EUR 36.34, 40.89 and 45.43). Tier prices increase by five percent plus inflation (as measured by the Consumer Price Index).

If the allowances in the reserve are all sold, allowances from future years are transferred to the reserve and made available for sale.

COMPLIANCE

MRV Reporting is required for most sectors above 10,000 $MtCO_2e$.

REPORTING FREQUENCY: One year

Operators must implement internal audits, quality assurance and control systems for the reporting program and the data reported.

Emission data reports and their underlying data require independent third-party verification annually for all reporters that exceed 25,000 $MtCO_2e$.

ENFORCEMENT Penalties may be assessed pursuant to Health and Safety Code section 38580 (misdemeanor, fines, and possibly imprisonment).

There are separate and substantial penalties for mis- or non-reporting under the Mandatory GHG Reporting Regulation.

Under the Cap-and-Trade Regulation, if an entity fails to surrender a sufficient number of compliance instruments to meet its compliance obligation, there is a separate violation of this article for each required compliance instrument that has not been surrendered, or otherwise obtained by the Executive Officer. A separate violation accrues every 45 days after the end of the Untimely Surrender Period for each required compliance instrument that has not been surrendered. **ADJUSTMENT TO COMPLIANCE OBLIGATION:** Outside of enforcement, there is also an automatic adjustment to the compliance obligation due equal to the number of compliance instruments short for that compliance surrender deadline multiplied by four. One-fourth of that amount is retired and the remaining three-quarters are auctioned by the state.

OTHER INFORMATION

INSTITUTIONS INVOLVED California Air Resources Board

LINKS WITH OTHER SYSTEMS California linked with Québec's ETS on 1 January 2014.

Québec Cap-and-Trade System

in force

EMISSIONS COVERAGE ($MTCO_2E$, 2015)	LIABLE ENTITIES
65.3	80

GAS COVERAGE	ALLOCATION	OFFSETS & CREDITS
SEVERAL GASES	AUCTIONING & FREE ALLOCATION	DOMESTIC OFFSETS

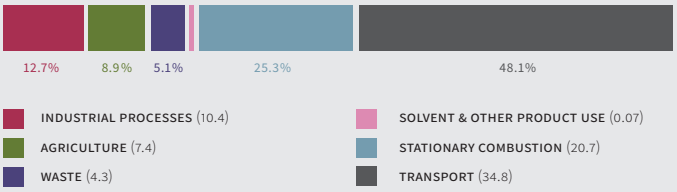
Québec's Cap-and-Trade system for GHG emissions was introduced in 2012 with a transition year in which emitters could prepare and familiarize themselves with the program without mandatory compliance. The program's enforceable compliance obligation began on 1 January 2013.

Québec has been a member of the Western Climate Initiative (WCI) since 2008 and formally linked its system with that of California's on 1 January 2014.

BACKGROUND INFORMATION

OVERALL GHG EMISSIONS (EXCL. LULUCF) 78.3 $MtCO_2e$ (2012)

OVERALL GHG EMISSIONS BY SECTOR $MtCO_2e$ (2012)



GHG REDUCTION TARGETS

BY 2020: Reduce GHG emissions by 20% below 1990 levels.

ETS SIZE

ETS CAP The following caps are given in millions of allowances:

FIRST COMPLIANCE PERIOD: (2013–2014): 23.20

SECOND COMPLIANCE PERIOD: (2015–2017): 2015: 65.30; 2016: 63.19; 2017: 61.08

THIRD COMPLIANCE PERIOD: (2018–2020): 2018: 58.96; 2019: 56.85; 2020: 54.74

EMISSIONS COVERAGE

GHG COVERED CO_2, CH_4, N_2O, SF_6, HFC, PFC, NO_3 and other fluorinated GHGs

SECTORS & THRESHOLDS Electricity, Industry (>25,000 CO_2e/year)

FIRST COMPLIANCE PERIOD (2013–2014): Electricity, Industry (>25,000 CO_2e/year)

SECOND COMPLIANCE PERIOD (2015–2017) AND THIRD COMPLIANCE PERIOD (2018–2020): Sectors of first compliance period + distribution and importation of fuels used for consumption in the transport and building sectors as well as in small and medium-sized businesses.

THRESHOLD: >25,000 CO_2e/year.

POINT OF REGULATION Mixed

NUMBER OF LIABLE ENTITIES 2013–2014: approx. 60 companies or 80 facilities in the electricity and industrial sectors. 2015: approx. 20 additional companies (fuel distributors).

PHASES AND ALLOCATION

TRADING PERIODS In Québec's Cap-and-Trade system, a trading period is referred to as a "compliance period" (see below). Allowances are allocated and auctioned with calendar vintage years.

ALLOCATION AUCTIONS: Generally, electricity and fuel distributors have to buy 100% of their allowances at auction (or on the market). Allowances are auctioned no more than four times a year.

In 2014, the Government of Québec held four auctions, which generated approximately CAD 100 million in revenue (approx. EUR 69.54 million). All auction revenues go to the Québec Green Fund and are dedicated to the fight against climate change.

On 25 November 2014, the first joint auction with California took place.

Number of allowances auctioned on 25 November 2014: 23,070,987 units for vintage year 2014 and 10,787,000 units for vintage year 2017. All units put up for sale were sold. The settlement price per unit was CAD 13.68 (approx. EUR 9.75) for vintage 2014 and CAD 13.41 (approx. EUR 9.55) for vintage 2017.

Unsold allowances in past auctions have been removed 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.

FREE ALLOCATION: Sectors subject to international competition will receive some free allowances. These include: aluminum, lime, cement, chemical and petrochemicals, metallurgy, mining and pelletizing, pulp and paper, petroleum refining, and others (manufacturers of glass food containers, electrodes, gypsum products, and some agri-food products).

FIRST COMPLIANCE PERIOD (2013–2014): Free allocation based on historical levels, production level and intensity target of GHG emissions attributable to the activity, with 100% allocation for process emissions, 80% for combustion emissions and 100% for emissions from other sources.

SECOND COMPLIANCE PERIOD (2015–17): Free allocation diminishes by approximately 1–2% on a yearly basis.

75% of free allowances issued on 14 January of each year (year X) (except in 2013 when they were issued on 1 May). The remaining 25% are to be issued in September of the following year (year X+1) after the Minister's verification of emission reports (for year X). Free allocation is based on real output.

No free allocation for fuel distributors starting in 2015.

COMPLIANCE PERIOD FIRST COMPLIANCE PERIOD: 1 January 2013–31 December 2014. Subsequent compliance periods last for three calendar years as of 1 January 2015 (2015–2017, 2018–2020, and so forth) although rules pertaining to

the free allocation of allowances are only set by regulation until 2020.
Allowances must be surrendered by 1 November following the end of the compliance period.

FLEXIBILITY

BANKING AND BORROWING Banking is allowed but emitter is subject to general holding limit. Borrowing is not allowed.

OFFSETS AND CREDITS **QUALITATIVE LIMIT:** Currently three domestic (non-Kyoto) offset types are accepted as compliance units originating from projects carried out according to three "protocols" in Québec: (1) CH_4 destruction as part of projects to cover manure storage facilities (2) Capture of gas from specified landfill sites. (3) Destruction of certain ozone depleting substances contained in insulating foam and of certain refrigerant gases recovered from domestic appliances in Canada. Further offset types may be approved by the authority. **QUANTITATIVE LIMIT:** Up to eight percent of each entity's compliance obligation. Offsets issued by jurisdictions linked with Québec will be recognized. The Minister may require the promoter to replace any offset credit issued to the buyer for a project, in the case that:

1) Due to omissions, inaccuracies or false information in the documents provided by the promoter, the GHG emissions reductions for which the offset credits were issued were not eligible;

2) Offset credits were applied for under another program for the same reductions as those covered by the application for credits under this regulation. In the instance that credit recovery is not possible; an equivalent number of credits will be retired from the minister's environmental integrity account. The minister takes three percent of issued offset credits as a contingency reserve to fill that account.

PRICE MANAGEMENT PROVISIONS Minimum auction (reserve) price for joint auction with California in 2014: CAD 12.82 (approx. EUR 9.14); increasing by five percent + inflation per year until 2020. Reserve emission units held in the Allowance Price Containment Reserve account may be sold at CAD 48.32, 54.37, 60.04/t CO_2e (approx. EUR 34.43, 38.74, 42.78) in 2015. Only covered entities established in Québec are eligible to purchase allowances from the Reserve, as long as they do not have valid compliance instruments for the current period in their general account. Reserve prices increase annually by five percent + inflation.

COMPLIANCE

MRV **REPORTING FREQUENCY:** One year. Report to be submitted by 1 June of each year. **REPORTING FRAMEWORK:** Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere of the Environment Quality Act. **VERIFICATION:** GHG reporting for emitters participating in ETS (higher threshold than regulatory reporting requirement) must send a verification report carried out by an organization accredited to ISO 14065.

ENFORCEMENT For non-compliance, entities can be fined CAD 3,000–500,000 (approx. EUR 2,100–356,000) and spend up to 18 months in jail in the case of a natural person, and CAD 10,000–3,000,000 (approx. EUR 7,100–2,138,000) in the case of a legal person. Note: In December 2014, the Canadian dollar was trading at around USD 0.88.

Fines are doubled in the case of a second offense. In addition, the Minister of Sustainable Development, Environment, Wildlife and Parks may suspend the allocation to any emitter in case of non-compliance.

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, will have to remit three allowances for each allowance it failed to remit to the minister.

The emitter responsible 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.

OTHER INFORMATION

INSTITUTIONS INVOLVED Ministère du Développement durable, de l'Environnement et de la Lutte contre les changements climatiques (Ministry of Sustainable Development, the Environment and the Fight Against Climate Change), Office of Climate Change, Carbon Market Directorate

LINKS WITH OTHER SYSTEMS On 1 January 2014, Québec linked with California.

Washington

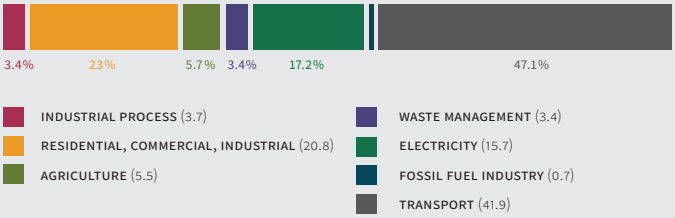
under consideration

In 2008, Washington adopted GHG reduction targets for 2020, 2035 and 2050. In order to achieve these targets, on 29 April 2014, Washington Governor Jay Inslee signed Executive Order 14–04, which outlines an action plan to reduce carbon pollution and accelerate the development and use of clean energy technology. A multi-stakeholder Carbon Emissions Reduction Taskforce was also established in order to provide recommendations on the design and implementation of a market-based carbon pollution program. Based on these recommendations, the governor announced a slate of climate change and clean energy programs on 17 December 2014. This includes the Carbon Pollution Accountability Act, a legislative proposal that would establish a Cap-and-Trade program in 2016.

BACKGROUND INFORMATION

OVERALL GHG EMISSIONS (EXCL. LULUCF) 91.7 $MtCO_2e$ (2011)
(million metric tons)

OVERALL GHG EMISSIONS BY SECTOR $MtCO_2e$ (2012)



GHG REDUCTION TARGETS **BY 2020:** Reduce emissions to 1990 levels. **BY 2035:** Reduce emissions 25% below 1990 levels. **BY 2050:** Reduce emissions 50% below 1990 levels or 70% below the state's expected emissions for that year.

Manitoba (WCI)

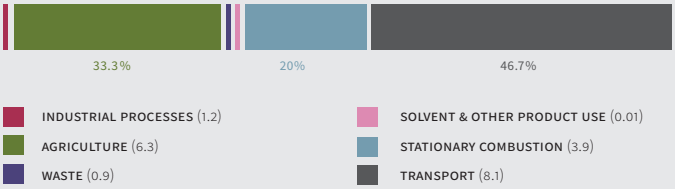
under consideration

Manitoba joined the Western Climate Initiative (WCI) in June 2008. Stakeholders were invited to share their views on a Cap-and-Trade plan for Manitoba through March 2011. The government is currently considering further measures.

BACKGROUND INFORMATION

OVERALL GHG EMISSIONS (EXCL. LULUCF) 21.1 $MtCO_2e$ (2012)

OVERALL GHG EMISSIONS BY SECTOR $MtCO_2e$ (2012)



GHG REDUCTION TARGETS

Manitoba has achieved its initial target of stabilizing emissions in 2010 at 2000 levels, and is evaluating its achievement of its 2012 target of reducing emissions to 6% below 1990 levels by 2012.

Ontario (WCI)

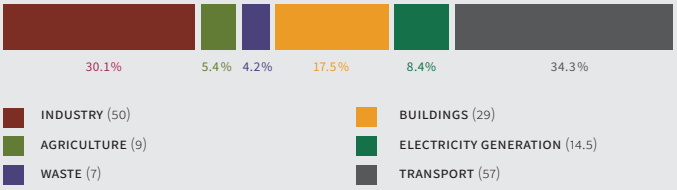
under consideration

In 2015, Ontario will release a climate change strategy and action plan to achieve its 2020 target and lay the groundwork to achieve its 2050 target, informed by extensive dialogue with the public, industry and municipalities. It has also signed a Memorandum of Understanding on climate change with Québec, including a commitment to explore the use of market-based mechanisms to reduce greenhouse gas emissions.

BACKGROUND INFORMATION

OVERALL GHG EMISSIONS (EXCL. LULUCF) 167 $MtCO_2e$ (2012)

OVERALL GHG EMISSIONS BY SECTOR $MtCO_2e$ (2012)

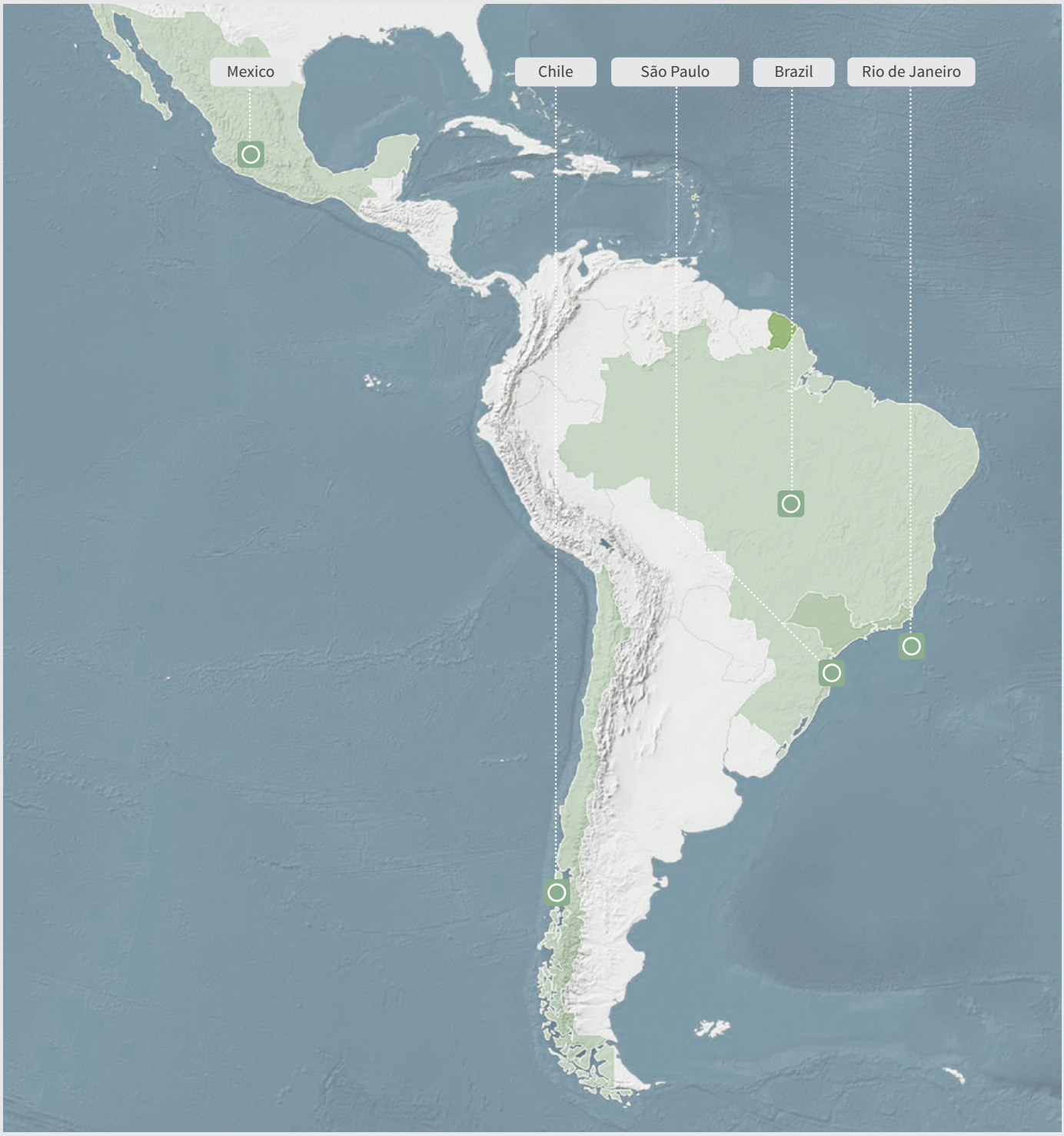


GHG REDUCTION TARGETS

Manitoba has achieved its initial target of stabilizing emissions in 2010 at 2000 levels, and is evaluating its achievement of its 2012 target of reducing emissions to six percent below 1990 levels by 2012.

Latin America and the Caribbean

Carbon pricing is on the rise in Latin America. Chile and Mexico have chosen to first implement a carbon tax, but they may transition in the future to an ETS. Brazil is also considering various policy options — including ETS — to put a price on carbon.



Brazil

under consideration

Brazil enacted its National Climate Change Policy in December 2009, thereby establishing a voluntary commitment to reduce GHG emissions by 36.1%–38.9% compared to business-as-usual (BAU) projections for 2020. Furthermore, the policy aims to promote the development of a Brazilian market for emissions reductions.

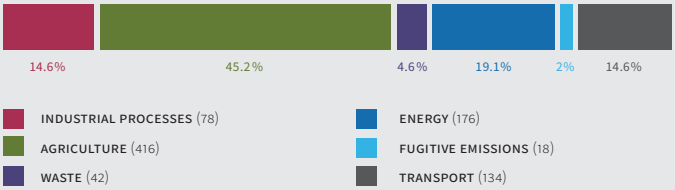
As part of its activities under the Partnership for Market Readiness (PMR), the Brazilian government is considering the implementation of market instruments to meet Brazil's voluntary GHG reduction commitment and reduce overall mitigation costs. Brazil is currently assessing different carbon pricing instruments including an emissions trading system (ETS) and a carbon tax. Over the next two and a half years, the Ministry of Finance will work on design options and conduct comprehensive economic and regulatory impact assessments for both instruments. Depending on the impact assessment, the work stream is expected to culminate in a White Paper with design recommendations for a carbon pricing instrument for Brazil to be submitted to the Inter-ministerial Committee on Climate Change in 2017.

In 2014, 21 companies organized a voluntary ETS simulation. The initiative is scheduled to run until the end of 2015, offering a platform to gain experience and acceptance for a compulsory national ETS. The allocation process and trading is managed by the Rio de Janeiro Green Stock Exchange (BVRio), and the ETS design was coordinated by the Centro de Estudos em Sustentabilidade da Fundação Getúlio Vargas (GVCes/FGV).

BACKGROUND INFORMATION

OVERALL GHG EMISSIONS (EXCL. LULUCF) 864 $MtCO_2e$ (2005)

OVERALL GHG EMISSIONS BY SECTOR $MtCO_2e$ (2005)



GHG REDUCTION TARGETS BY 2020: Voluntary commitment to reduce GHG emissions by 36.1%–38.9% compared to BAU projections.

OTHER INFORMATION

INSTITUTIONS INVOLVED Ministry of Finance; Ministry of Science, Technology and Innovation

Brazil — Rio de Janeiro

under consideration

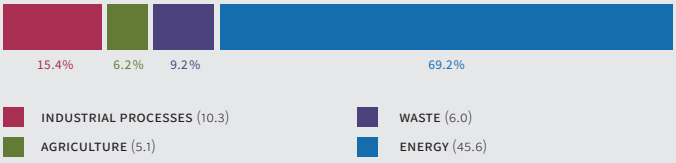
The Brazilian state of Rio de Janeiro is planning to implement a mandatory emissions trading system to cover major polluting industries. The system was announced during the Rio+20 Conference in 2012 and was expected to start in early 2013. However, it has been delayed until further notice.

GHG REDUCTION TARGETS The State of Rio de Janeiro has an overall GHG reduction target based on emissions intensity defined in terms of tons of CO_2e per State Gross GDP. **BY 2030:** According to Decree 43216 (of 2011), the emissions intensity in 2030 shall be less than the emissions intensity in 2005. A number of different reduction targets are also defined for specific sectors.

BACKGROUND INFORMATION

OVERALL GHG EMISSIONS (EXCL. LULUCF) 67 $MtCO_2e$ (2005)

OVERALL GHG EMISSIONS BY SECTOR $MtCO_2e$ (2005)



OTHER INFORMATION

INSTITUTIONS INVOLVED

State Environment Institute (Instituto Estadual do Ambiente)

Brazil — São Paulo

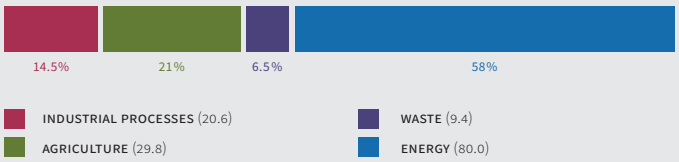
under consideration

The Brazilian State of São Paulo announced plans to establish an ETS in 2012. However, the plan was put on hold for an undetermined time in 2014.

BACKGROUND INFORMATION

OVERALL GHG EMISSIONS (EXCL. LULUCF) 139.8 $MtCO_2e$ (2005)

OVERALL GHG EMISSIONS BY SECTOR $MtCO_2e$ (2005)



GHG REDUCTION TARGETS BY 2020: 20% reduction of GHG emissions from 2005 levels.

OTHER INFORMATION

INSTITUTIONS INVOLVED State Fund for Pollution Prevention and Control (FECOP): a fund for projects related to environmental improvements in São Paulo.; Secretariat for the Environment of the State of São Paulo: in charge of administering the FECOP; CETESB: environmental agency of the state of São Paulo; BM&F BOVESPA: Brazilian Mercantile & Futures Exchange (BM&F) and the São Paulo Stock Exchange (Bovespa); Centro de Estudos em Sustentabilidade Getulio Vargas (GVCes)

Chile

under consideration

Under the PMR, Chile received funding to develop a roadmap for the design and eventual implementation of an ETS for GHG mitigation in the energy sector in March 2013. However, it subsequently shifted policy priorities toward the implementation of a carbon tax. The roadmap includes necessary institutional arrangements, regulatory options, economic impacts and technical requirements for a MRV framework to track GHG emissions that would fit both a carbon tax and an ETS.

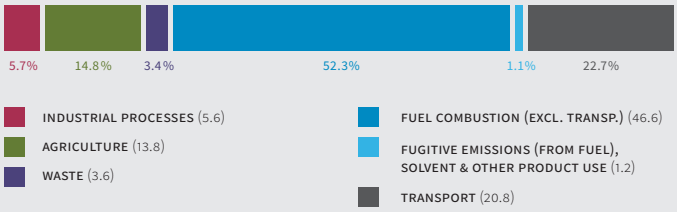
In September 2014, Chile approved the carbon tax for thermal power generators with a thermal input equal or above 50 MW as part of a broader fiscal reform. Power plants based on biomass are exempted. From 2017 on, emitters will have to pay USD 5 (EUR 4) for related CO_2 emissions. The tax level for particulate matter, NO_x and SO_2, emissions that are additionally covered by the tax is yet to be determined.

In addition to its mandatory mitigation policies, Chile has a track record of activities in the voluntary carbon market. Established in 2009, the Santiago Climate Exchange provides a local platform for trading voluntary GHG reductions. In addition, the Chilean government decided to establish a “Platform for the Generation and Trading of Carbon Credits from the Forestry Sector in Chile" in January 2013. The platform works in cooperation with Verified Carbon Standards, a major GHG program in the global voluntary carbon market.

BACKGROUND INFORMATION

OVERALL GHG EMISSIONS (EXCL. LULUCF) 91.6 $MtCO_2e$ (2010)

OVERALL GHG EMISSIONS BY SECTOR $MtCO_2e$ (2010)



GHG REDUCTION TARGETS BY 2020: Under the UNFCCC and conditional to external support, Chile has pledged to reduce projected BAU emissions by 20% compared to 2007 levels.

OTHER INFORMATION

INSTITUTIONS INVOLVED Ministry of Energy; Ministry of the Environment; Ministry of Finance

Mexico

under consideration

The General Climate Change Law of April 2012 provides the basic framework for the establishment of a voluntary ETS in Mexico. Subsequently, in June 2013, the government released its National Strategy on Climate Change, outlining the country's transition to a low-carbon economy. In April 2014, the Special Climate Change Program (2014–2018) was released.

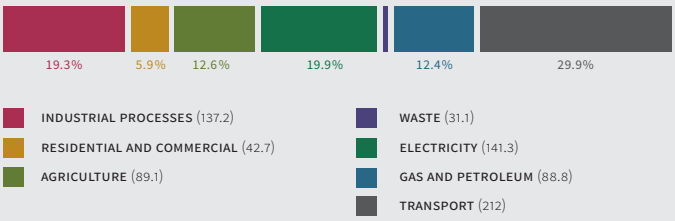
In February 2014, the Mexican Secretary of Energy announced plans for an ETS in the electricity sector. The announcement came shortly after the introduction of a carbon tax on importers and producers of fossil fuels (natural gas exempted) in January 2014. The tax is set at approximately USD 3.50 per tCO_2e (EUR 2.80), though firms are allowed to use offset credits (from domestic CDM offset projects only) to fulfill their tax liability. During this time, Mexico has also taken steps to liberalize the energy sector. In December 2013, the Mexican Constitution was modified, and by July 2014, a legal framework was in place, opening the energy sector to both domestic and foreign private investment. A market for Clean Energy Certificates will be developed in order to promote the use of renewables and other clean energy sources. It remains to be determined how the different policy instruments will work together.

In October 2014, a mandatory reporting system (the National Emissions Registry) for both direct and indirect GHG emissions for facilities with annual emissions above 25,000 tCO_2e was established. Emitters in the energy, industrial, transport, agricultural, waste, commercial and services sectors are required to report the six GHG identified by the UNFCCC and black carbon. The National Emissions Registry also includes the voluntary registration of mitigation or reduction certificates obtained from projects and activities carried out in national territory.

BACKGROUND INFORMATION

OVERALL GHG EMISSIONS (EXCL. LULUCF) 742.2 $MtCO_2e$ (2013)

OVERALL GHG EMISSIONS BY SECTOR $MtCO_2e$ (2013)



GHG REDUCTION TARGETS **BY 2020:** 30% compared to BAU scenario, conditional on international financial support. **BY 2050:** 50% compared to 2000 GHG emission levels.

Asia

With eight systems launched over the past three years, Asia has been the most dynamic region with regards to ETS. Two major players are joining the effort: on 1 January, the Republic of Korea launched Asia's newest system and China plans to introduce a national ETS in 2016.

ETS in force
ETS scheduled
ETS considered

Tokyo Cap-and-Trade Program

in force

EMISSIONS COVERAGE ($MTCO_2E$, 2015)	LIABLE ENTITIES
10.8	1325

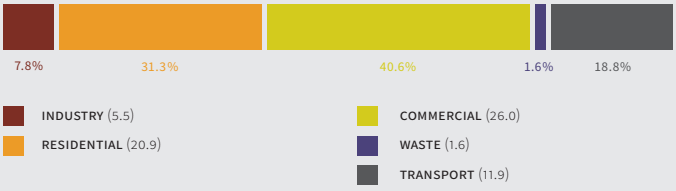
GAS COVERAGE	ALLOCATION	OFFSETS & CREDITS
CO_2 ONLY	FREE ALLOCATION	DOMESTIC

The Tokyo Cap-and-Trade Program (TMG ETS) is Japan's first mandatory emissions trading system, launched in April 2010. Under the TMG ETS, large offices and factories are required to reduce emissions by six to eight percent in the first phase (FY2010–2014), while in the second phase the target is expected to increase to 15–17%. In FY2012, emissions were reduced by 22% compared to base-year emissions.

BACKGROUND INFORMATION

OVERALL GHG EMISSIONS (EXCL. LULUCF) 69.6 $MtCO_2e$ (2012)

OVERALL GHG EMISSIONS BY SECTOR $MtCO_2e$ (2012)



GHG REDUCTION TARGETS BY 2020: 25% below 2000 GHG levels

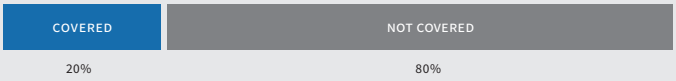
ETS SIZE

ETS CAP Absolute cap set at facility-wide level that aggregates to a Tokyo-wide cap. The cap consists of the sum of the base year emissions of covered facilities, multiplied by a compliance factor, multiplied by the number of years of the compliance period (five years). **FIRST PERIOD:** (FY2010–FY2014): Six percent reduction below base-year emissions. **SECOND PERIOD:** (FY2015–FY2019): 15% reduction below base year emissions.

COMPLIANCE FACTOR FIRST PERIOD: (FY2010–FY2014): Eight percent or six percent **SECOND PERIOD:** (FY2015–FY2019): 17% or 15%

The higher compliance factors (eight percent and 17%) apply to office buildings, and district and cooling plant facilities (excluding facilities which use a large amount of district heating and cooling). The lower compliance factors (six percent and 15%) apply, among others, to office buildings, facilities which are heavy users of district and cooling plants, and factories. Highly energy efficient facilities that have already made significant progress with regard to climate change measures are subject to half or three-quarters of the compliance factor.

EMISSIONS COVERAGE



GHG COVERED CO_2

SECTORS & THRESHOLDS Commercial and industrial sectors.

GENERAL THRESHOLD: Facilities that consume energy more than 1,500kL of crude oil equivalent or more per year

POINT OF REGULATION Downstream

NUMBER OF LIABLE ENTITIES 1,325 facilities (as of 31 January 2014)

PHASES AND ALLOCATION

TRADING PERIOD FIRST PERIOD: 1 April 2011–30 September 2016 (compliance period and adjustment year) **SECOND PERIOD:** 1 April 2015–30 September 2021 (compliance period and adjustment year).

ALLOCATION Grandfathering based on historical emissions calculated according to the following formula: base year emissions × (1-compliance factor) × compliance period (five years).

Base-year emissions for the first compliance period are based on the average emissions of three consecutive years between FY2002–FY2007.

Allocation to new entrants is based on past emissions or on emissions intensity standards: emissions activity (floor area) x emission intensity standard.

COMPLIANCE PERIOD Five years. **FIRST PERIOD:** FY2010–FY2014

SECOND PERIOD: FY2015–FY2019 Fiscal year runs from 1 April to 31 March.

Allowances must be surrendered by 1 November following the end of the compliance period.

FLEXIBILITY

BANKING AND BORROWING Banking is allowed between two compliance periods (e.g., banking from first to second compliance period is allowed. Banking from first to third is not). Borrowing is not allowed.

OFFSETS AND CREDITS Currently credits from four offset types are allowed in the TMG ETS. **SMALL AND MID-SIZE FACILITY CREDITS:** Total amount of emissions reductions achieved by implementing emissions reduction measures from non-covered small and medium-sized facilities in Tokyo since FY2010. Issuance of credits from FY2011. Small and Mid-size Facility Credits can be used for compliance without a limit. **OUTSIDE TOKYO CREDITS:** Emission reductions achieved from large facilities outside of the Tokyo area. Large facilities: energy consumption of 1,500 kL of crude oil equivalent or more in a base-year, and with base-year emissions of 150,000 tons or less. Credits only issued for the reduction amount that exceeds the compliance factor of eight percent. Issuance of credits from FY2015. Outside Tokyo 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 1,000 kW) electricity production are counted at 1.5 times the value of regular credits. Credits from biomass (biomass rate of 95% or more, black liquor is excluded)

and hydro power (1,000kW to 10,000kW) are converted with the factor 1. Types of Credits: Environmental Value Equivalent, Renewable Energy Certificates and New Energy Electricity, generated under the Renewable Portfolio Standard Law. Renewable Energy Credits can be used for compliance without limit.

SAITAMA CREDITS (VIA LINKING). TWO TYPES:

1) Excess Credits from the Saitama System: Emission reductions from facilities with base-year emissions of 150,000t or less. Issuance of credits from FY2015.

2) Small and Mid-Size Facility Credits issued by Saitama Prefecture. Issuance of credits from FY2012. Saitama Credits can be used for compliance without limit. All offsets have to be verified by verification agencies.

PRICE MANAGEMENT PROVISIONS In general, TMG does not control carbon prices. However, the supply of credits available for trading may be increased in case of excessive price evolution.

COMPLIANCE

MRV Participants are required to submit annually (fiscal year) their emission reduction plans and emissions reports based on "TMG Monitoring/Reporting Guidelines" and "TMG Verification Guidelines." These reports also require third-party verification. CO_2 emission factors are fixed during the five year compliance period. Six GHG gases have to be monitored and reported: CO_2 (non-energy related), CH_4, N_2O, PFCs, HFCs and SF_6.

Verified reduction amounts can be used for compliance, but cannot be traded to other facilities except energy related CO_2. Verification is required only when it is used for compliance.

ENFORCEMENT In case of non-compliance, the following measures may be taken in two stages: **FIRST STAGE:** The governor orders the facility to reduce emissions by the amount of the reduction shortfall multiplied by 1.3.

SECOND STAGE: Any facility that fails to carry out the order will be publicly named and subject to penalties (up to JPY 500,000 [EUR 3,419]) and surcharges (1.3 times the shortfall).

OTHER INFORMATION

INSTITUTIONS INVOLVED TMG Bureau of Environment

LINKS WITH OTHER SYSTEMS Linking with the Saitama Prefecture started in April 2011 when the Saitama ETS was launched. Credits from excess emission reductions and Small & Mid-Size Facility Credits (offsets) are officially eligible for trade between the two jurisdictions. However, since excess emission reductions need to be confirmed at the end of the first compliance period, credits will only become tradable from 2015 onward, no trade has occurred yet.

Target Setting Emissions Trading System in Saitama

in force

EMISSIONS COVERAGE ($MtCO_2e$, 2015)	LIABLE ENTITIES
11.4	581

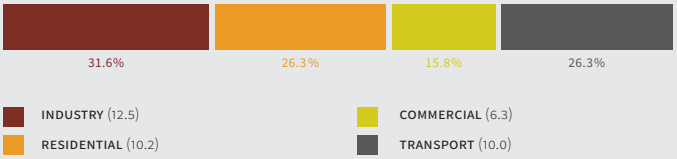
GAS COVERAGE	ALLOCATION	OFFSETS & CREDITS
CO_2 ONLY	FREE ALLOCATION	DOMESTIC

Saitama's emissions trading system was established in April 2011 as part of the Saitama Prefecture Global Warming Strategy Promotion Ordinance. Saitama's emissions trading system is also bilaterally linked to Tokyo's. In FY2012, the Saitama emissions trading system had achieved a 22% reduction in emissions below base-year emissions.

BACKGROUND INFORMATION

OVERALL GHG EMISSIONS (EXCL. LULUCF) 44.0 $MtCO_2e$ (FY2012)

OVERALL GHG EMISSIONS BY SECTOR $MtCO_2e$ (2012)

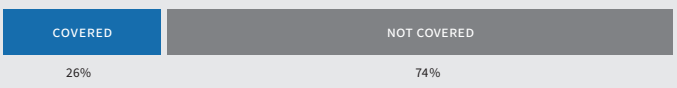


GHG REDUCTION TARGETS BY 2020: 25% below 2005 GHG levels

ETS SIZE

ETS CAP An absolute cap is set at the facility level, which aggregates to a Saitama-wide cap. This is calculated according to the following formula: Sum of base year emissions of covered facilities x compliance factor (eight percent/six percent) x number of years of a compliance period. (First Period: four years, Second Period: five years). **FIRST PERIOD (FY2011–FY2014):** Eight or six percent reduction below base-year emissions. **SECOND PERIOD (FY2015–FY2019):** 15 or 13% reduction below base year emissions. **COMPLIANCE FACTOR: FIRST PERIOD (FY2011–FY2014):** Eight or six percent **SECOND PERIOD (FY2015–FY2019):** 15% or 13%

EMISSIONS COVERAGE



GHG COVERED CO_2

SECTORS & THRESHOLDS Commercial and industrial sectors.

THRESHOLD: Facilities that consume 1,500kL of crude oil equivalent or more per year.

POINT OF REGULATION Downstream

NUMBER OF LIABLE ENTITIES 581 facilities (as of 31 March 2013)

PHASES AND ALLOCATION

TRADING PERIODS **FIRST PERIOD:** 1 April 2012 to 30 September 2016 (compliance period and adjustment year). **SECOND PERIOD:** 1 April 2015–30 September 2021 (compliance period and adjustment year).

ALLOCATION Grandfathering based on historical emissions is calculated according to the following formula: Base year emissions × (1-compliance factor) × compliance period.

Base year emissions for the first compliance period are based on the average emissions of three consecutive fiscal years between 2002 and 2007.

Allocation to new entrants is based on past emissions or on emissions intensity standards: Emissions activity (floor area) x emission intensity standard.

COMPLIANCE PERIOD Four or five years. **FIRST PERIOD:** FY2011–FY2014

SECOND PERIOD: FY2015–FY2019; Fiscal year runs from 1 April to 31 March.

FLEXIBILITY

BANKING AND BORROWING Banking is allowed between two consecutive compliance periods (e.g., banking from first to second compliance period is allowed. Banking from first to third is not). Borrowing is not allowed..

OFFSETS AND CREDITS Currently credits from six offset types are allowed in the Saitama system.

EXCESS REDUCTION AS CREDITS

SMALL AND MID-SIZE FACILITY CREDITS: Total amount of emissions reductions achieved by implementing emissions reduction measures from non-covered small and medium sized facilities in Saitama since FY2011. Issuance of credits from FY2012. Small and Mid-Size Facility Credits can be used for compliance without limit. **OUTSIDE SAITAMA CREDITS:** Emissions reductions achieved from large facilities outside the Saitama Prefecture. Large facilities: energy consumption of 1,500 kL of crude oil equivalent or more in a base-year, and with base-year emissions of 150,000 tons or less. Credits only issued for the reduction amount that exceeds the compliance factor of eight percent. Issuance of credits from FY2015. Outside Saitama Credits can be used for compliance for up to one-third, in the case of offices, or to half, in the case of factories, of the facilities' reduction targets. **RENEWABLE ENERGY CREDITS:** Credits from solar (heat, electricity), wind, geothermal, or hydro (under 1,000 kW) electricity production are counted at 1.5 times the value of regular credits. Credits from biomass (biomass rate of 95% or more, black liquor is excluded) and hydro power (1,000kW to 10,000kW) are converted with the factor 1. Types of Credits: Environmental Value Equivalent, Renewable Energy Certificates, New Energy Electricity generated under the Renewable Portfolio Standard Law. Renewable Energy Credits can be used for compliance without limit. **FOREST ABSORPTION CREDITS:** Credits from forests inside the Saitama Prefecture are counted at 1.5 times the value of regular credits. Forest Absorption Credits can be used for compliance without limit.

TARGET SETTING EMISSIONS TRADING SYSTEM IN SAITAMA

TOKYO CREDITS (VIA LINKING): 2 TYPES. 1) Excess Credits from TMG ETS: Emissions reductions from facilities with base-year emissions of 150,000t or less. Issuance of credits from FY2015. **2)** Small and Mid-Size Facility Credits issued by TMG ETS: Issuance of credits from FY2012. Tokyo Credits can be used for compliance without a limit.
All offsets have to be verified by verification agencies.
PRICE MANAGEMENT PROVISIONS In general, the Saitama Prefectural Government does not control carbon prices. However, the supply of credits available for trading may be increased in case of excessive price evolution.

COMPLIANCE

MRV Participants are required to report their verified emissions based on the Saitama Prefectural Government Monitoring/Reporting Guidelines and the Saitama Prefectural Government Verification Guidelines. All six GHG gases have to be monitored and reported: CO_2 (non-energy related), CH_4, N_2O, PFC_s, HFC_s and SF_6. Verified reduction amounts can be used for compliance, but cannot be traded to other facilities except for energy-related CO_2. Verification is required only when it is used for compliance.
ENFORCEMENT None.

OTHER INFORMATION

INSTITUTIONS INVOLVED Saitama Prefectural Government
LINKS WITH OTHER SYSTEMS Linking with TMG ETS started in April 2011. Credits from excess emissions reductions and Small & Mid-Size Facility Credits (offsets) are officially eligible for trade between the two jurisdictions. However, since excess emissions reductions need to be confirmed at the end of the first compliance period, credits will only become tradable from 2015 onward, no trade has occurred yet.

Korean Emissions Trading System

in force

EMISSIONS COVERAGE ($MtCO_2e$, 2015)	LIABLE ENTITIES
573	525

GAS COVERAGE	ALLOCATION	OFFSETS & CREDITS
SEVERAL GASES	FREE ALLOCATION	DOMESTIC OFFSETS

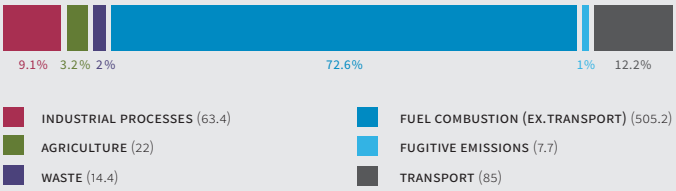
On 1 January 2015, the Republic of Korea launched its national ETS (KETS), the first nationwide Cap-and-Trade program in operation in Asia. With a cap of 573 $MtCO_2e$ in 2015, it is the second-largest ETS worldwide after the EU ETS. It covers roughly two-thirds of the country's total emissions.

The almost unanimous adoption of the framework for Korean ETS by the Korean Parliament on 2 May 2012 was a major step: The Korean economy has grown very fast over the past two decades and Korea has become the OECD's fastest-growing GHG emitter. As a non-Annex I country under the Kyoto Protocol, Korea has no legally-binding obligation to reduce its emissions. Yet, by means of the Korean Emissions Trading System, it aims to reduce its GHG emissions by 30% against business-as-usual (BAU) by 2020.

BACKGROUND INFORMATION

OVERALL GHG EMISSIONS (EXCL. LULUCF) 697.7 $MtCO_2e$ (2011)

OVERALL GHG EMISSIONS BY SECTOR $MtCO_2e$ (2011)



GHG REDUCTION TARGETS BY 2020: Unconditional, voluntary target of 30% below BAU.

ETS SIZE

ETS CAP PHASE I (2015–2017): 1,687 $MtCO_2e$, including a reserve of 89 million tCO_2e for market stabilization measures, early action and new entrants.
2015: 573 $MtCO_2e$; **2016:** 562 $MtCO_2e$; **2017:** 551 $MtCO_2e$
CAPS FOR PHASE II AND III: To be announced.

EMISSIONS COVERAGE

GHG COVERED CO_2, CH_4, N_2O, PFCs, HFCs, SF_6

SECTORS & THRESHOLDS PHASE I (2015–2017): 23 sub-sectors from steel, cement, petro-chemistry, refinery, power, buildings, waste sectors and aviation. Threshold: company >125,000 tCO_2/year, facility >25,000 tCO_2/year.
POINT OF REGULATION Downstream
NUMBER OF LIABLE ENTITIES 525 business entities, including five domestic airlines.

PHASES AND ALLOCATION

TRADING PERIODS PHASE I: Three years (2015–2017) **PHASE II:** Three years (2018–2020) **PHASE III:** Five years (2021–2025).
ALLOCATION PHASE I (2015–2017): 100% free allowances, no auctioning.
Most sectors will receive their free allowances based on the average GHG emissions of the base year (2011–2013). Three sectors (grey clinker, oil refinery, aviation) will be allocated free allowances following benchmarks based on previous activity data from the base year (2011–2013).
During Phase I, about five percent of total allowances are retained in the reserve for market stabilization measures (14 $MtCO_2e$), early action (41 $MtCO_2e$), and other purposes incl. new entrants (33 $MtCO_2e$). In addition, any unallocated allowances and withdrawn allowances will be transferred to the reserve.
PHASE II (2018–2020): 97% free allowances, three percent auctioning.
PHASE III (2021–2025): less than 90% freely allocated, more than 10% auctioning.
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: **A)** additional production cost of >five percent and trade intensity of >10%; or **B)** additional production cost of >30%; or **C)** trade intensity of >30%.
COMPLIANCE PERIOD One year

FLEXIBILITY

BANKING AND BORROWING Banking is allowed without any restriction. Borrowing is allowed only within a single trading phase (maximum of 10% of entity's obligation), not across phases.
OFFSETS AND CREDITS Phase I (2015–2017) and Phase II (2018–2020):
QUALITATIVE LIMIT: Only domestic credits from external reduction activities implemented by non-ETS entities — and that meet international standards — may be used for compliance. Domestic CDM credits (CERs) are allowed in the scheme. Eligible activities include those eligible under the CDM and carbon capture and storage (CCS). However, only activities implemented after 14 April 2010 are eligible. **QUANTITATIVE LIMIT:** Up to 10% of each entity's compliance obligation. Phase III (2021–2025): Up to 50% of the total offsets allowed into the scheme may be covered with international offsets.
PRICE MANAGEMENT PROVISIONS The Allocation Committee may decide to implement market stabilization measures in the following cases: (A) The market

allowance price of six consecutive months is at least three times higher than the average price of the two previous years; (B) The market allowance price of six consecutive months is at least twice the average price of two previous years and the average trading volume of one month is at least twice the volume of the same month of the two previous years; (C) The average market allowance price of one given month is smaller than 60% of the average price of the two previous years.
In 2015 and 2016, the price threshold will be KRW 10,000 (EUR 7).
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 (currently up to 10%) (4) An increase or decrease of the offsets limit (currently up to 10%) (5) Temporary set-up of a price ceiling or price floor.

COMPLIANCE

MRV Annual reporting of emissions must be submitted within three months from the end of a given compliance year (by the end of March). Emissions must be verified by a third-party verifier.
Emissions reports are then reviewed and certified by the Certification Committee of the Ministry of Environment within five months from the end of a given compliance year (by the end of May). If the liable entity fails to report emissions correctly, the report will be disqualified.
ENFORCEMENT Penalty shall not exceed three times the average market price of allowances of the given compliance year or KRW 100,000/ton (EUR 70).

OTHER INFORMATION

INSTITUTIONS INVOLVED Ministry of Environment

China Emissions Trading System

scheduled

In its 12th Five Year Plan, China set its commitment to gradually develop a carbon trading market. The National Development Reform Commission (NDRC) thereby designated seven provinces and cities — Guangdong, Hubei, Beijing, Shanghai, Tianjin, Chongqing and Shenzhen — as regional mandatory pilot emission trading systems (ETS) in October 2011. The pilots started operation in 2013 and 2015, and shall be incorporated in a national system during the 13th Five Year Plan (2016–20120). The basic rules for a national ETS were published in December 2014, which focused on core principles and the division of responsibilities between the national and provincial authorities. However, no specific details on the system's design have been published yet. In preparation for the national ETS, the NDRC has notified large emitters outside the pilots to report on their emissions.

In parallel to the development of a mandatory ETS, NDRC released a regulation on voluntary trading in June 2012. It aims at encouraging voluntary GHG emission trading such as offsetting with China Certified Emission Reductions (CCERs) and at ensuring that trading activities are conducted in an appropriate manner.

GENERAL INFORMATION

OVERALL GREENHOUSE GAS EMISSIONS 9,477 $MtCO_2e$ (2012)

OVERALL GHG REDUCTION TARGET BY 2015 (12th Five Year Plan): 17% reduction in carbon intensity compared to 2010 levels. **BY 2020:** 40–45% reduction in carbon intensity compared to 2005 (voluntary commitment under the Copenhagen Accord of 2009). Emissions peak is expected around 2030.

Beijing (Pilot) Emissions Trading System

in force

EMISSIONS COVERAGE ($MtCO_2e$, 2015)	LIABLE ENTITIES
50.0	543

GAS COVERAGE	ALLOCATION	OFFSETS & CREDITS
CO_2 ONLY	FREE ALLOCATION	DOMESTIC

On 28 November 2013, Beijing was the third Chinese region, after Shenzhen and Shanghai, to start its pilot Emissions Trading System (ETS). The pilot covers about 40% of the city's total emissions, including both direct and indirect emissions from electricity providers, the heating sector, manufacturers and major public buildings. The first compliance period ended in June 2014.

BACKGROUND INFORMATION

OVERALL GHG EMISSIONS (EXCL. LULUCF) 188.1 $MtCO_2e$ (2012)

GHG REDUCTION TARGETS BY 2015 (12th Five Year Plan): 18% reduction in carbon intensity compared to 2010 levels.

ETS SIZE

ETS CAP 50$MtCO_2$(2013)

EMISSIONS COVERAGE

GHG COVERED CO_2

SECTORS & THRESHOLDS Industrial and non-industrial companies and entities, including electricity providers, heating sector, cement, petrochemicals, manufacturers and service sector. **INCLUSION THRESHOLD:** 10,000t CO_2/year, considering both direct and indirect emissions.

POINT OF REGULATION Mixed: Both the power sector and electricity consuming sectors are included in the scheme. Electricity prices are regulated in China, and therefore a scheme based on direct emissions alone would not induce a pass-through of carbon costs via the electricity price, and would not incentivize demand-side management of electricity. The system therefore covers emissions from the power sector upstream and other sectors downstream.

NUMBER OF LIABLE ENTITIES 415 (2013); 543 (2014)

BEIJING (PILOT) EMISSIONS TRADING SCHEME

PHASES AND ALLOCATION

TRADING PERIODS Three years (2013–2015)
ALLOCATION Mainly free allocation through grandfathering based on 2009–2012 emissions or emissions intensity. Benchmarking for new entrants and entities with expanded capacity.
COMPLIANCE PERIOD One year (15 June)

FLEXIBILITY

BANKING AND BORROWING Banking allowed during the pilot phase.
There are currently no rules on borrowing.
OFFSETS AND CREDITS Domestic project-based carbon offset credits—China Certified Emission Reduction (CCER)—are allowed. The use of CCER credits is limited to five percent of the annual allocation, of which at least 50% have to be from projects from within the jurisdiction of the city of Beijing.
Verified carbon emission reduction from energy saving projects and forest carbon sink projects from within the city of Beijing are also allowed.
PRICE MANAGEMENT PROVISIONS In case of market fluctuations, the Beijing Development and Reform Commission (DRC) can buy or auction allowances in order to stabilize the market.

COMPLIANCE

MRV Annual reporting of CO_2 emissions. Third-party verification is required. The Beijing DRC has released guidelines for monitoring and reporting for the following six sectors: heat production and supply, thermal power generation, cement, petrochemicals, other industrial enterprises, and the service sector.
ENFORCEMENT Penalties for non-compliance range from CNY 30,000 (EUR 3,926) to CNY 50,000 (EUR 6,544). Companies failing to surrender enough allowances to match their emissions are fined three to five times the average market price for each missing allowance.

OTHER INFORMATION

INSTITUTIONS INVOLVED Beijing DRC (competent authority); China Beijing Environment Exchange (trading platform)

Chongqing (Pilot) Emissions Trading Scheme

in force

EMISSIONS COVERAGE ($MtCO_2e$, 2015)	LIABLE ENTITIES
125.0	242

GAS COVERAGE	ALLOCATION	OFFSETS & CREDITS
SEVERAL GASES	FREE ALLOCATION	DOMESTIC

On 19 June 2014, Chongqing was the latest Chinese region to start its pilot emissions trading scheme (ETS). The system mainly covers enterprises from seven sectors: power, electrolytic aluminum, ferroalloys, calcium carbide, cement, caustic soda, and iron and steel. The 242 covered enterprises account for around 40% of the city's total emissions.

BACKGROUND INFORMATION

OVERALL GHG EMISSIONS (EXCL. LULUCF) 243.1 $MtCO_2e$ (2012)
GHG REDUCTION TARGETS BY 2015 (12th Five Year Plan): 17% reduction in carbon intensity compared to 2010 levels.

ETS SIZE

ETS CAP 125 $MtCO_2e$ (2013)
EMISSIONS COVERAGE

GHG COVERED CO_2, CH_4, N_2O, $HFCs$, $PFCs$, SF_6
SECTORS & THRESHOLDS Not specified, but covered sectors include power, electrolytic aluminum, ferroalloys, calcium carbide, cement, caustic soda, and iron and steel. **THRESHOLD:** 20,000t CO_2e/year.
POINT OF REGULATION Mixed: Both the power sector and electricity consuming sectors are included in the scheme. Electricity prices are regulated in China, and therefore a scheme based on direct emissions alone would not induce a pass-through of carbon costs via the electricity price, and would not incentivize demand-side management of electricity. The system therefore covers emissions from the power sector upstream and other sectors downstream.
NUMBER OF LIABLE ENTITIES 242 (2013–2014)

PHASES AND ALLOCATION

TRADING PERIODS Three years (2013–2015)
ALLOCATION Free allocation through grandfathering 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.
COMPLIANCE PERIOD Due to the late start, compliance for 2013 and 2014 are combined in one phase, one year compliance period for 2015 (20 June).

FLEXIBILITY

BANKING AND BORROWING Banking allowed during the pilot phase. Borrowing not allowed.
OFFSETS AND CREDITS Domestic project-based carbon offset credits—China Certified Emission Reduction (CCER)—are allowed if emissions exceed allocation with a maximum amount of eight percent of the compliance obligation.
PRICE MANAGEMENT PROVISIONS In case of market fluctuations, the exchange can take price stabilization measures. Compliance entities must not sell more than 50% of their free allocation.

COMPLIANCE

MRV Annual reporting of GHG emissions. Third-party verification is required. The Chongqing DRC has released a guiding document for monitoring and reporting that includes methods for different emissions sources: combustion, industrial processes and electricity consumption.
ENFORCEMENT Penalties for non-compliance range from CNY 20,000 (EUR 2,618) to CNY 50,000 (EUR 6,544).

OTHER INFORMATION

INSTITUTIONS INVOLVED Chongqing DRC (competent authority); Chongqing Carbon Emissions Exchange (trading platform)

Guangdong (Pilot) Emissions Trading Scheme

in force

EMISSIONS COVERAGE ($MtCO_2e$, 2015)	LIABLE ENTITIES
408.0	211

GAS COVERAGE	ALLOCATION	OFFSETS & CREDITS
CO_2 ONLY	AUCTIONING & FREE ALLOCATION	DOMESTIC

On 19 December 2013, Guangdong was the fourth Chinese region, after Shenzhen, Shanghai and Beijing, to start its pilot emissions trading scheme (ETS). Guangdong is the largest of the seven cities and regions selected to launch a pilot ETS. The scheme covers enterprises from four industries: power, iron and steel, cement, and petrochemicals. These industries account for more than half of the province's emissions. The first compliance period ended on 15 July 2014.

BACKGROUND INFORMATION

OVERALL GHG EMISSIONS (EXCL. LULUCF) 610.5 $MtCO_2e$ (2012)
GHG REDUCTION TARGETS BY 2015: (12th Five Year Plan): 19.5% reduction in carbon intensity compared to 2010 levels.

ETS SIZE

ETS CAP 388 $MtCO_2$ (2013); 408 $MtCO_2$ (2014)
EMISSIONS COVERAGE

GHG COVERED CO_2
SECTORS & THRESHOLDS
SECTORS: Energy, iron and steel, cement, petrochemicals.
Ceramics, textiles, nonferrous metals, chemicals, pulp and paper, construction, transportation sectors may be included during the pilot phase at a later stage
THRESHOLDS: 20,000tCO_2/year or energy consumption 10,000tCe/year.
POINT OF REGULATION Mixed: Both the power sector and electricity consuming sectors are included in the scheme. Electricity prices are regulated in China, and therefore a scheme based on direct emissions alone would not induce a pass-through of carbon costs via the electricity price, and would not incentivize demand-side management of electricity. The system therefore covers emissions from the power sector upstream and other sectors downstream.
NUMBER OF LIABLE ENTITIES 184 (2013); 193 existing enterprises and 18 new entrants (2014)

PHASES AND ALLOCATION

TRADING PERIODS Three years (2013–2015)
ALLOCATION Mainly free allocation through grandfathering based on 2009–2012 emissions and benchmarking for certain industrial processes and new entrants. During the pilot phase three percent (2013) to 10% (2015) of allowances are auctioned. During the first compliance year participation in auctions was mandatory to receive free allocation.
COMPLIANCE PERIOD One year (20 June)

FLEXIBILITY

BANKING AND BORROWING Banking allowed during the pilot phase. As yet, there are no rules on borrowing.
OFFSETS AND CREDITS Domestic project-based carbon offset credits — China Certified Emission Reduction (CCER) — are allowed. The use of CCER credits is limited to 10% of the annual compliance obligation of which at least 70% have to be from projects from within the jurisdiction of the province of Guangdong.
PRICE MANAGEMENT PROVISIONS Guangdong has a floor price for the auctions. Initially, it was set at CNY 60 (EUR 7.85). After the completion of the first compliance phase, the price was lowered to CNY 25 (EUR 3.27) and will increase to CNY 40 (EUR 5.24) in steps of CNY 5 (EUR 0.65) with each quarterly auction.

COMPLIANCE

MRV Annual reporting of CO_2 emissions. Third-party verification is required. The Guangdong DRC has released guidelines for monitoring and reporting for the four following sectors: power, cement, iron and steel, and petrochemicals.
ENFORCEMENT Penalties for non-compliance range from CNY 10,000 (EUR 1,309) to CNY 50,000 (EUR 6,544). Companies failing to surrender enough allowances to match their emissions will be deducted twice the amount of allowances from next year's allocation and are fined CNY 50,000 (EUR 6,544).

OTHER INFORMATION

INSTITUTIONS INVOLVED Guangdong Guangdong DRC (competent authority); China Emissions Exchange Guangzhou (trading platform)

Hubei (Pilot) Emissions Trading System

in force

EMISSIONS COVERAGE ($MtCO_2e$, 2015)	LIABLE ENTITIES
324.0	138

GAS COVERAGE	ALLOCATION	OFFSETS & CREDITS
CO_2 ONLY	AUCTIONING & FREE ALLOCATION	DOMESTIC OFFSETS

On 2 April, Hubei was the sixth pilot emissions trading system (ETS) in China to start trading. The system covers 138 of the most carbon intensive companies in the province, accounting for approximately 35% of the province's total carbon emissions. Until now, Hubei has been the most active market among the pilot ETS in terms of trading.

BACKGROUND INFORMATION

OVERALL GHG EMISSIONS (EXCL. LULUCF) 463.1 $MtCO_2e$ (2012)
GHG REDUCTION TARGETS BY 2015 (12th Five Year Plan): 17% reduction in carbon intensity compared to 2010 levels.

ETS SIZE

ETS CAP 324 $MtCO_2$ (2014)
EMISSIONS COVERAGE

35% 65%

GHG COVERED CO_2
SECTORS & THRESHOLDS Power and heat supply, iron and steel, chemicals, petrochemicals, cement, automobile manufacturing, ferrous metals, glass, pulp and paper, food and beverage.
THRESHOLD: Energy consumption more than 60,000 tCe/year.
POINT OF REGULATION Mixed: Both the power sector and electricity consuming sectors are included in the scheme. Electricity prices are regulated in China, and therefore a scheme based on direct emissions alone would not induce a pass-through of carbon costs via the electricity price, and would not incentivize demand-side management of electricity. The system therefore covers emissions from the power sector upstream and other sectors downstream.
NUMBER OF LIABLE ENTITIES 138 (2013–2014)

PHASES AND ALLOCATION

TRADING PERIODS Three years (2013–2015)
ALLOCATION Mainly free allocation through grandfathering based on historic emissions, also considering early action and sector-specific factors. A smaller proportion of allowances are auctioned to complement the allocation process.
COMPLIANCE PERIOD Due to the late start, compliance for 2013 and 2014 are combined in one phase, one year compliance period for 2015 (end of May).

FLEXIBILITY

BANKING AND BORROWING Banking allowed during the pilot phase. Borrowing not allowed.
OFFSETS AND CREDITS Domestic project-based carbon offset credits — China Certified Emission Reduction (CCER) — from the province of Hubei are allowed. The use of CCER credits is limited to 10% of the annual allocation.
PRICE MANAGEMENT PROVISIONS In case of market fluctuations, the exchange can take price stabilization measures.

COMPLIANCE

MRV Annual reporting of CO_2 emissions. Third-party verification is required. 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.
ENFORCEMENT Penalties for non-compliance range from CNY 10,000 (EUR 1,309) to CNY 150,000 (EUR 19,632). Companies failling 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.

OTHER INFORMATION

INSTITUTIONS INVOLVED Hubei Development and Reform Commission (competent authority); Hubei DRC (trading platform)

Shanghai (Pilot) Emissions Trading System

in force

EMISSIONS COVERAGE ($MtCO_2e$, 2015)	LIABLE ENTITIES
160.0	191

GAS COVERAGE	ALLOCATION	OFFSETS & CREDITS
CO_2 ONLY	AUCTIONING & FREE ALLOCATION	DOMESTIC

On 26 November 2013, Shanghai was the second Chinese region, after Shenzhen, to start its pilot ETS. The pilot covers around half of the city's emissions, including industrial and non-industrial sectors like transportation. Shanghai completed its first compliance period on 30 June 2014.

BACKGROUND INFORMATION

OVERALL GHG EMISSIONS (EXCL. LULUCF) 297.7 $MtCO_2e$ (2012)
GHG REDUCTION TARGETS BY 2015 (12th Five Year Plan): 19% reduction in carbon intensity compared to 2010.

ETS SIZE

ETS CAP 160 $MtCO_2$
EMISSIONS COVERAGE

GHG COVERED CO_2
SECTORS & THRESHOLDS
INDUSTRIAL SECTORS: Electricity, iron and steel, petrochemicals, chemicals, non-ferrous metals, building materials, textiles, paper, rubber, chemical fiber.
NON-INDUSTRIAL SECTORS: Aviation, ports, airports, railways, commercial, hotels, and financial sector.
THRESHOLDS: Power and industry: 20,000t CO_2/year; Non-industry: 10,000t CO_2/year, considering both direct and indirect emissions.
POINT OF REGULATION Mixed: Both the power sector and electricity consuming sectors are included in the scheme. Electricity prices are regulated in China, and therefore a scheme based on direct emissions alone would not induce a pass-through of carbon costs via the electricity price, and would not incentivize demand-side management of electricity. The system therefore covers emissions from the power sector upstream and other sectors downstream.
NUMBER OF LIABLE ENTITIES 191 (2013)

PHASES AND ALLOCATION

TRADING PERIODS Three years (2013–2015)
ALLOCATION One-off free allocation for 2013–2015 based on 2009–2011 emissions, considering company growth and benchmarks for certain sectors (energy, airlines, ports and airports). Ex-post allocation adjustments, e.g., on the basis of a production data, are possible. In 2013, a one-off auction took place before the compliance deadline with a minimum price of 120% of the average market price from the last 30 trading days (CNY 48 [EUR 6.29]). Such allowances, however, could only be used for immediate compliance. Further auctioning or other forms of allocation may be introduced during the pilot phase.
COMPLIANCE PERIOD One year (30 June)

FLEXIBILITY

BANKING AND BORROWING Within the pilot phase, banking is allowed across compliance periods. No rules on borrowing.
OFFSETS AND CREDITS Domestic project-based carbon offset credits — China Certified Emission Reduction (CCER) — are allowed. The use of CCER credits is limited to five percent of the annual allocation.
PRICE MANAGEMENT PROVISIONS If prices vary more than 30% in one day, the exchange can take prize stabilization measures, temporarily suspend trading or impose holding limits.

COMPLIANCE

MRV Annual reporting of CO_2 emissions. Third-party verification is required. The Shanghai DRC has released guidelines for monitoring and reporting for the following nine sectors: Iron and steel, electricity, building materials, nonferrous metals, textiles and paper, aviation, large buildings (hotels, commercial and financial) and transport stations.
ENFORCEMENT Between CNY 10,000 (EUR 1,308) — CNY 50,000 (EUR 6,544) can be imposed for non-compliance. In case of serious violations, further sanctions may be imposed, e.g., 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.

OTHER INFORMATION

INSTITUTIONS INVOLVED Shanghai DRC (competent authority); Shanghai Environment and Energy Exchange (trading platform)

Shenzhen (Pilot) Emissions Trading Scheme

in force

EMISSIONS COVERAGE ($MtCO_2e$, 2015)	LIABLE ENTITIES
32.0	832

GAS COVERAGE	ALLOCATION	OFFSETS & CREDITS
CO_2 ONLY	AUCTIONING & FREE ALLOCATION	DOMESTIC

Shenzhen was the first of the Chinese pilot emission trading schemes (ETS) to start operation on 18 June 2013. Shenzhen does not have as much heavy industry as other Chinese regions. 635 medium and small emitters from 26 sectors and 197 buildings are covered under the Shenzhen ETS, accounting for about 40% of Shenzhen's 2010 emissions. On 30 June 2014, Shenzhen finished its first compliance period.

BACKGROUND INFORMATION

OVERALL GHG EMISSIONS (EXCL. LULUCF) 153 $MtCO_2e$ (2012)

GHG REDUCTION TARGETS BY 2015 (12th Five Year Plan): 21% reduction in carbon intensity compared to 2010 levels.

ETS SIZE

ETS CAP 32 $MtCO_2$ (excluding buildings)

EMISSIONS COVERAGE

GHG COVERED CO_2

SECTORS & THRESHOLDS Power, water supply, manufacturing sectors, buildings. **THRESHOLDS:** 5,000tCO_2e/year for enterprises; 20,000m_2 for public buildings and 10,000m_2 for government buildings.

POINT OF REGULATION Mixed: Both the power sector and electricity consuming sectors are included in the scheme. Electricity prices are regulated in China, and therefore a scheme based on direct emissions alone would not induce a pass-through of carbon costs via the electricity price, and would not incentivize demand-side management of electricity. The system therefore covers emissions from the power sector upstream and other sectors downstream.

NUMBER OF LIABLE ENTITIES 635 enterprises, 197 public buildings

PHASES AND ALLOCATION

TRADING PERIODS Three years (2013–2015)

ALLOCATION Allowances are distributed for free based on sector-specific carbon intensity benchmarks.

In addition, a game theoretical approach that takes into account the companies' own estimations of output and emissions is applied for manufacturing companies. Ex-post adjustments are possible.

In 2014, three percent of allowances were auctioned. In the long run, the proportion of allowances allocated through auctions is to increase, progressively transitioning toward full auctioning.

COMPLIANCE PERIOD One year (June 30)

FLEXIBILITY

BANKING AND BORROWING Banking is allowed during the pilot phase. Borrowing not allowed.

OFFSETS AND CREDITS Domestic project-based carbon offset credits — China Certified Emission Reduction (CCER) — are allowed. The use of CCER credits is limited to 10% of the annual compliance obligation.

PRICE MANAGEMENT PROVISIONS In case of market fluctuations, the Shenzhen DRC can either sell extra allowances from a reserve at a fixed price, that can only be used for compliance and cannot be traded, or buy back up to 10% of the total allocation.

COMPLIANCE

MRV Annual reporting of CO_2 emissions with a tier approach taking into account the size of the company. Third-party verification is required.

ENFORCEMENT Penalties for non-compliance range from CNY 50,000 (EUR 6,544) to CNY 150,000 (EUR 19,632). Furthermore, 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 INFORMATION

INSTITUTIONS INVOLVED Shenzhen DRC (competent authority); China Emissions Exchange Shenzhen (trading platform)

Tianjin (Pilot) Emissions Trading System

in force

EMISSIONS COVERAGE ($MtCO_2e$, 2015)	LIABLE ENTITIES
160.0	114

GAS COVERAGE	ALLOCATION	OFFSETS & CREDITS
CO_2 ONLY	FREE ALLOCATION	DOMESTIC

On 26 December 2013, Tianjin was the fifth Chinese region, after Shenzhen, Shanghai, Beijing and Guangdong, to start its pilot emissions trading scheme (ETS). The system covers enterprises from five sectors: heat and electricity production, iron and steel, petrochemicals, chemicals, and exploration of oil and gas. These industries account for around 60% of the city's total emissions. The first compliance period ended on 25 July 2014.

BACKGROUND INFORMATION

OVERALL GHG EMISSIONS (EXCL. LULUCF) 215 $MtCO_2e$ (2012)

GHG REDUCTION TARGETS BY 2015 (12th Five Year Plan): 19% reduction in carbon intensity compared to 2010 levels.

ETS SIZE

ETS CAP 160 $MtCO_2$ (2013)

EMISSIONS COVERAGE

GHG COVERED CO_2

SECTORS & THRESHOLDS Heat and electricity production, iron and steel, petrochemicals, chemicals, exploration of oil and gas. **THRESHOLD:** 20,000 tCO_2/year considering both direct and indirect emissions.

POINT OF REGULATION Mixed: Both the power sector and electricity consuming sectors are included in the scheme. Electricity prices are regulated in China, and therefore a scheme based on direct emissions alone would not induce a pass-through of carbon costs via the electricity price, and would not incentivize demand-side management of electricity. The system therefore covers emissions from the power sector upstream and other sectors downstream.

NUMBER OF LIABLE ENTITIES 114 (2013–2015)

PHASES AND ALLOCATION

TRADING PERIODS Three years (2013–2015)

ALLOCATION Mainly free allocation through grandfathering based on 2009–2012 emissions or emissions intensity. Benchmarking for new entrants and expanded capacity.

COMPLIANCE PERIOD One year (31 May)

FLEXIBILITY

BANKING AND BORROWING Banking allowed during the pilot phase. Borrowing not allowed.

OFFSETS AND CREDITS Domestic project-based carbon offset credits — China Certified Emission Reduction (CCER) — are allowed. The use of CCER credits is limited to 10% of the annual compliance obligation.

PRICE MANAGEMENT PROVISIONS In case of market fluctuations, the Tianjin DRC can buy or sell allowances in order to stabilize the market.

COMPLIANCE

MRV Annual reporting of CO_2 emissions. Third-party verification is required.

ENFORCEMENT In case of non-compliance, companies are disqualified for preferential financial support and policies for three years.

OTHER INFORMATION

INSTITUTIONS INVOLVED Tianjin DRC (competent authority); Tianjin Climate Exchange (trading platform)

Japan

under consideration

In 2010, the Basic Act on Climate Change Countermeasures mandating the introduction of a domestic ETS passed the lower house of parliament. Though several options have been proposed, the government decided to continue evaluating the potential impact on the Japanese economy and the impact of ETS in other countries, while taking into account existing global warming countermeasures—for instance, voluntary actions by industry—and prospects for a fair and effective international climate framework.

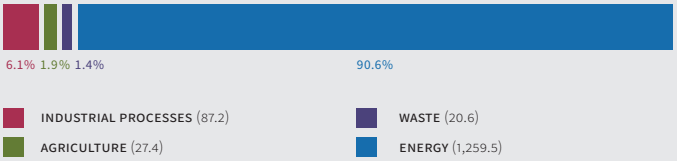
Since the Great East Japan Earthquake of 2011, Japan has focused on revising its national energy policy. In parallel, Japan is currently working on finalizing its plan on global warming countermeasures. Meanwhile Japanese companies can familiarize themselves with a voluntary Cap-and-Trade scheme: the Advanced Technologies Promotion Subsidy Scheme with Emission Reduction Targets (ASSET).

Japan participates in the Kyoto carbon market. In parallel, Japan promotes the Joint Crediting Mechanism(JCM) for the post-2012 era.

BACKGROUND INFORMATION

OVERALL GHG EMISSIONS (EXCL. LULUCF) 1,395 $MtCO_2e$ (FY2013)

OVERALL GHG EMISSIONS BY SECTOR $MtCO_2e$ (2013)



INDUSTRIAL PROCESSES (87.2)
AGRICULTURE (27.4)
WASTE (20.6)
ENERGY (1,259.5)

GHG REDUCTION TARGETS BY 2020: In November 2013, Japan adjusted its GHG reduction target from a 25% reduction from 1990 levels to a 3.8% reduction from 2005 levels, taking into account the impact of the shutdown of all 52 nuclear power plants following the Great East Japan Earthquake. This amounts to a 3.1% rise from 1990 levels, and is subject to change depending on future developments in its energy policy. **BY 2050:** Japan continues to aim at achieving an 80% reduction below 1990 levels.

Thailand

under consideration

Thailand's 11th National Economic and Development Plan (2012–2016) calls for several measures related to the development of a domestic carbon market. Various programs have been initiated and/or are currently under development. The Thailand Greenhouse Gas Management Organization (TGO) is developing a voluntary target-and-trade system for energy efficiency certificates—the Energy Performance Certificate Schemes (EPC)—as part of its activities under the Partnership for Market Readiness (PMR). The Thailand Voluntary Emissions Trading Scheme (Thailand V-ETS) will help the private sector build MRV capacity and integrate carbon in their business models. Furthermore, the Thailand Voluntary Emission Reduction Program (T-VER) will produce credits, which companies and individuals can use as offsets.

BACKGROUND INFORMATION

OVERALL GHG EMISSIONS (EXCL. LULUCF) 331.4 $MtCO_2e$ (2009)

OVERALL GHG EMISSIONS BY SECTOR $MtCO_2e$ (2013)

INDUSTRIAL PROCESSES (19.7)
AGRICULTURE (60.6)
WASTE (9.9)
ENERGY (244.0)
BUNKER FUELS (15.2)

GHG REDUCTION TARGETS Thailand has no mandatory GHG reduction targets under the Kyoto Protocol.

Vietnam

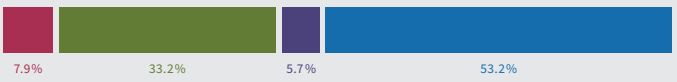
under consideration

Vietnam's Green Growth Strategy (2012) pursues the objective of a low carbon economy and invokes the introduction of market-based instruments. Several measures have been initiated that prepare the implementation of National Appropriate Mitigation Actions (NAMAs) in the waste, steel, cement, chemical fertilizer, wind power and biogas sectors. As part of its activities under the PMR, Vietnam is focusing on the steel and waste sector. The planned MRV system and crediting NAMA will provide the experiences for the implementation of a sector-based Cap-and-Trade program in the steel sector, which could start in 2020.

BACKGROUND INFORMATION

OVERALL GHG EMISSIONS (EXCL. LULUCF) 266 $MtCO_2e$ (2009)

OVERALL GHG EMISSIONS BY SECTOR $MtCO_2e$ (2013)



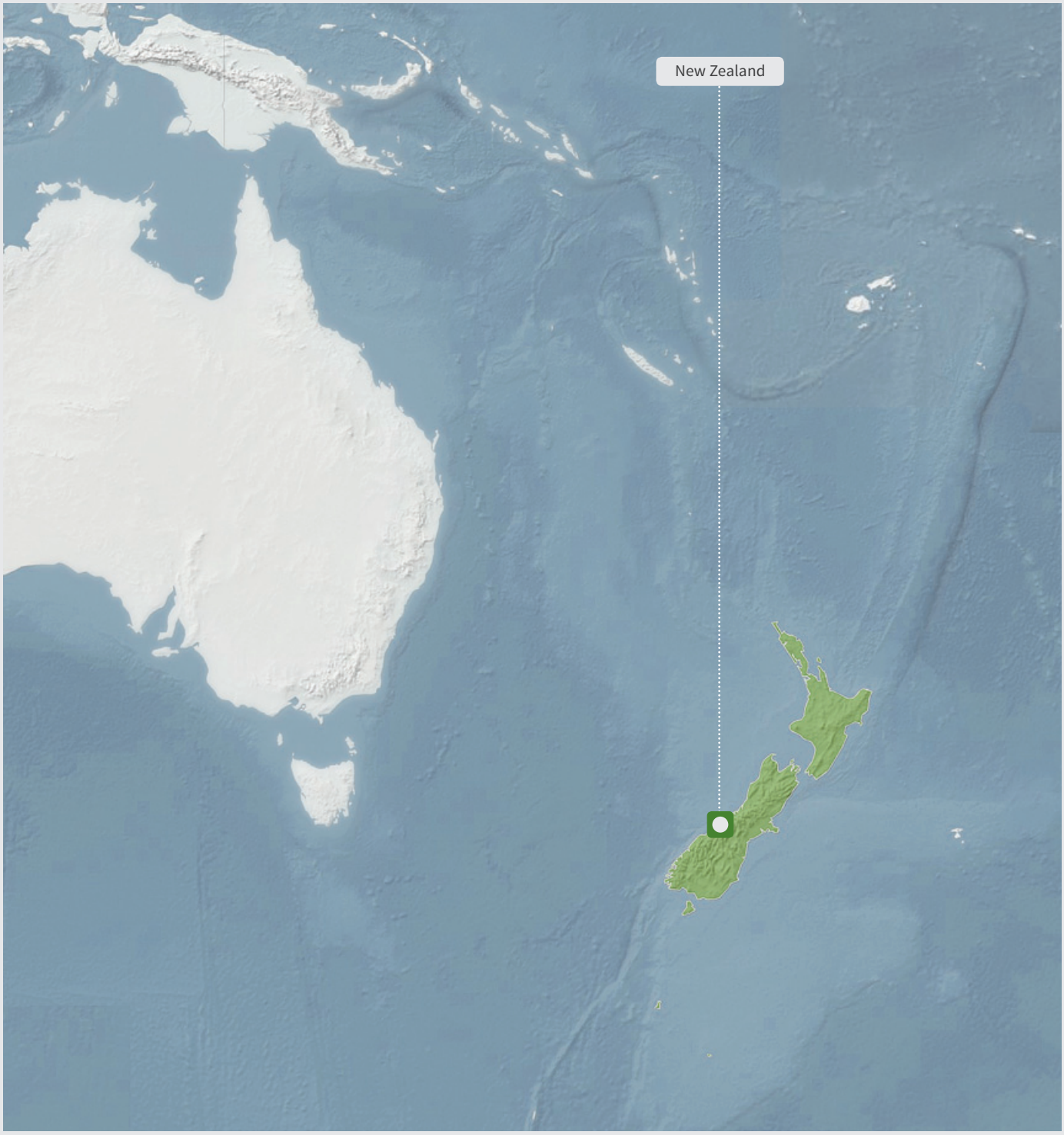
INDUSTRIAL PROCESSES (21.2)
AGRICULTURE (88.3)
WASTE (15.4)
ENERGY (141.0)

GHG REDUCTION TARGETS BY 2020: eight to ten percent below 2011 GHG (intensity) levels. Vietnam has no mandatory GHG reduction targets under the Kyoto Protocol.

Pacific

Despite Australia rolling back its Carbon Pricing Scheme in 2014, emissions trading is still present in the Pacific region. In 2015, New Zealand will transition to a domestic-only ETS and preparations for a second review of the system will take place.

ETS in force
ETS scheduled
ETS considered



New Zealand Emissions Trading Scheme (NZ ETS) in force

EMISSIONS COVERAGE ($MtCO_2e$, 2015)	LIABLE ENTITIES
38.6	2423

GAS COVERAGE	ALLOCATION	OFFSETS & CREDITS
SEVERAL GASES	AUCTIONING & FREE ALLOCATION	INTERNATIONAL UNTIL MAY 2015 & DOMESTIC

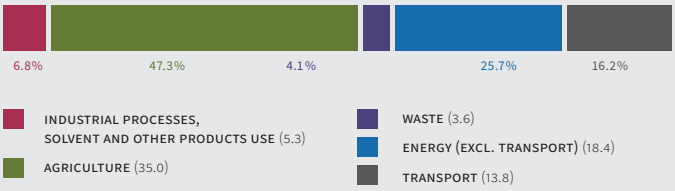
New Zealand launched its emissions trading scheme (NZ ETS) in 2008. The NZ ETS has continued to evolve and now covers all sectors of the economy, with agriculture facing reporting, but not surrender, obligations. The first statutory review of the NZ ETS was completed in 2011 and the NZ ETS was subsequently amended in 2012. A second review of the NZ ETS will begin in 2015, with the scope yet to be decided.

New Zealand decided to take its international emissions reduction commitment to 2020 under the UNFCCC, rather than continuing with the second phase of the Kyoto Protocol. From 31 May 2015, NZ ETS participants will subsequently have restricted access to international Kyoto units (CERs, ERUs and RMUs) and will not be allowed to carryover first commitment period units for use in the NZ ETS after that date. These changes will effectively transition the NZ ETS to a domestic-only scheme from June 2015. New Zealand may consider re-opening access to international units and introducing an auctioning mechanism, if the need arises with changing market conditions.

BACKGROUND INFORMATION

OVERALL GHG EMISSIONS (EXCL. LULUCF) 76.1 $MtCO_2e$ (2012)

OVERALL GHG EMISSIONS BY SECTOR $MtCO_2e$ (2012)



GHG REDUCTION TARGETS BY 2020: An unconditional reduction of five percent below 1990 GHG levels; By 2050: 50% below 1990 GHG levels

ETS SIZE

ETS CAP The NZ ETS has no fixed cap, in order to accommodate carbon sequestration from forestry activities, and to enable full access to international carbon markets. The NZ ETS legislation includes provision to introduce auctioning of NZUs within an overall cap on non-forestry sectors.

EMISSIONS COVERAGE

COVERAGE WITH SURRENDER OBLIGATIONS. EMISSIONS COVERAGE WITH REPORTING OBLIGATIONS: ~98%

GHG COVERED CO_2, CH_4, N_2O, SF_6, HFC_s and PFC_s

SECTORS & THRESHOLDS Sectors were gradually phased-in over time. **2008:** Forestry (mandatory: pre-1990 forest land, voluntary: post-1989 forest land). **2010:** Stationary energy (various thresholds), industrial processing (various thresholds) and liquid fossil fuels (various thresholds). **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. Agriculture faces reporting obligations, but no surrender obligations.

POINT OF REGULATION Point of obligation is placed high-up the supply chain to minimize administrative costs and reduce complexity.

Some large businesses that purchase directly from mandatory NZ ETS participants can choose to opt into the NZ ETS rather than have the costs passed down from their suppliers.

NUMBER OF LIABLE ENTITIES 2,423 entities registered (as of June 2014). 264 entities with both mandatory reporting and surrender obligations. 2,159 entities with voluntary reporting and surrender obligations; mostly for forestry activities. In addition, 67 entities had mandatory reporting without surrender obligations; mostly for agricultural activities.

PHASES AND ALLOCATION

TRADING PERIODS The NZ ETS has year-on-year allocations and surrender obligations.

ALLOCATION Intensity based allocation for the industrial sector (26 eligible activities): 90% free allocation for highly emissions-intensive and trade exposed activities (1,600 tCO_2e/NZD 1 million of revenue [EUR 620,000]). 60% free allocation for moderately emissions-intensive and trade exposed activities (800 tCO_2e per NZD 1 million of revenue).

In 2012, 3.45 million NZUs were allocated to industrial participants, compared to 27.08 million units surrendered in this period.Forestry and fisheries sectors: Owners of pre-1990 forest land received a one-off free allocation of NZUs to compensate for a decrease in land value due to the introduction of the NZ ETS, and fishing quota owners were also compensated for rising fuel costs.

Liquid fossil fuels, energy, industrial, waste and synthetic gases (non-forestry sectors): Participants are required to surrender one unit for every two tons of emissions produced.

In 2012, the NZ ETS legislation was amended to allow the introduction of auctioning of NZUs within an overall cap on non-forestry sectors. However, no decision to implement auctioning has been taken.

COMPLIANCE PERIOD One year

FLEXIBILITY

BANKING AND BORROWING Banking is allowed except for those units that were purchased under the fixed price option (see "price management provisions"). Borrowing is not allowed.

OFFSETS AND CREDITS

INTERNATIONAL UNITS ALLOWED IN NZ ETS: ERUs, RMUs and CERs from the first commitment period of the Kyoto Protocol allowed until the 31 May 2015. Kyoto units from the second commitment period are restricted. The use of international units will be reviewed to ensure market liquidity, should the need arise, or when international market conditions are better suited to New Zealand's domestic circumstances. **QUALITATIVE LIMIT:** CERs and ERUs from nuclear projects, long-term CERs, temporary CERs and AAUs that do not originate from New Zealand are ineligible for surrender. CERs and ERUs from HFC-23 and N_2O destruction projects, as well as from certain large-scale hydroelectricity projects are also ineligible. **QUANTITATIVE LIMIT:** Unlimited use, however, under the first Kyoto Commitment Period, New Zealand was required to hold at least 90% of its initial assigned amount in the registry (approximately 280 million units). This included AAUS, CERs, ERUS and RMUs.

Since January 2013, pre-1990 forest landowners have the option to offset deforestation on their land by planting an equivalent new forest elsewhere in New Zealand (under given conditions).

PRICE MANAGEMENT PROVISIONS Transitional measures were implemented to assist firms with the transition to having a price placed on carbon. These include one unit for two tons of emissions surrender obligation for non-forestry sectors and a NZD 25 fixed price option (EUR 16), which effectively acts as a price ceiling. These measures were extended following the 2011 NZ ETS Review.

COMPLIANCE

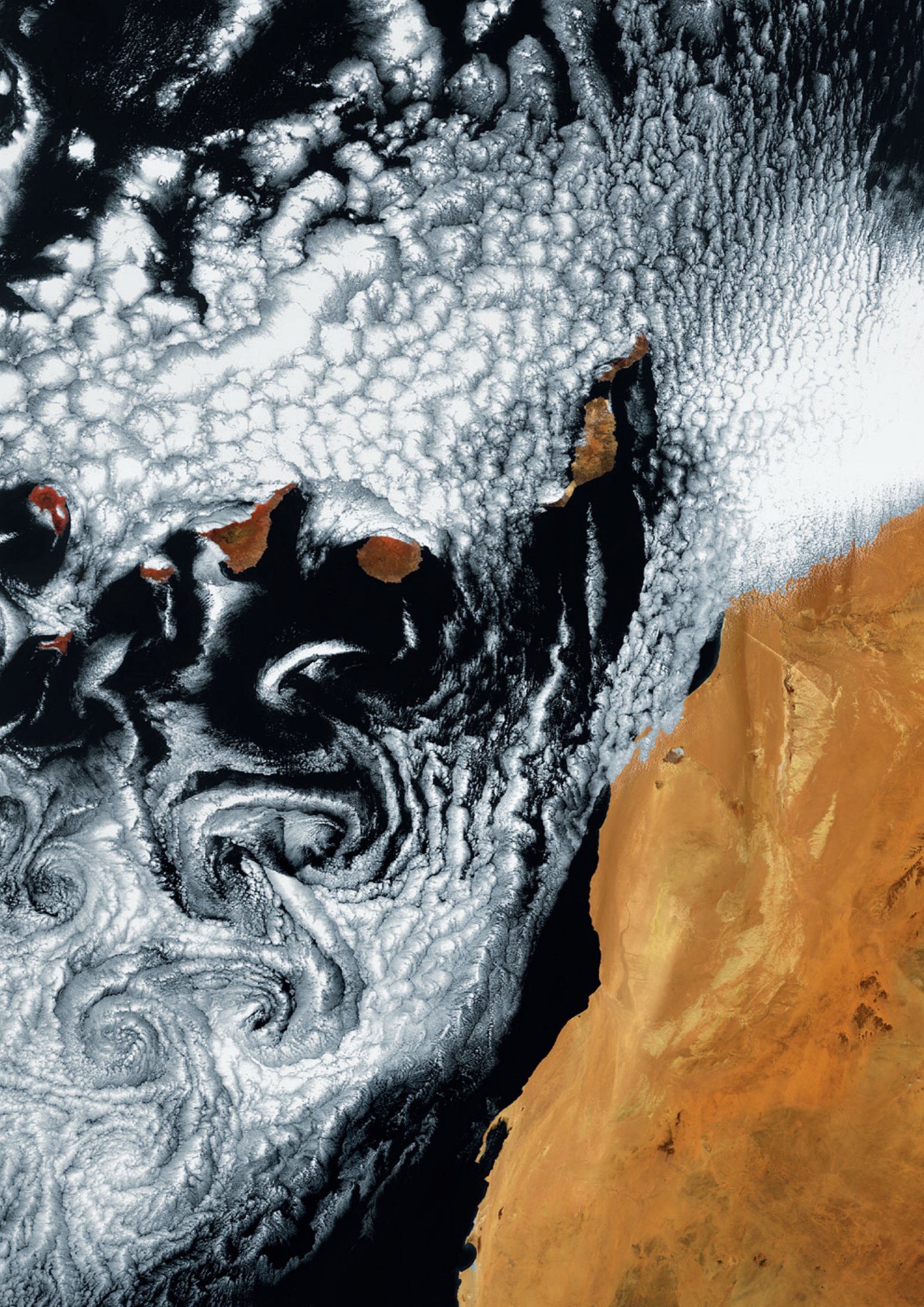
MRV Annual self-reporting supplemented by audits. Third-party verification is only required when participants apply for the use of a unique emission factor.

ENFORCEMENT An entity that fails to surrender emission units when required to, will have to surrender units, and pay a penalty of NZD 30 (EUR 20) for each unit. Entities can be fined up to NZD 24,000 (EUR 15,100) 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.

Entities can also be fined up to NZD 50,000 (EUR 31,500) for knowingly altering, falsifying or providing incomplete or misleading information about any obligations under the emissions trading 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.

OTHER INFORMATION

INSTITUTIONS INVOLVED Ministry for the Environment; the Environmental Protection Authority and Ministry for Primary Industries



About ICAP
introducing the International Carbon Action Partnership

ICAP is the only multilateral forum focusing exclusively on Cap-and-Trade systems for climate mitigation. ICAP promotes knowledge sharing and capacity building on emissions trading, and facilitates technical discussions on design and compatibility issues among ETS policymakers.

Mission
ICAP's mission is to support ETS development worldwide with a view to creating a well-functioning global carbon market.

Objectives

- Share best practices and learning from each other's experience of ETS;
- Help policymakers recognize design compatibility issues and opportunities at an early stage;
- Facilitate possible future linking of trading programs;
- Highlight the key role of Cap-and-Trade as an effective climate policy response;
- Build and strengthen partnerships among governments.

Technical Dialogue
The main function of ICAP is to facilitate technical dialogue on key design aspects of Cap-and-Trade systems. Conferences and technical workshops bring together experts and policymakers from around the world to learn, share, and reflect on the road ahead for emissions trading.

Technical design issues that the ICAP technical dialogue has covered so far include allocation (benchmarking and auctioning), market oversight, competitiveness and carbon leakage, offsets, and monitoring, reporting, verification, compliance and enforcement (MRVCE). Issues are dealt with in depth and with a focus on increasing system compatibility to enable linking.

Linking ETS is the overarching theme for the ICAP technical dialogue in 2014 and 2015 and a working group has been established to this effect. The working group examines possible alternatives to full design harmonization when linking, and is developing a "guide to linking" that outlines the various issues to consider when initiating linking consultations among jurisdictions.

Capacity Building
ICAP continues to hold capacity building seminars on emissions trading for developing and emerging economies. The ICAP courses provide an intensive 10–14 day introduction to all aspects of ETS design and implementation.

Beginning in 2009, ICAP has organized 11 courses, with 289 graduates from 39 countries. The courses target policymakers as well as stakeholders from the non-governmental, academic and private sectors. Experienced policymakers from ETS jurisdictions and experts from think tanks, business and academia teach about the key building blocks in designing and operating an ETS, from allowance allocation and MRV to stakeholder engagement, the functioning and dynamics of carbon markets and the linking of ETS.

In 2015, two ICAP courses will take place: an introductory-level course in Seoul, Korea primarily targeting participants from Asia, and an ETS master class in London, United Kingdom.

Knowledge Sharing
ICAP aspires to act as a knowledge hub on Cap-and-Trade matters. The central feature of this effort is the interactive "ETS Map," found on the ICAP website at www.icapcarbonaction.com. The ETS Map provides up-to-date information on ETS systems worldwide operating and under consideration, through a clean and user-friendly interface. Moreover, the quarterly ICAP newsletter reports on the latest developments in ETS worldwide. Finally, in cooperation with the World Bank's Partnership for Market Readiness (PMR), ICAP is developing a "How to" Handbook on the practicalities of establishing and operating an ETS. The ETS Handbook will provide guidance to policy makers on the steps required to establish a domestic ETS and the design options available, leveraging the substantial practical experience gained on ETS to date.

Members (as of January 2015)
Arizona, Australia, British Columbia (WCI), California (WCI/CA ETS), Denmark (EU ETS), European Commission (EU ETS), France (EU ETS), Germany (EU ETS), Greece (EU ETS), Ireland (EU ETS), Italy (EU ETS), Maine (RGGI), Manitoba (WCI), Maryland (RGGI), Massachusetts (RGGI), Netherlands (EU ETS), New Jersey, New Mexico, New York (RGGI), New Zealand (NZ ETS), Norway (EU ETS), Ontario (WCI), Oregon, Portugal (EU ETS), Québec (WCI/QC ETS), Spain (EU ETS), Tokyo Metropolitan Government (TMG ETS), Vermont (RGGI), United Kingdom (EU ETS) and the state of Washington.

Observers
Japan, Kazakhstan (KAZ ETS), Republic of Korea (KETS) and Ukraine

www.icapcarbonaction.com

List of Acronyms

Asset	Advanced Technologies Promotion Subsidy Scheme with Emission Reduction Targets
AAU	Assigned Amount Units
BAU	Business as Usual
BM&F	Brazilian Mercantile and Futures Exchange
Bovespa	São Paulo Stock Exchange
BVRio	Bolsa Verde do Rio
C&T	Cap-and-Trade
CAD	Canadian Dollar
CCAP 2020	Climate Change Action Plan 2013–2020
CCER	China Certified Emission Reductions
CCR	Cost Containment Reserve
CCS	Carbon Capture and Storage
CDM	Clean Development Mechanism
CER	Certified Emission Reductions
Cetesb	Companhia de Tecnologia de Saneamento Ambiental
CH_4	Methane
CHF	Swiss Franc
citss	Compliance Instrument Tracking System Service
CNY	Chinese Yuan Renminbi
CO_2	Carbon Dioxide
CPp	Clean Power Plan
dehst	German Emissions Trading Authority
DRC	Development and Reform Commission
EEA	European Economic Area
EFTA	European Free Trade Association
EITE	Energy-Intensive and Trade-Exposed
EPA	Environmental Protection Agency
EPC	Energy Performance Certificate
ERU	Emission Reduction Unit
ETS	Emissions Trading System or Emissions Trading Scheme
EU	European Union
EUA	European Union Allowance
EUR	Euro
FECOP	Fundo Estadual de Prevenção e Controle da Poluição
FY	Financial Year
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GVCES/FGV	Centro de Estudos em Sustentabilidade da Fundação Getúlio Vargas
GWP	Global Warming Potential
HFCs	Hydrofluorocarbon
HFC-23	Fluoroform
ICAO	International Civil Aviation Organization
ICAP	International Carbon Action Partnership
ISO	International Organization for Standardization
JCM	Joint Crediting Mechanism
JI	Joint Implementation
JPY	Japanese Yen
KETS	Korean Emissions Trading Scheme
Kl	Kiloliters
KRW	South Korean Won
Kw	Kilowatts
KZT	Kazakhstan Tenge
LDCs	Least Developed Countries
LULUCF	Land Use, Land-Use Change and Forestry
MmC	Mine Methane Capture
MRV	Monitoring, Reporting and Verification
MSR	Market Stability Reserve
Mt	Million Metric Tons
$MtCO_2e$	Million Metric Tons of Carbon Dioxide Equivalent
$MtCO_2e$	Metric Tons of Carbon Dioxide Equivalent
MW	Megawatt
N_2O	Nitrous Oxide
NAMA	Nationally Appropriate Mitigation Actions
NDRC	National Development Reform Commission
NER	New Entrant Reserve
NF_3	Nitrogen Triflouride
NPC	National People's Congress
NZ	New Zealand
NZD	New Zealand Dollar
NZU	New Zealand Units
OECD	Organization for Economic Cooperation and Development
PFCs	Perfluorocarbon
PMR	Partnership for Market Readiness
pnmc	Brazilian National Climate Change Policy
rbob	Reformulated blendstock for oxygenate blending
RGGI	Regional Greenhouse Gas Initiative
RMU	Removal Unit
RPS	Renewable Portfolio Standard
SF_6	Sulfur Hexafluoride
tCe	Ton of carbon equivalent
tCO_2	Ton of carbon dioxide
tCO_2e	Ton of carbon dioxide equivalent
TGO	Thailand Greenhouse Gas Management Organization
v-ets	Thailand Voluntary Emissions Trading Scheme
TMG	Tokyo Metropolitan Government
T-VER	Thailand Voluntary Emission Reduction
UNDP	United Nations Development Program
UFRJ	Universidade Federal do Rio de Janeiro
UNFCCC	United Nations Framework Convention on Climate Change
USD	US Dollar
US EPA	US Environmental Protection Agency
WCI	Western Climate Initiative

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Guinea-Bissau and the Bissagos islands, January 2014 (cover) © USGS/ESA
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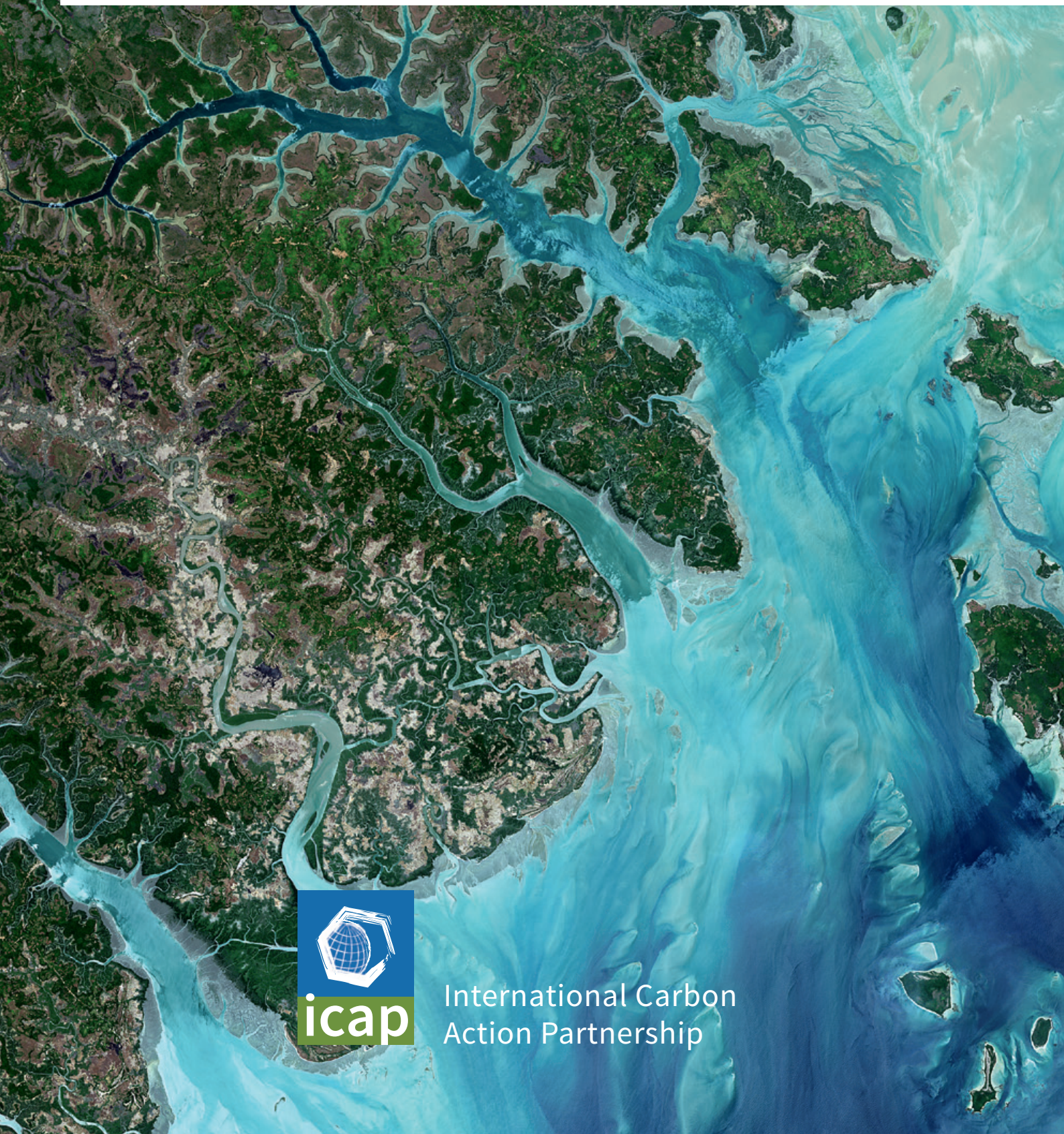
In 2015, there are 17 emissions trading systems (ETS) for greenhouse gas emissions in force across four continents, covering 35 countries, 13 states or provinces and seven cities. The 2015 Status Report by the International Carbon Action Partnership (ICAP) aims to makes sense of the great diversity of ETS in operation and under consideration worldwide. It combines up-to-date factsheets on existing and planned ETS worldwide with contributions from policymakers and carbon market experts.



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