



IEAGHG Information Paper: 2018-IP02; Status of Carbon Pricing in 2017

The IC4E (Institute of Climate Economics) is a Paris based think tank that provides public and private decision makers with expertise on economic and financial issues related to energy and ecological transition. One of its key areas of expertise is Carbon Pricing. More details on the range of IC4E's activities can be found at: <https://www.i4ce.org/home/>

IC4E have produced a summary report on the landscape of carbon pricing in 2017. The report is attached as an annex to this IP for member's reference.

The summary report presents key trends regarding the implementation of explicit carbon pricing policies at the regional and national level in 2017. A world map, a detailed table and a graph provide comprehensive information on the jurisdictions that have implemented or plan to implement explicit carbon pricing policies, the type of instrument chosen, the sectors covered, the pricing levels and the use of revenues.

5 key trends for 2017 that were observed include:

- Few jurisdictions have implemented an explicit carbon price ;
- The adoption of carbon pricing policies is accelerating ;
- Carbon revenues, which decreased in 2016, remain an important financing tool for both the environment and the economy ;
- Carbon prices are perceived as too low for the economic sphere ;
- Explicit carbon prices in 2017 are not aligned with the costs of necessary climate action in order to stay on the 2°C trajectory.

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Global panorama of carbon prices in 2017

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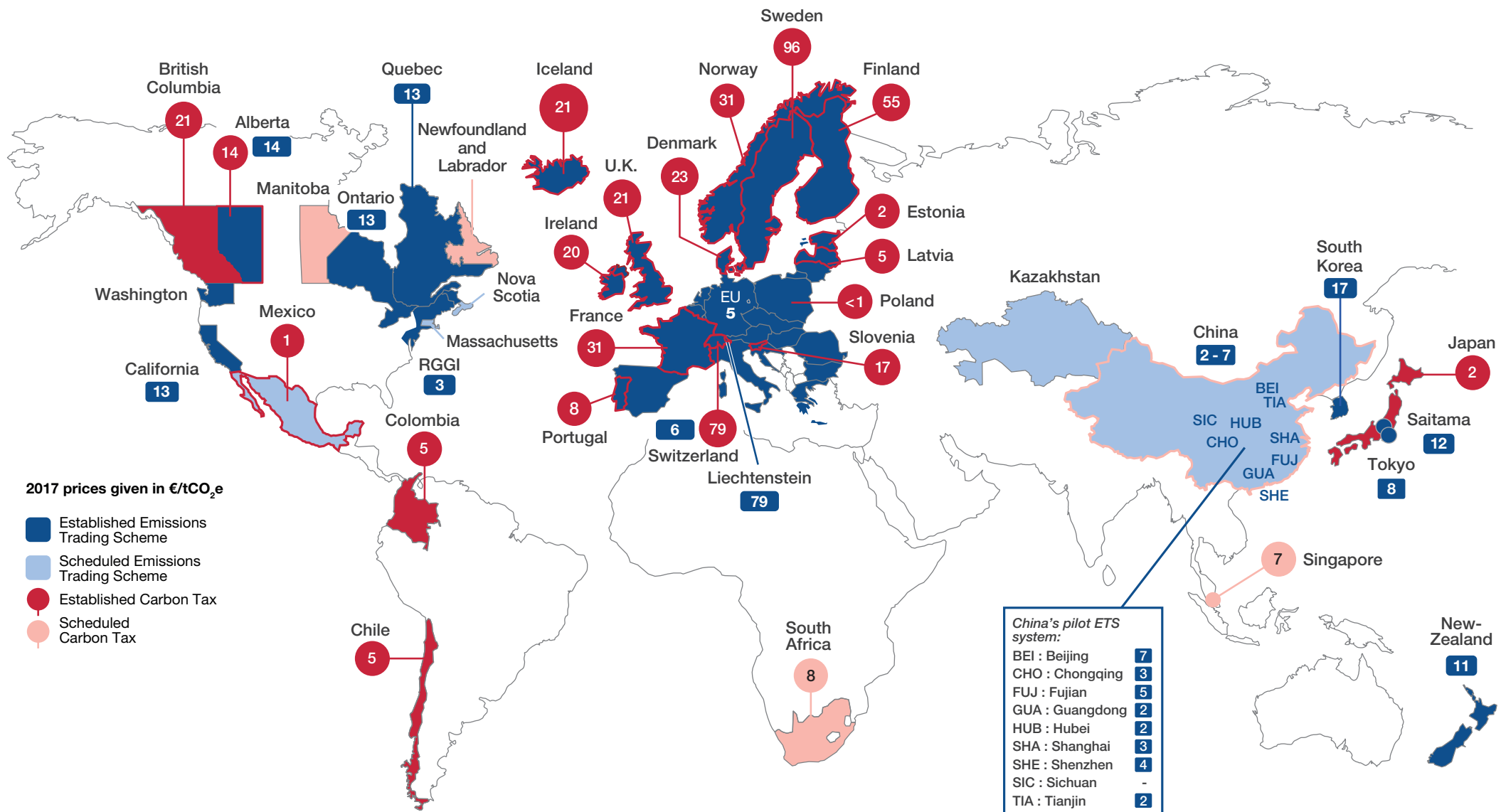
INTRODUCTION

In September 2017, I4CE updated its database on carbon pricing policies. This panorama presents key trends regarding the implementation of explicit carbon pricing policies at the regional and national level in 2017. A timeline, a world map, a detailed table and a graph provide comprehensive information on the jurisdictions that have implemented or plan to implement explicit carbon pricing policies, the type of instrument chosen, the sectors covered, the pricing levels and the use of revenues.

5 key trends for 2017

- 1. (Too) Few jurisdictions have implemented an explicit carbon price.** As of September 1st, 2017, more than 40 countries and 25 provinces or cities have adopted carbon pricing policies, consisting of carbon taxes and Emissions Trading Schemes (ETS). These jurisdictions account for around 25% of global greenhouse gas emissions.
- 2. However, the adoption of carbon pricing policies is accelerating.** Since 2016, 10 ETS and 8 carbon taxes have been implemented or announced for the years to come. In the next few months, the next major step will be the launch of a national ETS in China, which will become the largest carbon pricing initiative worldwide.
- 3. Carbon revenues, which have decreased in 2016, remain an important financing tool for both the environment and the economy.** In 2016, USD 22 billion of public revenues were generated with carbon pricing initiatives, according to World Bank estimates. This amount marks a diminution compared to the USD 26 billion collected in 2015, which can be explained by the low prices of carbon in some ETS such as the European Union, California and Quebec. In 2016, two thirds of carbon pricing revenues come from carbon taxes. If we look at how the revenues are allocated, each jurisdiction makes clear choices, but no trend emerges at the global level.
- 4. Carbon prices are perceived as too low for the economic sphere.** The explicit price of a CO₂ ton in 2017 varies generally between €1 and €100 depending on the jurisdiction. However, more than 75% of emissions regulated by carbon pricing are covered by a price below €10, a level considered to be too low for the public and private sectors in order to support the low carbon transition.
- 5. Explicit carbon prices in 2017 are not aligned with the costs of necessary climate action in order to stay on the 2°C trajectory.** To achieve the goals of the international community on climate change while sustaining economic growth, the High Level Commission on carbon prices led by economists Stern and Stiglitz recommends to reach a carbon price between USD 40 and USD 80 per ton of CO₂ by 2020, and between USD 50 and USD 100 by 2030.

Map of explicit carbon prices around the world in 2017



Features of carbon prices in 2017

Instruments:

- ESTABLISHED EMISSIONS TRADING SCHEME
- SCHEDULED EMISSIONS TRADING SCHEME
- ESTABLISHED CARBON TAX
- SCHEDULED CARBON TAX

Sectors:

- ENERGY
- INDUSTRY
- TERTIARY
- TRANSPORT
- WASTE
- AVIATION

Fuels:

- COAL
- OIL
- GAS

Jurisdiction	Year of implementation	Price in €/tCO ₂ (nominal value)**	Share of emissions (%)	Sectoral scope						Fuels covered		
EU ETS	2005	5	45									
New-Zealand *	2008	11	51									
Switzerland	2008	6	11									
RGGI, USA	2009	3	20									
Tokyo	2010	8	20									
Saitama	2011	12	18									
California	2013	13	85									
Quebec	2013	13	85									
China	Beijing	2013	7	40								
	Guangdong	2013	2	60								
	Shanghai	2013	3	57								
	Shenzhen	2013	4	40								
	Tianjin	2013	2	55								
	Chongqing	2014	3	40								
	Hubei	2014	2	35								
	Fujian	2016	5	60								
	Sichuan	2017	NC	NC								
South Korea	2015	17	68									
Alberta	2017	14	45									
China	2017	NC	35									
Ontario	2017	13	82									
Washington	2017	NC	66									
Kazakhstan	2018	NC	NC									
Massachusetts	2018	NC	NC									
Mexico	2018	NC	NC									
Nova Scotia	2018	NC	NC									

Jurisdiction	Year of implementation	Price in €/tCO ₂ (nominal value)**	Share of emissions (%)	Sectoral scope						Fuels covered		
Finland	1990	55	36									
Poland	1990	>1	4									
Norway	1991	31	60									
Sweden	1991	96	42									
Denmark	1992	23	45									
Latvia	1995	5	15									
Slovenia	1996	17	24									
Estonia	2000	2	3									
Alberta	2007	14	45									
British Columbia	2008	21	70									
Liechtenstein	2008	79	26									
Switzerland	2008	79	35									
Ireland	2010	20	33									
Iceland	2010	21	55									
Japan	2012	2	70									
United-Kingdom	2013	21	25									
France	2014	31	40									
Mexico	2014	1	46									
Portugal	2015	8	26									
Chile	2017	5	40									
Colombia	2017	5	30									
South Africa	TBD in 2017	8	75									
Manitoba	2018	NC	NC									
Newfoundland-and-Labrador	2018	NC	NC									
Singapore	2019	7	NC									
China	2020	NC	NC									

* The ETS in New Zealand also covers the forest sector.

** Source: I4CE according to ICAP, IETA, World Bank and collection of public data. ETS prices are mean values observed between March 2016 and March 2017.

Carbon price in €/tCO₂:

- Less than 10€
- Between 11€ and 30€
- More than 30€

Percentage of GHG emissions covered by carbon pricing:

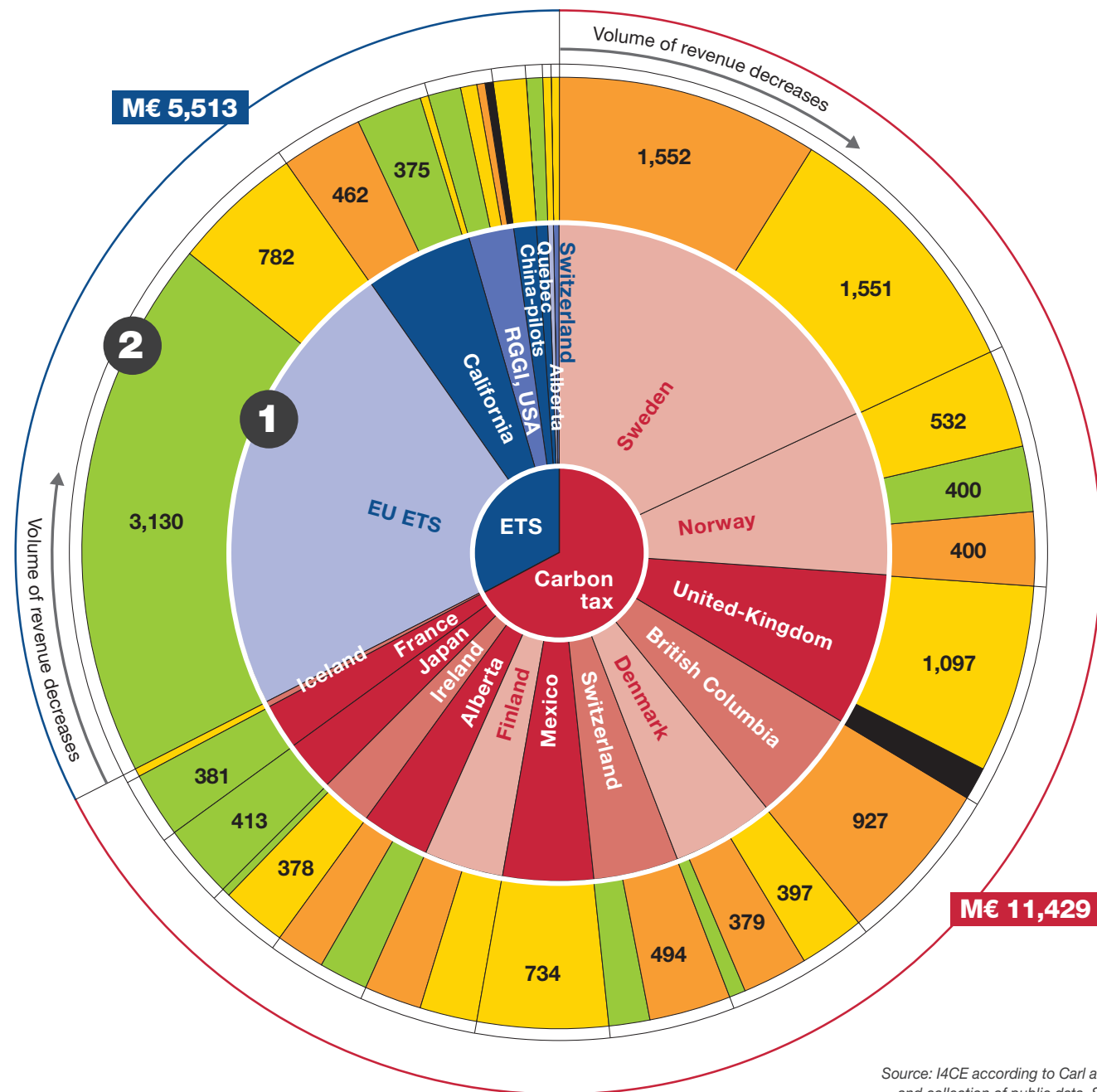
- Less than 35%
- Between 36% and 65%
- More than 65%

1 Year of implementation

- Carbon tax since 2013
- Carbon tax between 2008 and 2013
- Carbon tax before 2007
- Emissions Trading Scheme since 2013
- Emissions Trading Scheme between 2008 and 2013
- Emissions Trading Scheme before 2007

2 Revenue uses

- Green projects
- General budget allocation
- Tax exemptions
- Other uses

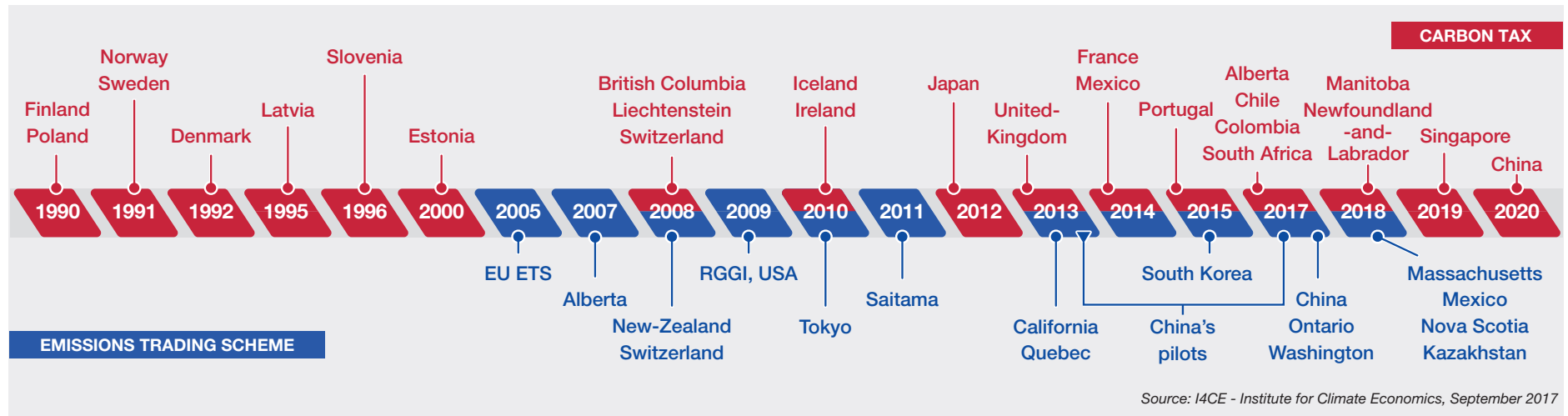


Key takeaways

- Figures represented here are for fiscal year 2013-2014. If no data was available, a previous year was taken into account.
- 75% of carbon revenues are generated by carbon taxes, amounting to 11,429 millions of euros. ETS have generated 5,513 millions of euros.
- More than 60% of carbon revenues come from member countries of the European Union.
- At the global scale, 34% of revenues are used for projects dedicated to the low-carbon transition; 37% are allocated in the general budget; and 29% finance tax exemptions.

Note: Figures represented here are for fiscal year 2013-2014. If no data was available, a previous year was taken into account.

Source: I4CE according to Carl and Fedor (2016) and collection of public data, September 2017



What is an explicit carbon price?

Two instruments put a price directly on greenhouse gas (GHG) emissions: the carbon tax is a *price-based* instrument and the Emissions Trading Scheme (ETS) is a *quantity-based* instrument.

- The **carbon tax** is a monetary levy added to the sale price of a good depending on the quantity of GHGs emitted during its production and / or use. A carbon tax may be applied at various stages of the supply chain and may target upstream producers or downstream companies and end users.
- The **Emissions Trading Scheme** (ETS) is a mechanism that sets emission reduction obligations for market participants and distributes emission quotas corresponding to this ceiling. Participants can buy their quotas to compensate for excessive emissions or sell their quotas to promote additional reduction efforts.

Sources

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- World Bank and Ecofys (2017). Carbon Pricing Watch 2017 (May). Washington DC: World Bank. Available [here](#)
- PMR - Partnership for Market Readiness (2017). Carbon Tax Guide: a Handbook for Policy Makers. & Appendix: Carbon Tax Case Studies. Washington DC: World Bank. Available [here](#)
- Carl, Jeremy and Fedor, David (2016). Tracking global carbon revenues: A survey of carbon taxes versus cap-and-trade in the real world. Energy Policy 96, pp. 50-77. Available [here](#)
- For more precisions on the sources used for the Global panorama of explicit carbon prices, and especially on national sources: contact@i4ce.org