# CIERP Policy Brief

CLIMATE POLICY LAB

# Carbon Pricing in Practice: Lessons from Existing Policies

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*This policy brief summarizes the key findings of an extensive study to determine what is working, what isn't, and why, when it comes to implementing a carbon price.*

More than 100 countries stated their intent to utilize carbon pricing in their Paris Agreement Commitments. There are currently approximately 40 national carbon pricing mechanisms and 20 operating sub-nationally in cities, states, provinces, and other jurisdictions. In total, these cover approximately 7 gigatons of carbon dioxide equivalent ($GTCO_{2e}$), roughly 13% of global emissions[1]. This policy brief summarizes the key findings of an extensive study to determine what is working, what isn't, and why, when it comes to implementing a carbon price. The full report is available online[2]. From the eight emissions trading systems (ETS)[3], five carbon tax[4] and two carbon tax-ETS hybrid[5] regimes reviewed[6], we identify several design and implementation features that enable successful initiation and management of a carbon pricing policy.

**Institutional learning:** Regimes that learn from the failures/successes of implementation within/outside their jurisdiction tend to have more robust carbon pricing markets with features that ensure price stability, reduce emissions leakage, and demonstrate increasing ambition. Learning from neighboring jurisdictions also helps harmonize design features and enables a seamless transition towards an integrated market. The observed learning patterns in ETS regimes, however, have not reduced the level of heterogeneity in design features across different fuels, industries, or sectors in the existing carbon pricing regimes. This may indicate that jurisdictions design emissions and compliance related features that are most suitable to their economic structure and special interests while being open to learning administrative practices from other implementations. We find no evidence of institutional learning in carbon tax systems.

**Administrative prudence:** The following elements were found to be necessary for the successful administration of a carbon pricing policy, among others discussed in the full report:

*Transitioning to allowance auctioning in the ETS market:* Transitioning from free allocations to a full auction of allowances over time ensures political buy-in to the implementation of an ETS and also generates future revenues. The revenues may then be used to encourage other green investments and/ or to alleviate the distributional burden of a carbon pricing policy.

*Ensuring price stability in the ETS market:* Managing price fluctuations in an ETS market using a price collar, relaxing the amount of allowances that may be banked or borrowed across ETS phases, ensuring sufficient reserve allowances, and the presence of an independent regulatory body with the ability to

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1 World Bank, Ecofys, and Vivid Economics. *State and Trends of Carbon Pricing 2016.* Washington, DC: World Bank, 2016.

2 https://sites.tufts.edu/cierp/files/2017/11/Carbon-Pricing-In-Practice-A-Review-of-the-Evidence.pdf

3 EU, Switzerland, Regional Greenhouse Gas Initiative (RGGI), California, Québec, New Zealand, Republic of Korea, and China's seven provinces — Beijing, Shanghai, Tianjin, Chongqing, Shenzhen, Guangdong, Hubei

4 British Columbia, Mexico, Chile, Japan, India

5 Norway and Ireland

6 Cases were selected to represent diverse geographies, jurisdiction levels, implementation timelines, and heterogeneity in design features.

inject or remove allowances from the market without requiring permission from the legislature are all essential to create a predictable marketplace with stable prices and appropriate liquidity.

*Engaging stakeholders:* An ETS or a carbon tax rolled out with a predetermined schedule of adjustments to the emissions cap or carbon price, which is revised periodically based on stakeholder feedback and updated emissions data, will ensure cost efficiency and environmental stringency. A commitment to periodic review of program rules also helps reach full compliance from stakeholders.

*Familiarizing stakeholders with data monitoring and reporting:* Getting firms used to monitoring and reporting emissions data prior to the rollout of an ETS or a carbon tax helps firms ease in to the compliance process and also helps regulators avoid inaccurate estimations of carbon tax or emissions cap. Allowing an emissions inventory system to continue alongside an existing carbon tax policy could allow for a smooth transition to a future ETS market.

**Ambition:** While the results have been modest, in all cases carbon pricing mechanisms have resulted in reduced emissions. The current average carbon price, adjusted for the percentage of emissions covered in any regime, is less than the U.S. interagency working group's conservative social cost of carbon estimate of \$20 per ton of $CO_{2e}$[7]. This means that most carbon pricing regimes would benefit from being more ambitious if the policy goal is to substantially reduce emissions.

**Carbon revenue management:** A "double dividend" exclusive to emissions reductions may exist in cases where mitigation occurs as a result of the carbon pricing policy and where revenue from ETS auctions or carbon taxes is, in turn, invested in other emissions-reducing activities. This added benefit occurs even when the prevailing carbon price is low. A combination of earmarking revenue for emissions-reducing activities, reducing income taxes to address the distributional consequences of a carbon price, and recycling revenue back to the general budget could allow for a double dividend for emissions reductions without compromising the jurisdiction's economic imperatives.

Knowledge gaps exist in understanding the interaction of pricing instruments with other climate policy instruments and how governments manage these policies to achieve optimum emissions reductions in ETS, carbon tax, and hybrid regimes. However, there is clear evidence of what the successful design features are. Policy makers should consider implementing these to create a robust carbon pricing policy.

### POLICY IMPLICATIONS

- Carbon taxes are a good first step in advance of the introduction of an ETS. This is especially true for countries that need time to build the administrative capacity required to manage an ETS.

- For any carbon pricing regime to result in emissions reductions it needs to be more than a symbolic pricing mechanism.

- Strategies are needed to counter policy uncertainty and to advance the achievement of greater emissions reductions.

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7 Pindyck, Robert S. "Pricing carbon when we don't know the right price." *Regulation* 36, no. 2 (2013): 43.

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