Box 1 / Carbon pricing in numbers

CARBON PRICING INITIATIVES AROUND THE WORLD

57 implemented or scheduled for implementation

46 NATIONAL
28 SUBNATIONAL jurisdictions

11 GtCO₂e = 20% of GHG emissions covered

Range of prices in existing initiatives
US$1 - 127/tCO₂e

51% of the emissions covered are priced < US$10/tCO₂e

US$44 BILLION raised in carbon pricing revenues in 2018.

As of April 1, 2019

“State and Trends of Carbon Pricing 2019” State and Trends of Carbon Pricing (June), World Bank, Washington, DC.
The large circles represent cooperation initiatives on carbon pricing between subnational jurisdictions. The small circles represent carbon pricing initiatives in cities.

Note: Carbon pricing initiatives are considered “scheduled for implementation” once they have been formally adopted through legislation and have an official, planned start date. Carbon pricing initiatives are considered “under consideration” if the government has announced its intention to work towards the implementation of a carbon pricing initiative and this has been formally confirmed by official government sources. The carbon pricing initiatives have been classified in ETSs and carbon taxes according to how they operate technically. ETS not only refers to cap-and-trade systems, but also baseline-and-credit systems as seen in British Columbia and baseline-and-offset systems as seen in Australia. The authors recognize that other classifications are possible.

“State and Trends of Carbon Pricing 2019” State and Trends of Carbon Pricing (June), World Bank, Washington, DC.
Figure 2 / Regional, national and subnational carbon pricing initiatives: share of global emissions covered

Note: Only the introduction or removal of an ETS or carbon tax is shown. Emissions are presented as a share of global GHG emissions in 2012 from (EDGAR) version 4.3.2 including biofuels emissions. Annual changes in GHG emissions are not shown in the graph. In 2018, the Alberta Carbon Competitiveness Incentive Regulation (CCIR) replaced the Alberta Specified Gas Emitters Regulation, which was launched in 2007. The information on the China national ETS represents early unofficial estimates based on the announcement of China’s National Development and Reform Commission on the launch of the national ETS of December 2017.

“State and Trends of Carbon Pricing 2019” State and Trends of Carbon Pricing (June), World Bank, Washington, DC.
Figure 3 / Prices in implemented carbon pricing initiatives

Note: Nominal prices on April 1, 2019, shown for illustrative purpose only. The Australia ERF Safeguard Mechanism, British Columbia GGIRCA, Canada federal OBPS, Kazakhstan ETS, Nova Scotia CaT, Newfoundland and Labrador PSS, Saskatchewan OBPS and Washington CAR are not shown in this graph as price information is not available for those initiatives. Prices are not necessarily comparable between carbon pricing initiatives because of differences in the sectors covered and allocation methods applied, specific exemptions, and different compensation methods.
Figure 4 / Carbon price, share of emissions covered and carbon pricing revenues of implemented carbon pricing initiatives

Note: The size of the circles is proportional to the amount of government revenues except for initiatives with government revenues below US$100 million in 2018. The circles of these initiatives have an equal size. For illustrative purposes only, the nominal prices on April 1, 2019 and the coverages in 2019 are shown. The carbon tax rate applied in Argentina, Finland, Mexico and Norway varies with the fossil fuel type and use. The carbon tax rate applied in Denmark varies with the GHG type. The graph shows the average carbon tax rate weighted by the amount of emissions covered at the different tax rates in those jurisdictions. The middle point of each circle corresponds to the price and coverage of that initiative.

“State and Trends of Carbon Pricing 2019” State and Trends of Carbon Pricing (June), World Bank, Washington, DC.
Figure 5 / Sectoral coverage and GHG emissions covered by carbon pricing initiatives implemented or scheduled for implementation, with sectoral coverage and GHG emissions covered

Note: The size of the circles reflects the volume of GHG emissions in each jurisdiction. Symbols show the sectors and/or fuels covered under the respective carbon pricing initiatives. The largest circle (China) is equivalent to 12.4 GtCO₂ and the smallest circle (Switzerland) to 0.05 GtCO₂. The carbon pricing initiatives have been classified in ETSs and carbon taxes according to how they operate technically. ETS does not only refer to cap-and-trade systems, but also baseline-and-credit systems such as British Columbia and baseline-and-offset systems such as in Australia. Carbon pricing has evolved over the years and they do not necessarily follow the two categories in a strict sense. The authors recognize that other classifications are possible.

The coverage includes the China national ETS and eight ETS pilots. The coverage represents early unofficial estimates based on the announcement of China's National Development and Reform Commission on the launch of the national ETS of December 2017 and takes into account the GHG emissions that will be covered under the national ETS and are already covered under the ETS pilots. The sector symbol refers to the covered sectors in the national ETS or one of the ETS pilots. The national ETS will initially cover the power sector only. The covered sectors vary per ETS pilot.

* The coverage includes the China national ETS and eight ETS pilots. The coverage represents early unofficial estimates based on the announcement of China's National Development and Reform Commission on the launch of the national ETS of December 2017 and takes into account the GHG emissions that will be covered under the national ETS and are already covered under the ETS pilots. The sector symbol refers to the covered sectors in the national ETS or one of the ETS pilots. The national ETS will initially cover the power sector only. The covered sectors vary per ETS pilot.

** Also includes Norway, Iceland and Liechtenstein. Carbon tax emissions are the emissions covered under various national carbon taxes; the scope varies per tax.

*** ETS emissions are the emissions covered under the Tokyo CaT and Saitama ETS.

**** The coverage includes both components of the Canada federal backstop system and the subnational carbon pricing initiatives.

The large circles represent cooperation initiatives on carbon pricing between subnational jurisdictions. The small circles represent carbon pricing initiatives in cities. Note: RGGI = Regional Greenhouse Gas Initiative. TCI = Transportation and Climate Initiative. Carbon pricing initiatives are considered “scheduled for implementation” once they have been formally adopted through legislation and have an official, planned start date. Carbon pricing initiatives are considered “under consideration” if the government has announced its intention to work towards the implementation of a carbon pricing initiative and this has been formally confirmed by official government sources. The carbon pricing initiatives have been classified in ETSs and carbon taxes according to how they operate technically. ETS not only refers to cap-and-trade systems, but also baseline-and-credit systems as seen in British Columbia and baseline-and-offset systems as seen in Australia. The authors recognize that other classifications are possible.

Initiatives implemented or scheduled for implementation:
- National ETSs: Australia, Austria, Belgium, Bulgaria, China, Croatia, Cyprus, Czech Republic, Germany, Greece, Hungary, Italy, Kazakhstan, Lithuania, Luxemburg, Malta, the Netherlands, New Zealand, the Republic of Korea, Romania, and Slovakia.
- National carbon taxes: Argentina, Chile, Colombia, Japan, Mexico, Singapore, South Africa, and Ukraine.
- Both national ETSs and carbon taxes: Canada, Denmark, Estonia, Finland, France, Iceland, Ireland, Latvia, Liechtenstein, Norway, Poland, Portugal, Slovenia, Spain, Sweden, Switzerland, and the United Kingdom.
- Subnational ETSs: Beijing, California, Chongqing, Connecticut, Delaware, Fujian, Guangdong, Hubei, Maine, Maryland, Massachusetts, New Hampshire, New York, Nova Scotia, Quebec, Rhode Island, Saitama, Saskatchewan, Shanghai, Shenzhen, Tianjin, Tokyo, Vermont, and Washington State.
- Subnational carbon taxes: Prince Edward Island.
- Both subnational ETSs and carbon taxes: Alberta, British Columbia, Newfoundland and Labrador.

Initiatives under consideration:
- National ETS or carbon tax: Brazil, Canada, Chile (ETS), Colombia (ETS), Côte d’Ivoire, Japan (ETS), Mexico (ETS), the Netherlands (carbon tax), Senegal, Thailand, Turkey, Ukraine (ETS), and Vietnam.
- Subnational ETS or carbon tax: Catalonia, New Brunswick, Northwest Territories, Ontario, Oregon, Rio de Janeiro, São Paulo, Taiwan, China, and Virginia.

“State and Trends of Carbon Pricing 2019” State and Trends of Carbon Pricing (June), World Bank, Washington, DC.
Figure 7 / Regional, national and subnational carbon pricing initiatives: share of global emissions covered

Note: Only the introduction or removal of an ETS or carbon tax is shown. Emissions are presented as a share of global GHG emissions in 2012 from (EDGAR) version 4.3.2 including biofuels emissions. Annual changes in GHG emissions are not shown in the graph. In 2018, the Alberta Carbon Competitiveness Incentive Regulation (CCIR) replaced the Alberta Specified Gas Emitters Regulation, which was launched in 2007. The information on the China national ETS represents early unofficial estimates based on the announcement of China’s National Development and Reform Commission on the launch of the national ETS of December 2017.
Figure 8 / Prices in implemented carbon pricing initiatives

Note: Nominal prices on April 1, 2019, shown for illustrative purpose only. The Australia ERF Safeguard Mechanism, British Columbia GGIRCA, Canada federal OBPS, Kazakhstan ETS, Nova Scotia CaT, Newfoundland and Labrador PSS, Saskatchewan OBPS and Washington CAR are not shown in this graph as price information is not available for those initiatives. Prices are not necessarily comparable between carbon pricing initiatives because of differences in the sectors covered and allocation methods applied, specific exemptions, and different compensation methods.
Figure 9 / Carbon price and emissions coverage of implemented carbon pricing initiatives

Note: The Australia ERF Safeguard Mechanism, British Columbia GGIRCA, Canada federal OBPS, Kazakhstan ETS, Nova Scotia CaT, Newfoundland and Labrador PSS, Saskatchewan OBPS, and Washington CAR are not shown in this graph as price information is not available for those initiatives. The carbon tax rate applied in Argentina, Finland, Mexico and Norway varies with the fossil fuel type and use. The carbon tax rate applied in Denmark varies with the GHG type. The graph shows the average carbon tax rate weighted by the amount of emissions covered at the different tax rates in those jurisdictions.

“State and Trends of Carbon Pricing 2019” State and Trends of Carbon Pricing (June), World Bank, Washington, DC.
Figure 10 / Carbon price, share of emissions covered and carbon pricing revenues of implemented carbon pricing initiatives

Note: The size of the circles is proportional to the amount of government revenues except for initiatives with government revenues below US$100 million in 2018; the circles of these initiatives have an equal size. For illustrative purposes only, the nominal prices on April 1, 2019 and the coverages in 2019 are shown. The carbon tax rate applied in Argentina, Finland, Mexico and Norway varies with the fossil fuel type and use. The carbon tax rate applied in Denmark varies with the GHG type. The graph shows the average carbon tax rate weighted by the amount of emissions covered at the different tax rates in those jurisdictions. The middle point of each circle corresponds to the price and coverage of that initiative.

“State and Trends of Carbon Pricing 2019” State and Trends of Carbon Pricing (June), World Bank, Washington, DC.
Figure 11 / Summary map of key carbon pricing developments in the Canadian provinces and territories

Note: A carbon tax in Northwest Territories (NWT) is to be introduced by July 1, 2019 pending passage of Bill 42 “An Act to Amend the Petroleum Products Tax Act”. As of April 1, 2019— the cut-off date of this report—Bill 42 has not been adopted yet. The NWT carbon tax will be changed from “Under consideration” to “Implemented or scheduled for implementation” once the bill has been formally adopted through legislation.

“State and Trends of Carbon Pricing 2019” State and Trends of Carbon Pricing (June), World Bank, Washington, DC.
Figure 12 / Cumulative trading volume and value of the Chinese ETS pilots in 2018

“State and Trends of Carbon Pricing 2019” State and Trends of Carbon Pricing (June), World Bank, Washington, DC.
Figure 13 / Sectoral coverage and GHG emissions covered by carbon pricing initiatives implemented or scheduled for implementation, with sectoral coverage and GHG emissions covered

Note: The size of the circles reflects the volume of GHG emissions in each jurisdiction. Symbols show the sectors and/or fuels covered under the respective carbon pricing initiatives. The largest circle (China) is equivalent to 12.4 GtCO₂ and the smallest circle (Switzerland) to 0.05 GtCO₂. The carbon pricing initiatives have been classified in ETSs and carbon taxes according to how they operate technically. ETS does not only refer to cap-and-trade systems, but also baseline-and-credit systems such as British Columbia and baseline-and-offset systems such as in Australia. Carbon pricing has evolved over the years and they do not necessarily follow the two categories in a strict sense. The authors recognize that other classifications are possible.

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* The coverage includes Norway, Iceland and Liechtenstein. Carbon tax emissions are the emissions covered under various national carbon taxes; the scope varies per tax.

** Also includes Australia.

*** ETS emissions are the emissions covered under the Tokyo CaT and Saitama ETS.

**** The coverage includes both components of the Canada federal backstop system and the subnational carbon pricing initiatives.

“State and Trends of Carbon Pricing 2019” State and Trends of Carbon Pricing (June), World Bank, Washington, DC.
Box 6 / Carbon pricing in numbers

**CARBON PRICING INITIATIVES AROUND THE WORLD**

- 57  implemented or scheduled for implementation
- 46 NATIONAL
- 28 SUBNATIONAL jurisdictions

- 11 GtCO₂e = 20% of GHG emissions covered

**Range of prices in existing initiatives**

US$1 - 127/tCO₂e

- 51% of the emissions covered are priced < US$10/tCO₂e

**US$44 BILLION**

raised in carbon pricing revenues in 2018.

As of April 1, 2019

Note: As the modalities and procedures for the NDC registry are not yet in place, there is currently no basis to enforce a timeline on the submission of the NDC even though the Parties are technically in breach of the provisions of the Agreement. The EU is included as a separate Party in the tally above.

“State and Trends of Carbon Pricing 2019” State and Trends of Carbon Pricing (June), World Bank, Washington, DC.
Figure 15 / Historic CDM and JI issuances and CER prices


“State and Trends of Carbon Pricing 2019” State and Trends of Carbon Pricing (June), World Bank, Washington, DC.

Figure 16 / Historic annual issuance of VCS and Gold Standard credits

Data provided by the Gold Standard and the Verra’s VCS database.

“State and Trends of Carbon Pricing 2019” State and Trends of Carbon Pricing (June), World Bank, Washington, DC.
Figure 17 / Illustrative example of pre- and post-tax subsidies on gasoline


Note: Figures show potential divergence between private costs for 1 liter of gasoline and socially optimal prices due to negative externalities. All estimates are fictional. $ = US dollar. VAT = value added tax.

Figure 18 / Global energy subsidies, 2011–15

“State and Trends of Carbon Pricing 2019” State and Trends of Carbon Pricing (June), World Bank, Washington, DC.