

Strengthening the Paris Agreement by supply-side climate policies

To reach the Paris Agreement's goal of keeping global warming well below 2 degrees, much of the world's deposits of oil, gas and coal must be left permanently in the ground. In an article published in *Science* in 2020, we present key economic mechanisms through which an international treaty directly limiting the supply of fossil fuels would help reach this goal.

Less carbon leakage

The Paris Agreement reduces greenhouse gas emissions by imposing CO₂ taxes and other instruments, thereby weakening the demand for fossil fuels. However, the resulting lower international fossil fuel prices increase fuel use in countries that free ride by not implementing demand-side measures. This is *carbon leakage*.

If a coalition of countries agree to reduce their *supply* of fossil fuels, they will contribute to higher global fuel prices. By reducing both their own demand (as pledged in the Paris Agreement) and supply of fossil fuels, they can counteract changes in international fuel prices and thereby diminish carbon leakage.

Stimulating investments in green technology

A producer treaty will raise the expected future prices of fossil fuels, also in countries without climate policy. This makes investments in climate friendly technologies more profitable. Such increased investments in green technology lower the costs of tomorrow's climate friendly society, enhancing thereby the realism of such a society – which in turn strengthens the prospects that green investments will in effect be profitable.

Insurance against a failed Paris Agreement

If the Paris Agreement turns out to be successful in preventing excessive climate change, then future international fossil fuel prices will be low due to low demands. This undermines the profitability of extracting fossil fuels and ensures that a sufficient amount of resources will remain in the ground. Hence, the producer treaty becomes inexpensive as deposits pledged to remain untouched will end being unprofitable anyway. It might even avoid stranded assets by preventing investors with false beliefs to undertake unprofitable exploration and development of deposits.

If the Paris Agreement turns out to be a failure, then a producer treaty will impose real costs on producers with deposits that the treaty has earmarked for conservation. But it will also provide considerable – probably much greater – benefits in terms of a more stable global climate.

Thus, a producer treaty will insure against the serious consequences if the Paris Agreement fails, while being inexpensive – or even beneficial – if it succeeds.

Bringing producers on the team

A successful Paris Agreement will reduce the value of resources that are still in the ground. Hence, big producers of oil, gas and coal have been among the most strident opponents of the agreement.

However, they would benefit if a treaty limits fossil fuel supply. Why? Producers will of course lose on deposits that will remain untouched but gain on the fossil fuels that are nonetheless produced since fuel prices will be higher. Groups that traditionally have worked hard to undermine climate policies might therefore be expected to support a producer treaty.

Practical steps towards supply-side climate policies

A supply-side treaty will be more effective if participation is wide. However, the advantages sketched above do not require full participation.

As a first step, rich, well-organized fossil fuel-producing countries could announce moratoria on fossil fuel exploration in areas like the Arctic. As a next step, these countries could invite all fossil fuel producers to prepare supply-side pledges, in the form of exploration moratoria and extraction caps.

Like demand-side measures, supply-side policies will face resistance – from fossil fuel-importing countries and fossil fuel-reliant firms. Nevertheless, the fact that demand- and supply-side policies distribute costs and benefits differently suggests that both approaches should be applied in tandem.

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Publication

[The case for a supply-side climate treaty](#)

Asheim GB, Fæhn T, Nyborg K, Greaker M, Hagem C, Harstad B, Hoel MO, Lund D, Rosendahl KE

Science. 2019 Jul 26