

CARBON PRICING WATCH 2015

An advance brief from the State and Trends of Carbon Pricing 2015 report, to be released late 2015

At a glance – recent key carbon pricing developments

Globally, 2014 was the warmest year on record¹ and temperatures are now 0.8°C above pre-industrial levels.² Even at this relatively low level of warming, the earth is showing the impact—more frequent occurrences of extreme heat and extreme precipitation, a drying trend in drought-prone regions, and increased tropical cyclone activity in the North Atlantic.³ The Intergovernmental Panel on Climate Change (IPCC) says that we need to reach zero net emissions by 2100 to stabilize climate change around the 2°C target above pre-industrial temperatures, agreed to by governments as the maximum acceptable amount of global warming.⁴ Carbon pricing is an essential piece of the path toward this decarbonization.

Overview

Significant progress in carbon pricing has been made over the last ten years, as displayed in Figure 1. In 2015, about 40 national and over 20 subnational jurisdictions, representing almost a quarter of global greenhouse gas emissions (GHG),⁵ are putting a price on carbon,

as illustrated in Figure 2. Together, the carbon pricing instruments in these jurisdictions cover about half of their emissions, which translates into approximately 7 GtCO₂e, or about 12 percent of annual global GHG emissions.⁶ This figure represents a threefold increase over the past decade.⁷

The total value of the emissions trading schemes (ETs) reported in the State and Trends of Carbon Pricing 2014 report was about US\$30 billion (US\$32 billion to be precise). Despite the repeal of Australia's Carbon Pricing Mechanism in July 2014, and mainly due to the launch of the Korean ETS and the expansion of GHG emissions coverage in the California and Quebec ETs, the value of global ETs as of April 1, 2015 increased slightly to about US\$34 billion. In addition, carbon taxes around the world, valued for the first time in this report, are about US\$14 billion. Combined, the value of the carbon pricing mechanisms globally in 2015 is estimated to be just under US\$50 billion.⁸

¹ Temperature records began in 1880. Source: NOAA National Climatic Data Center, *Global Analysis - Annual 2014*, accessed April 28, 2015, <https://www.ncdc.noaa.gov/sotc/global/2014/13>.

² Source: World Bank, *Turn Down the Heat: Confronting the New Climate Normal*, 2014.

³ Source: World Bank, *Turn Down the Heat: Confronting the New Climate Normal*, 2014.

⁴ Source: World Bank, *Decarbonizing Development: Three Steps to a Zero-Carbon Future*, 2015.

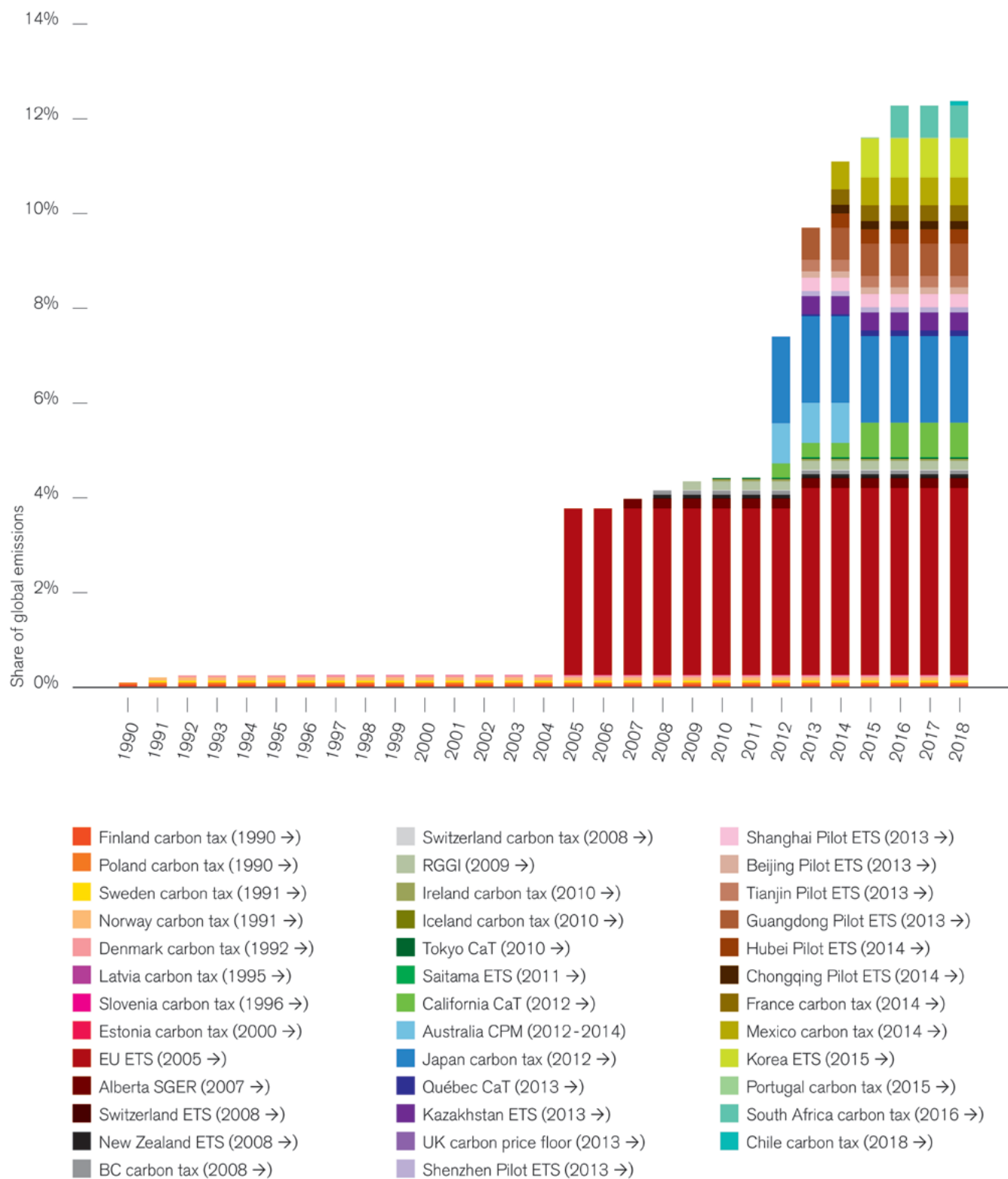
⁵ The GHG of 39 national and 23 subnational jurisdictions represent about 23% of global emissions.

⁶ These numbers are revised on a regular basis to reflect updates in GHG emissions in each jurisdiction, changes in the design and coverage of existing carbon pricing instruments, inclusion of new instruments, and availability of data. Thus, these latest figures and the ones from previous reports are not necessarily comparable.

⁷ In 2005, carbon pricing instruments covered 4 percent of annual global GHG emissions. This figure has increased to 12 percent in 2015.

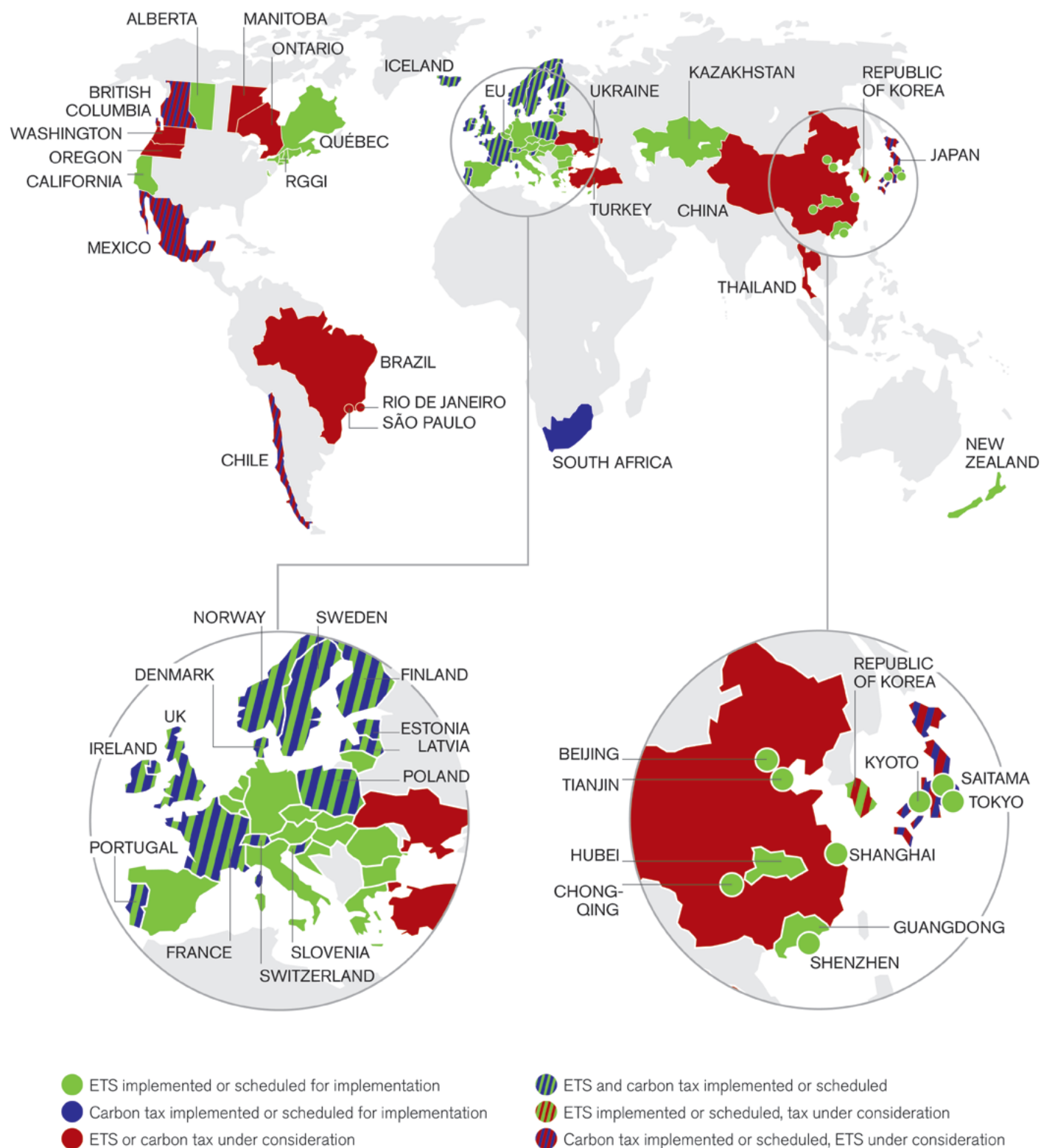
⁸ The estimated total value for ETS markets is based on each ETS's allowance volume for 2015, or the latest year available, multiplied by the allowance price on April 1, 2015. The estimated total value for carbon taxes is based on official government budgets for 2015 where available, or otherwise on the GHG emissions covered multiplied by the nominal carbon price on April 1, 2015.

Figure 1. Regional, national, and subnational carbon pricing initiatives: share of global emissions covered⁹



⁹ Only the introduction or removal of an ETS or carbon tax is shown. Emissions are represented as a share of global emissions in 2012. Annual changes in global, regional, national, and subnational GHG emissions are not shown in the graph

Figure 2. Summary map of existing, emerging, and potential regional, national and subnational carbon pricing instruments (ETS and tax)¹⁰



¹⁰ Carbon pricing instruments are considered "implemented" or "scheduled for implementation" once they have been formally adopted through legislation.

New regional, national, and subnational carbon pricing initiatives

Notable developments in 2014 include the implementation of the pilot ETSs in Hubei and Chongqing in China, carbon taxes in France and Mexico¹¹ and the passing of carbon tax legislation in Chile.

In addition, two new carbon pricing instruments entered into force on January 1, 2015: the Korea's ETS and Portugal's carbon tax.

Existing regional, national, and subnational carbon pricing initiatives

As new carbon pricing instruments emerge, already existing national and regional instruments have been further developed and refined. While industry protection and the allocation of carbon pricing revenue spending have been important topics in the carbon pricing discourse, structural reform is the top priority of the European Union (EU) ETS agenda, the debate on the Market Stability Reserve (MSR)¹² having reached consensus on a 2019 start date.

In addition, California and Québec successfully linked their ETSs and expanded their GHG emissions coverage to include transport fuels. China continued its preparations for the introduction of a national ETS, which is expected to be launched in 2016. It will be part of China's mitigation strategy to reach its target of emissions peaking around 2030. In the meantime, China's seven pilot schemes have expanded in scope and are exploring possibilities of cooperation with other regions.

Finally, the political decision to replace Australia's Carbon Pricing Mechanism with the Direct Action Plan, which retains offsetting but does not impose a cap on GHG emissions, and the further delay in linking the EU's and Switzerland's ETSs, highlight the evolving nature of carbon pricing instruments as they are further aligned with broader national priorities.

Corporate carbon pricing

A number of policy makers in both developed and developing countries, together with business leaders, continue to voice their support for the critical role of carbon pricing in achieving a global decarbonized economy.¹³ The role of the private sector in carbon pricing is growing, with businesses increasingly engaging on the topic. In addition, the adoption of an internal carbon price in business strategies is spreading, even in regions where carbon pricing has not been legislated. Currently, at least 150 companies are using an internal price on carbon.¹⁴ These companies represent diverse sectors, including consumer goods, energy, finance, industry, manufacturing, and utilities.

Looking ahead

Carbon pricing will continue to be used as an instrument to reduce GHG emissions. This is underscored by several Intended Nationally Determined Contributions (INDCs), which explicitly indicate that carbon pricing will be an element of **their** mitigation strategy. Furthermore, the EU has confirmed that its ETS will be the key instrument used to achieve its 2030 emission reduction target.

¹¹ For further details on France's and Mexico's carbon taxes, please refer to World Bank, *State and Trends of Carbon Pricing*, May 2014.

¹² In February 2014, the European Commission decided to temporarily postpone the auctioning of EU ETS allowances, a process also known as "back-loading." Following this change, the focus of the EU ETS structural reform agenda shifted to the need for greater price stability and predictability through flexibility of allowance supply in the EU ETS. The proposed MSR was designed to achieve this goal.

¹³ The World Bank Group is supporting these developments with initiatives such as the Carbon Pricing Leadership Coalition (CPLC) and the Partnership for Market Readiness (PMR), among others.

¹⁴ Source: CDP, *Global Corporate Use of Carbon Pricing: Disclosures to Investors*, 2014.

International carbon pricing update

Advances at the international level have been modest. The key objectives of the 20th Conference of the Parties (COP20) to the United Nations Framework Convention on Climate Change (UNFCCC), in December 2014, were (i) to decide what information is required in the INDCs and (ii) to consider the elements of the draft negotiation text in preparation for COP21 in Paris. On both fronts, progress has been limited and the lack of pre-2020 ambition remains a challenge. The Doha Amendment to the Kyoto Protocol is currently not legally binding since to date it has been ratified by only 31 of the required 144 Parties.¹⁵

Rather than formulate detailed requirements for the content of the INDCs, the agreement reached in Lima made a series of recommendations.¹⁶ As of May 15, 2015, Andorra, Canada, the EU, Gabon, Liechtenstein, Mexico, Norway, Russia, Switzerland, and the United States – together accounting for approximately 30 percent of global GHG emissions – had submitted their INDCs. Based on preliminary findings by some market analysts, further dialogue may be needed to make the INDCs consistent with a 2°C pathway. Several existing INDCs explicitly indicate that carbon pricing will be an element of their mitigation strategy. In addition, Mexico's INDC stipulates that the emission reduction commitment could increase from 25 to 40 percent, subject to a global climate agreement that asks for, among other things, carbon pricing mechanisms implemented internationally.¹⁷

In February 2015, the Ad Hoc Working Group on the Durban Platform for Enhanced Action (ADP), released the negotiating text¹⁸ for an agreement at COP21, building on the output of the Lima talks. The role of carbon markets in a future agreement is open for discussion, with six options proposed in this text.¹⁹ These range from explicit definitions of market mechanisms, including definitions of an ETS and an enhanced Clean Development Mechanism (CDM), to descriptions of accounting rules alone, to no provisions at all for market mechanisms. Formal talks on the negotiating text will resume in Bonn in June 2015.

¹⁵ As of May 15, 2015, the following Parties had ratified the Doha Amendment: Bangladesh, Barbados, Brunei Darussalam, China, Comoros, Congo, Djibouti, Ecuador, Grenada, Guyana, Honduras, Indonesia, Kenya, Liechtenstein, Marshall Islands, Mauritius, Mexico, Micronesia, Monaco, Morocco, Namibia, Nauru, Norway, Palau, Peru, Singapore, Solomon Islands, South Africa, Sudan, Tuvalu, and United Arab Emirates. Source: *Doha Amendment to the Kyoto Protocol*, accessed May 15, 2015, https://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXVII-7-c&chapter=27&lang=en.

¹⁶ Source: Center for Climate and Energy Solutions, *Outcomes of the UN Climate Change Conference in Lima*, 2014.

¹⁷ Source: Mexico, INDC, 2015.

¹⁸ Source: UNFCCC, *Negotiating Text*, February 25, 2015.

¹⁹ Source: UNFCCC, *Negotiating Text*, February 25, 2015.

Clean Development Mechanism/Joint Implementation

The declining market trend for Kyoto credits—Certified Emission Reductions – (CERs) and Emission Reduction units (ERUs) – continued in 2014. To date, EU ETS installations have used 1.45 billion CERs and ERUs²⁰ to help with their compliance obligations, or 90 percent of the total 1.6 billion allowed by the EU ETS between 2008 and 2020. The former number represents about 60 percent of total Kyoto credits issued so far.²¹ The total residual demand for Kyoto credits between 2015 and 2020 in existing carbon pricing initiatives (such as the EU ETS) is expected to be minimal. On the other hand, the potential supply for the same period is still high.²² The lack of future demand is likely to lead to a substantial reduction in the supply of credits,²³ thereby preventing any significant price recovery from the currently historically low prices. Furthermore, carbon market actors continue to exit the market.²⁴

In order to support the CDM and Joint Implementation (JI) through these difficult market conditions, recent policy decisions have focused on the streamlining of project procedures and methodologies,²⁵ the promotion of voluntary CER cancellations,²⁶ and new procedures for voluntary deregistration of projects. As to the latter item, if a project has been deregistered from the CDM, it can seek alternative financing by generating offsets in national schemes, such as the offset mechanism used by pilot ETSs in China.²⁷

Results-Based Finance

The Results-Based Finance (RBF) approach provides a project with financial support after its emission reductions have been duly verified. Some RBF programs purchase compliance emission reduction units, including CERs and

²⁰ Source: European Commission, *Updated information on exchange and international credit use in the EU ETS*, May 4, 2015, http://ec.europa.eu/clima/news/articles/news_2015050402_en.htm

²¹ As of April 1, 2015, 2.4 billion CERs and ERUs had been issued. Source: UNEP DTU CDM Pipeline, accessed April 30, 2015.

²² Based on data obtained from Thomson Reuters Point Carbon and CDC Climat for the *State and Trends of Carbon Pricing 2014* report, full potential for CER and ERU issuance between 2014 and 2020 was estimated at 3.5-5.4 GtCO₂e. Also, UNEP DTU Partnership estimates total issuance of CERs until 2020 to be about 11 GtCO₂e (nominal value). Source: UNEP DTU CDM Pipeline, accessed April 30, 2015.

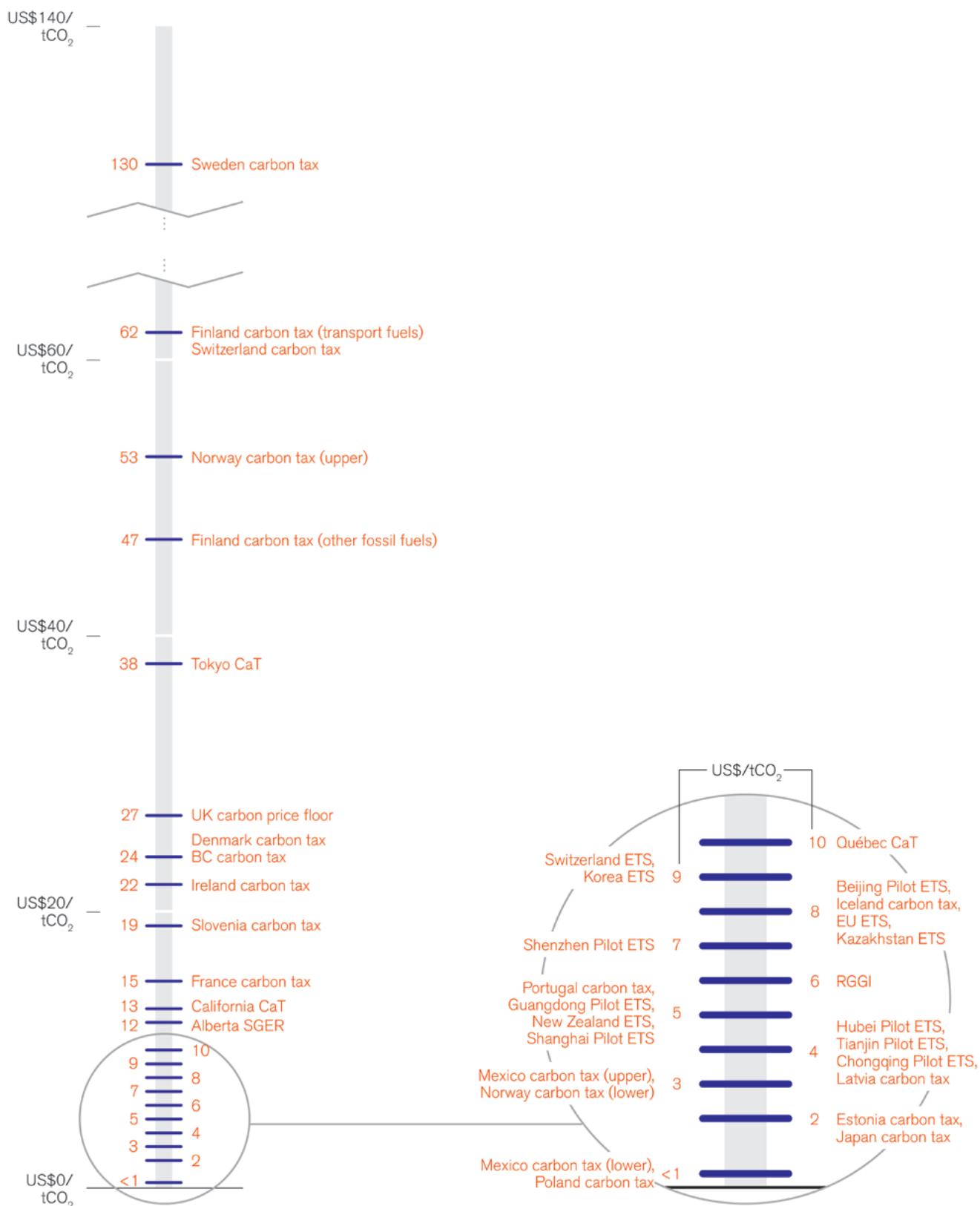
²³ Projects incur operational and regulatory costs to generate credits. Without a strong signal of demand for those credits, project developers are expected to reduce or discontinue their mitigation activity in some of those projects.

²⁴ For example, SGS withdrew from the validation and verification business in June 2014; in April 2015, Standard Bank closed its carbon desk, and Bunge announced it would close Climate Change Capital.

²⁵ Source: IETA, *Lima COP20 Summary*, 2014; Thomson Reuters, *Year in Review and Outlook: Asia on the Rise*, January 2015.

²⁶ Source: Thomson Reuters, *Same Same but Different - Progress within Reach in Lima COP?* December 9, 2014.

²⁷ Source: Thomson Reuters, *Same Same but Different - Progress within Reach in Lima COP?* December 9, 2014.

Figure 3. Prices of existing carbon pricing instruments²⁸²⁸ Prices on April 1, 2015.

ERUs,²⁹ helping to bridge the current lack of demand for these units. Other programs not designed for compliance markets also use RBF as a direct funding mechanism.³⁰

Regional, national, and subnational carbon pricing update

Carbon pricing has been implemented or is scheduled to commence in almost 40 national and over 20 subnational jurisdictions, as displayed in Figure 2. As shown in Figure 3, the prices observed vary widely and reflect the national or regional context of the instrument in question. Prices have shown little movement over the past year.

Governments commonly use funds raised through carbon taxes and the sale of allowances in ETSs to lower other taxes on businesses and households or to finance emission mitigation projects. In 2014, it is estimated that over US\$15 billion³¹ was raised in government revenue in this manner, a figure 50 percent higher than the US\$10.2 billion currently pledged to the Green Climate Fund.³² This highlights the potential to generate significant revenue streams through these means.

Further details on key developments in carbon pricing over the past year are presented below.³³

Canada and the United States

In the absence of national carbon pricing instruments in Canada and the United States, ETSs are being developed in California, Québec, and the Regional Greenhouse Gas Initiative (RGGI) states. The California and Québec Cap-and-Trade Programs officially linked up in January 2014, and the first shared auction took place in November 2014. The scope of both programs was enlarged in 2015 to incorporate transport fuels. This extended the coverage from about 35 to 85 percent of California and Québec's total GHG emissions. Legislators in California are expected to debate the size of the 2050 cap in the 2015 legislative session, which ends in September.³⁴ This follows California's announcement of a 2030 target to reduce

GHG emissions by 40 percent with respect to the 1990 emission level.³⁵ An ETS bill is currently being considered by the Washington State legislature.³⁶ If implemented, this is expected to price carbon at around US\$12 per tCO₂e, starting in 2016.³⁷

On April 13, 2015, Ontario announced its intention to implement an ETS linked to California and Québec's Cap-and-Trade Programs.³⁸ Ontario also signed a Memorandum of Understanding with Québec to collaborate on market mechanisms, as well as to harmonize GHG emissions reporting. Alberta's Specified Gas Emitters Regulation expires on June 30, 2015. No announcements have been made on the future of the program. However, the options under consideration include expanding the scope of coverage, raising the carbon price, and increasing the emission reduction requirement. British Columbia's carbon tax remains at the 2012 level of C\$30 (US\$25) per tCO₂e.

Looking ahead, the United States (through its INDC) has committed to a 26–28 percent reduction in GHG emissions from the 2005 baseline level by 2025. Individual states have the flexibility to choose their own compliance mechanisms, including emissions trading, efficiency measures, and increased deployment of renewable energy. The United States Environmental Protection Agency (EPA), under its Clean Power Plan (CPP), enables emissions trading and other types of cooperation between states by allowing multi-state approaches to compliance. The CPP has received support from officials representing the California Cap-and-Trade Program and the RGGI.

Chile

In September 2014, the Chilean parliament approved a carbon tax of US\$5 per tCO₂. Starting in 2018, this tax will be applied to power generators with a thermal plant capacity greater than 50 megawatts.³⁹

²⁹ Examples include the Carbon Initiative for Development (Ci-Dev) and the Pilot Auction Facility for Methane and Climate Change Mitigation (PAF).

³⁰ Examples include the Energy+ Partnership, the Nordic Climate Facility, and the Facility for Performance Based Climate Finance in Latin America, from the Development Bank of Latin America (CAF).

³¹ Author's calculations are based on auction revenue reports of the different ETSs, payments into Alberta's Climate Change and Management Fund, and the annual budget of governments that have carbon taxes in place.

³² Source: Green Climate Fund, *Status of Pledges and Contributions made to the Green Climate Fund*, April 17, 2015.

³³ Countries are listed in alphabetical order.

³⁴ Source: Environmental Defense Fund, *Carbon Market California*, 2015.

³⁵ Source: Office of Governor Edmund G. Brown Jr., *Governor Brown Establishes Most Ambitious Greenhouse Gas Reduction Target in North America*, April 29, 2015, <http://gov.ca.gov/news.php?id=18938>.

³⁶ Source: Washington State legislature, *Implementing a Carbon Pollution Market Program to Reduce Greenhouse Gas Emissions*, accessed May 1, 2015, <http://app.leg.wa.gov/billinfo/summary.aspx?year=2015&bill=1314>.

³⁷ Source: Reuters, *Washington Governor Unveils Carbon Cap-and-Trade Plan*, December 17, 2014, <http://www.reuters.com/article/2014/12/18/us-washington-carbon-policy-idUSKBN0JW01G20141218>.

³⁸ Source: Ministry of the Environment and Climate Change, Ontario government, *How Cap and Trade Works*, April 13, 2015, <http://news.ontario.ca/ene/en/2015/04/how-cap-and-trade-works.html>.

³⁹ Source: Marcelo Teixeira and Andre Grenon, *Chile Becomes the First South American Country to Tax Carbon*, September 27, 2014, <http://uk.reuters.com/article/2014/09/27/carbon-chile-tax-idUKL6N0RR4V720140927>.

China

Following the start of the pilot ETSs in Beijing, Guangdong, Shanghai, Shenzhen, and Tianjin in 2013, and in Chongqing and Hubei in 2014, the designs of some of these schemes are rapidly evolving. Their scope is expanding and their stringency is being heightened. For example, Shenzhen is planning to expand its ETS to include transportation;⁴⁰ Guangdong is considering to include more industrial sectors, such as buildings and transport; and in Hubei, 49 new companies are covered by its ETS.⁴¹ Furthermore, Chongqing reduced its cap at a greater rate than anticipated, lowering the number of freely allocated allowances by 7 percent compared to 2013.⁴² Until March 2015, approximately 17 million allowances worth US\$100 million had been traded in all schemes combined.⁴³

Over the past year, China has focused on extending emissions trading beyond the seven pilots.⁴⁴ Guangdong and Shenzhen are exploring a more coordinated approach to their respective ETS pilots, while Beijing is exploring an inter-regional ETS with Chengde, a city in Hebei province.⁴⁵ Furthermore, Shanghai is considering regional cooperation with Zhejiang, Jiangsu, Anhui, Jiangxi, Shandong, and Fujian provinces to exchange information and discuss ETS design and operation.⁴⁶ Finally, Beijing, Tianjin, and the Hubei provinces signed an agreement to cooperate on GHG mitigation.⁴⁷

⁴⁰ Source: Carbon Pulse, *Shenzhen Set to Broaden out Emissions Scheme*, March 16, 2015, <http://carbon-pulse.com/shenzhen-set-to-broaden-out-emissions-scheme/>.

⁴¹ Source: Carbon Pulse, *Hubei to Expand Emissions Trading Scheme*, December 3, 2015, <http://carbon-pulse.com/hubei-to-expand-emissions-trading-scheme-state-media/>.

⁴² Source: Chongqing Municipal Development and Reform Commission, *Chongqing Municipal Development and Reform Commission issued a notice of 2014 annual Chongqing carbon emissions quotas*, March 19, 2015, <http://www.cqdpcc.gov.cn/article-1-21088.aspx>; Carbon Pulse, *Chongqing Cuts Allocation by 9 Million Permits in 2014*, March 10, 2015, <http://carbon-pulse.com/chongqing-allocates-115-7-million-permits-for-2014/>.

⁴³ Source: Tsinghua University, *Carbon Finance Innovation in China's Emissions Trading Pilots*, March 12, 2015, <http://www.thepmr.org/system/files/documents/Carbon%20finance%20innovation%20in%20China%27s%20pilots-Duan%20Maosheng-201503.pdf>

⁴⁴ Source: Carbon Pulse, *Guangdong close to Launch 600 Million Yuan Carbon Fund*, March 17, 2015, <http://carbon-pulse.com/guangdong-close-to-launch-600-million-yuan-carbon-fund/>.

⁴⁵ Source: Beijing Municipal Commission of Development and Reform, *Regional Committee Held in Beijing and Hebei on Emissions Trading*, December 19, 2014, <http://www.bjpc.gov.cn/gzdt/201412/t8594655.htm>.

⁴⁶ Source: Shanghai Municipal Development and Reform Commission, *Regional Cooperation Seminar Held on Emissions Trading*, accessed April 28, 2015, http://www.shdrc.gov.cn/second.jsp?colid=551&top_id=316&artid=24800.

⁴⁷ Source: The White House, Office of the Press Secretary, *U.S.-China Joint Announcement on Climate Change*, November 11, 2014, <https://www.whitehouse.gov/the-press-office/2014/11/11/us-china-joint-announcement-climate-change>.

At a national level, China has committed to letting its GHG emissions peak around 2030,⁴⁸ with best efforts to letting them peak earlier. In addition, details are gradually being revealed on a nationwide ETS, which may be launched by the end of 2016 and be fully implemented in the course of 2019.⁴⁹ The general rules of a national ETS were published by the National Development and Reform Commission in December 2014.⁵⁰ The national ETS should cover power generation, metallurgy and non-ferrous metals, building materials, chemicals, and aviation.⁵¹ Ahead of the national ETS rollout, various regions – including Gansu, Qingdao,⁵² Hangzhou, and Anhui⁵³ – are seeking to implement their own ETSs.

EU

In February 2014, the European Commission (EC) decided to temporarily postpone the auctioning of EU ETS allowances, a process known as “back-loading.” Following this change, the focus of the EU ETS’ structural reform agenda shifted to the need for greater price stability and predictability through the flexibility of allowance supply in the EU ETS. The proposed Market Stability Reserve (MSR) was designed to achieve this goal. Consensus having been reached on a 2019 start date for the MSR, its formal adoption is expected following discussions between the EC, the European Council, and the European Parliament on the legislative details.⁵⁴ The other significant change to the EU ETS was the approval of a new carbon leakage list for 2015–2019.

⁴⁸ Source: The White House, Office of the Press Secretary, *U.S.-China Joint Announcement on Climate Change*, November 11, 2014, <https://www.whitehouse.gov/the-press-office/2014/11/11/us-china-joint-announcement-climate-change>.

⁴⁹ Source: International Carbon Action Partnership, *China to Cap Emissions from Six Sectors, ETS to Launch 2016*, accessed April 28, 2015, <https://icapcarbonaction.com/news/news-archive/268-china-to-cap-emissions-from-six-sectors-ets-to-launch-2016>.

⁵⁰ Source: National Development and Reform Commission, *People's Republic of China Order: No. 17*, October 12, 2014, http://qhs.ndrc.gov.cn/gzdt/201412/t20141212_652035.html.

⁵¹ Source: International Carbon Action Partnership, *China to Cap Emissions from Six Sectors, ETS to Launch 2016*, accessed April 28, 2015, <https://icapcarbonaction.com/news/news-archive/268-china-to-cap-emissions-from-six-sectors-ets-to-launch-2016>.

⁵² Source: Qingdao Municipal People's Government, *Notice on the Organization and Implementation of Low-Carbon City Qingdao Pilot Carbon Emissions Trading Market Embodiments*, September 24, 2014, <http://www.qingdao.gov.cn/n172/n68422/n68424/n30259215/n30259219/140924163750977834.html>.

⁵³ Source: Anhui People's Government, *Anhui Provincial People's Government Office on the Issuance of Anhui 2014-2015 Annual Energy Saving and Emission Reduction Carbon Development Action Programs*, September 24, 2014, <http://www.ah.gov.cn/UserData/DocHtml/1/2014/12/9/6417463050796.html>.

⁵⁴ Source: Carbon Pulse, *EU Nations Agree to 2019 MSR Start Date after Czechs Defect*, April 29, 2015, <http://carbon-pulse.com/eu-nations-agree-to-2019-msr-start-date-french-envoy/>.

Looking ahead, the EU is committed to reducing emissions by at least 40 percent below the 1990 baseline level by 2030, through domestic actions.⁵⁵ The EU ETS will be the main instrument to achieve its mitigation target.⁵⁶ That target will ensure that the EU is on a cost-effective track towards meeting its objective of cutting emissions by at least 80 percent by 2050. The EC is considering revisions to the EU ETS for Phase IV, focusing on the stability of the carbon market, competitiveness provisions for industry, and the use of auction revenues.

Kazakhstan

Full implementation of the Kazakhstan's ETS started in 2014, including enforcement and trading. The trading volume was low, with only 35 transactions representing a total of 1.3 MtCO₂e. The average price of allowances in 2014 was KZT406 (US\$2).⁵⁷ Although the pilot phase was completed in 2013, Kazakhstan's ETS still faces challenges with monitoring, reporting, and verification of GHG emissions, in particular with the verification process. The Kazakh government is looking to develop clearer guidance, formats, and templates for monitoring.⁵⁸ Other improvements include efforts to advance electronic reporting, develop and support the ETS registry, use benchmarking instead of grandfathering as the method for free allocation, and investigate the possibility of linking up with existing carbon markets.

Republic of Korea

The Korea ETS entered into force on January 1, 2015, and covers 23 subsectors including steel, cement, petro-chemistry, refinery, power, buildings, waste, and aviation. In the first phase – from 2015 to 2017 – ETS installations will receive a free allocation of 100 percent of their average 2011–13 GHG emissions. No auctioning will take place. There is a perception that the Korean market is undersupplied, causing Korean companies to be reluctant to sell their allowances. The latest trading was reported on January 16, 2015.⁵⁹

Companies can also use Korean offsets, including Korean CERs, for up to 10 percent of their compliance obligation. Given that the price of international credits is much lower than that of Korean Allowance Units (KRW9,610, approximately US\$9), some demand for Korean CERs is to be expected.⁶⁰

Mexico

In February 2014, the Mexican Ministry of Energy announced the potential development of an ETS in the energy sector. Through its INDC, Mexico committed to an unconditional reduction of 25 percent of its greenhouse gas emissions and short-lived climate pollutant emissions (with respect to business as usual) for the year 2030.⁶¹ Mexico also has a conditional goal of cutting these emissions by up to 40 percent in 2030, subject to a global agreement addressing topics such as an international carbon price, carbon border adjustments, technical cooperation, access to low-cost financial resources, and technology transfer.⁶² Mexico's INDC is part of a broader national climate change policy, which includes a carbon tax on fossil fuels.

Portugal

In Portugal, a carbon tax of €5 per tCO₂e (US\$5 per tCO₂e) was approved in November 2014, as part of a wider package of green tax reform. This carbon tax entered into force on January 1, 2015. It applies to non-EU ETS sectors and covers approximately 26 percent of the country's GHG emissions. The tax is expected to generate revenues of over €95 million (US\$104 million) in 2015.

Switzerland

In Switzerland, the first two auctions of allowances in its ETS took place in May and November 2014. Allowances in these two auctions were sold at two very different prices: CHF40 (US\$42) and CHF20 (US\$21), respectively.

Switzerland and the EU continued negotiations on linking, with a seventh round of talks taking place in March 2015, aimed at establishing an agreement in the first half of 2015.⁶³ In its INDC, Switzerland signaled its intention to use market mechanisms to aid in meeting its pledge to cut emissions in 2030 to half of its 1990 emissions level.⁶⁴

⁵⁵ Source: European Union, *Intended Nationally Determined Contribution of the EU and Its Member States*, March 6, 2015.

⁵⁶ Source: European Council, *European Council (23 and 24 October 2014) Conclusions*, http://www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/en/ec/145397.pdf.

⁵⁷ Source: *Stock Trading in Quotas Are on the Increase*, September 8, 2014, <http://www.tbc.kz/novosti/birzhevy-torgi-po-kvotam-idut-na-velichenie.html>. Source: "Stock trading in quotas are on the increase," CASPY, September 8, 2014, <http://www.tbc.kz/novosti/birzhevy-torgi-po-kvotam-idut-na-velichenie.html>.

⁵⁸ Source: Aigerim Yergabulova, *Kazakhstan Emission Trading Scheme (KAZ ETS): Status and Challenges of MRV*, <http://www.thepmr.org/system/files/documents/18.0-%20KAZAKHSTAN%20presentation-kaz.pdf>.

⁵⁹ Source: Carbon Pulse, *Korean Carbon Market Marred by Supply Drought*, March 6, 2015, <http://carbon-pulse.com/korea-carbon-market-marred-by-supply-drought/>.

⁶⁰ Korean CERs have to be cancelled and exchanged into "Korean Offset Credits" for compliance purposes.

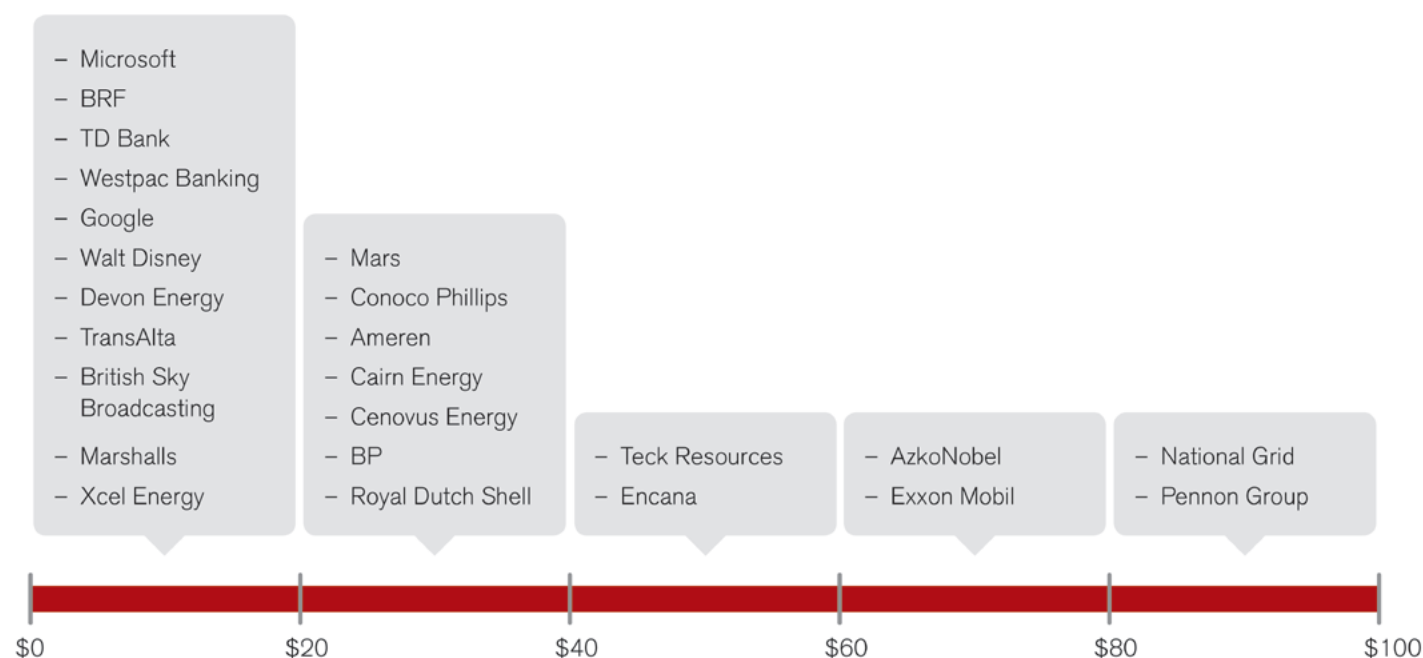
⁶¹ Source: Mexico Gobierno de la Republica, *Intended Nationally Determined Contribution*, March 30, 2015.

⁶² Source: Mexico Gobierno de la Republica, *Intended Nationally Determined Contribution*, March 30, 2015.

⁶³ Source: Federal Office for the Environment, *7th Round of Negotiations for Switzerland-EU Linking of Emissions Trading Systems*, March 26, 2015, <http://www.bafu.admin.ch/klima/13877/14510/14882/15415/index.html?lang=de>.

⁶⁴ Source: Switzerland, *Switzerland's Intended Nationally Determined Contribution (INDC) and Clarifying Information*, February 27, 2015.

Figure 4. Price range of the average internal carbon price⁶⁵ disclosed by companies to the CDP



Specifically, Switzerland intends to use new market mechanisms under the UNFCCC⁶⁶ (i.e., New Market-based Mechanisms, or NMMs, and Framework for Various Approaches, or FVA) to help it reach its target.

Corporate carbon pricing

Carbon pricing is now beyond the domain of government policy and is becoming an increasingly common tool in business decision making. Last September, over 1,000 companies and investors publicly expressed their support for carbon pricing at the New York Climate Summit.⁶⁷ Private sector firms are adopting internal carbon prices, even in jurisdictions without legislation to that effect. Globally, an internal carbon price is used by at least 150 companies as reported by CDP, with disclosed prices ranging from US\$6 to US\$89 per ton of CO₂e⁶⁸ (see Figure 4).

For many businesses, this is part of a risk management strategy to evaluate the current or potential impact of a mandated carbon price on their operations. It is also used as a means to identify and value cost savings and revenue opportunities in low-carbon investments.

Long-term investors are also beginning to realize that climate change can undermine the financial gains of their portfolio, and they have begun rethinking their investment strategies and practices. A report to be released shortly confirms that returns will inevitably be impacted by climate change and that prudent investors could realize net gains by positioning across and within sectors and asset classes.⁶⁹ Leading financial institutions are responding to climate risk by allocating capital and steering financial flows toward low carbon and “climate safe” activities. For example, the Swedish pension fund AP4 is decarbonizing its equity portfolio by tilting it towards more carbon-efficient companies.⁷⁰

Companies adopt an internal carbon price as a strategy to shift investment decisions toward lower-carbon assets and operations. Corporate carbon pricing can also help companies demonstrate their support for effective carbon pricing policies. Governments designing a carbon pricing instrument can furthermore benefit from the lessons learned through corporate carbon pricing.

In summary, the investments needed to transition to a low carbon economy are substantial. With the right price and appropriately de-risked investment structure, billions of dollars from the private sector can be unlocked.

⁶⁵ Some companies report that a price range is applied to take into account projected price increases and that different carbon prices are used for different jurisdictions.

⁶⁶ UNFCCC: United Nations Framework Convention on Climate Change.

⁶⁷ Source: World Bank, *We Support Putting a Price on Carbon*, 2014, <http://siteresources.worldbank.org/EXTSDNET/Resources/carbon-pricing-supporters-list-092114.pdf>

⁶⁸ Source: CDP, *Global Corporate Use of Carbon Pricing: Disclosures to Investors*, 2014.

⁶⁹ Mercer, *Investing in a Time of Climate Change*, 2015, forthcoming.

⁷⁰ Source: Global Investor Coalition with support from UNEP-FI and the World Bank Group, *Financial Institutions Taking Action on Climate Change*, 2014.

Carbon pricing policy design lessons

By analyzing carbon pricing instruments, in particular their success or failure, lessons on design features can be had. The evolution over time of these instruments reflects these lessons. For example, price stabilization measures are a feature of the California Cap-and-Trade Program and the Korea ETS. These were designed to avoid the price volatility experienced by the EU ETS. The EU ETS is attempting to solve the issue of supply and demand imbalance temporarily through back-loading and ultimately through its MSR.

The debate over the choice between an ETS and a carbon tax has dissipated. The choice depends on the circumstances and context of the country, and aligns with broader national economic priorities. In addition, politics are a particularly influential factor in the implementation of carbon pricing, as illustrated by the phenomenon of

subnational consensus, which has led to a proliferation of state or multi-state carbon pricing approaches in the US and Canada, in the absence of national instruments. Increasingly, an ETS and a carbon tax are being used in complementary ways to target emission reductions in different sectors. For example, the carbon taxes in France and Portugal are applicable to specific non-ETS sectors.

Finally, it is apparent that carbon pricing is only one instrument in a portfolio of approaches that can be used for emissions mitigation. Other policy instruments, such as the removal of fossil fuel subsidies, infrastructure investments in transportation and energy, renewable energy portfolio standards, and energy efficiency standards, also have an important role to play in achieving emission reductions. Carbon pricing and the various policy instruments will need to operate in tandem to address the urgency and scale of the climate change mitigation challenge.

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An Ecofys team composed of Alyssa Gilbert, Noémie Klein, Long Lam, and Lindee Wong prepared the paper in collaboration with the World Bank Group.”

Definition of carbon pricing: For the purpose of the State and Trends of Carbon Pricing report series, and also applicable to this brief, carbon pricing refers to initiatives that put an explicit price on greenhouse gas emissions. This includes emissions trading schemes, offset mechanisms, carbon taxes, corporate carbon pricing and results-based finance, using a metric directly based on carbon (i.e., price per ton of CO₂e). Policies that put an implicit price on carbon, for example removal of fossil fuel subsidies, fuel taxation, support for renewable energy, and energy efficiency certificate trading, are not included as they are outside the scope of the series and this brief.

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