

Local Carbon Policy

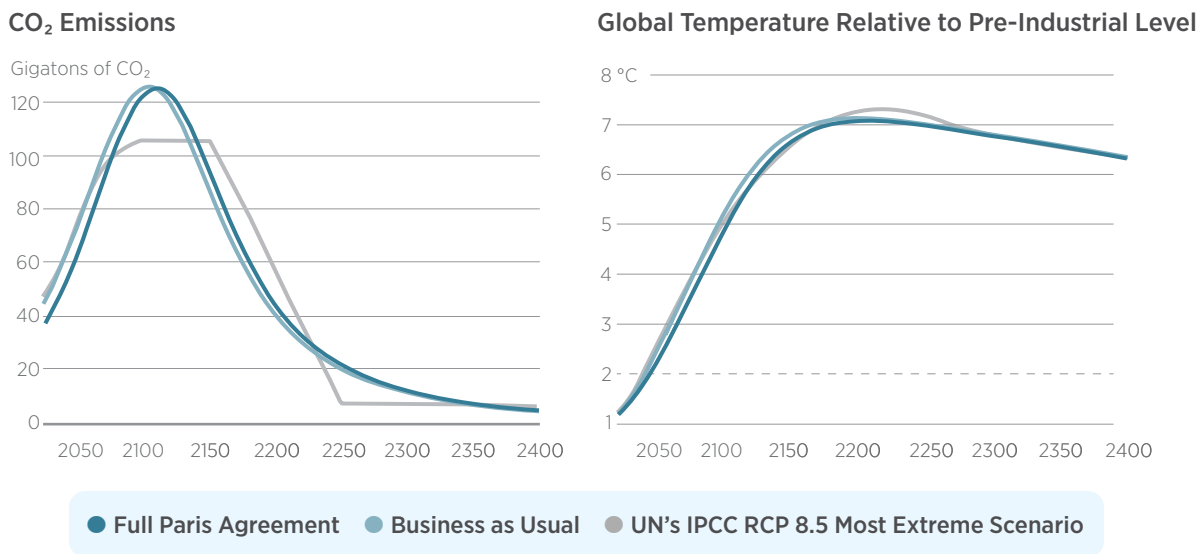
Based on BFI Working Paper 2022-57, “[Local Carbon Policy](#),” by José-Luis Cruz, Princeton University; and Esteban Rossi-Hansberg, University of Chicago

Although the distribution of carbon reduction pledges in the Paris Agreement is roughly in line with the local social cost of carbon (LSCC), the magnitude of those pledges is largely insufficient to achieve the Agreement’s goals.

All regions of the world do not—and will not—experience the effects of CO₂ emissions in the same way. Some will suffer greatly from the resultant climate change, while others may even benefit. These heterogeneous effects mean that different countries will have differing incentives to abide by the 2015 Paris Agreement, a climate change treaty meant to limit global warming below 2°C relative to pre-Industrial levels.

These differing incentives also complicate a classic economic tool to influence behavior: taxes or pricing. Do you want to reduce smoking? Increase cigarette taxes. Do you want to encourage home buying? Provide tax breaks. People respond to incentives, and price is a key incentive. In the case at hand, if you want to reduce carbon emissions to a desired level, tax their output accordingly. However, given the heterogeneous effects of CO₂

Figure 1 • CO₂ Emissions and Temperature Under the Paris Agreement



Note: This Figure displays the evolution of carbon emissions and global temperature in the business-as-usual scenario and under the coordinated Paris Agreement implementation. It also presents the evolution in the most extreme Intercontinental Panel on Climate Change (IPCC) scenario, RCP 8.5. The Figure shows that, even when the whole world commits to the Paris Agreement, the pledges only have a minuscule effect in reducing carbon emissions and limiting warming. Under the business-as-usual scenario, a global temperature increase of 2°C relative to pre-industrial levels is reached in the year 2043. The Paris Agreement delays the date at which we cross this threshold by only three years. That is, although the agreement might be politically consequential to build toward future agreements, the involved pledges are very far from achieving its stated goal.

emissions, what are the incentives to impose carbon taxes across different locations of the world? How are these incentives related to actual pledges in the Paris Agreement? What are the implications of these pledges for aggregate temperatures and the economies of different regions across the globe?

This novel research examines these questions by employing a spatial integrated assessment model that the authors developed in recent work¹ to determine a local social cost of carbon (LSCC). This allows the authors to address the challenge of linking heterogeneous climate effects with appropriate local action. Very briefly, the authors find the following:

- Most people would oppose a policy that simply imposes carbon taxes such that the carbon price everywhere is equal to the social cost of carbon. In other words, just as there is no single cost of carbon that applies to every region of the world, there is also no single tax that would appeal to all people.
- Setting carbon taxes to achieve the Paris Agreement's goals would mean rates that most, if not all, countries would consider exorbitant and untenable, exceeding \$200 per ton of CO₂ in some scenarios. The authors consider such a policy so unrealistic that they question the feasibility of the 2°C target itself.

- Necessary carbon taxes to achieve Agreement goals would involve very large inter-temporal transfers, or differing effects across generations. Asking people to pay a high price today so someone can reap the benefits at a lower cost in 100 years, in other words, is not an easy political sell. When future generations are valued almost as much as the current one (including the effect on growth), the resulting welfare gains are small, but negative for most of the developed world. They turn positive when the elasticity of substitution between clean energy sources and fossil fuels is larger, or when this substitution is easier.

Bottom line: Increasing the elasticity of substitution between energy sources is essential to making required carbon policy among heterogeneous regions more palatable.

¹See bfi.uchicago.edu/working-paper/the-economic-geography-of-global-warming/ for the authors' 2021 paper, "The Economic Geography of Global Warming," along with an interactive global map and Research Brief.

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