

# An alternative to carbon taxes

January 24 2019, by Anthony Patt, Johann Lilliestam

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Credit: AI-generated image ([disclaimer](#))

Climate policy is most effective when it helps people use alternative energy sources, rather than when it makes fossil energy more expensive, argue Anthony Patt and Johan Lilliestam.

Twenty years ago, scientists agreed on the need to reduce CO<sub>2</sub> emissions from the [energy sector](#). Today, there is agreement on the need to eliminate CO<sub>2</sub> emissions entirely. Carbon taxes were the policy

instrument developed to achieve the first objective effectively and efficiently. However, they are of relatively little use for achieving the second.

At first glance, carbon taxes are both simple and morally appealing. They force people to pay for the social cost of their pollution, and induce them to consume less fossil energy, helping the climate. Research shows, however, that carbon taxes do little to stimulate investment in alternative sources of energy. Higher gasoline taxes cause people to drive a little less, but not to switch to an electric car powered by sunshine.

That's a problem when the target is to eliminate emissions, not merely reduce them. In every area of life – driving, heating, dressing, eating – we need to either stop consuming entirely, or consume only things produced with and making use of non-[fossil energy](#). Reducing energy demand is neither necessary nor sufficient to eliminate emissions. What is both necessary and sufficient is a switch to 100% renewable energy, and there is enough wind and sunshine for this to work.

## **Enabling the energy transition**

What happens when people make the jump from an [old technology](#) to a new one? Social science research has identified a sequence of four processes:

- First, there is the process of inventing new technologies. Government R&D support is crucial.
- Second, new technologies need to become affordable. This doesn't happen in the laboratory, but through commercialization. Public policies that create demand in protected market niches for new technologies, at a time when they are still far too expensive for mass uptake, are often critical. Feed-in tariffs and technology quotas are successful examples.

- Third, once they are economically competitive, new technologies need to move from niche to mainstream. Here too, [government policies](#) often play a critical role. A century ago, cars began to displace horses only when governments began to build the right kinds of roads, with appropriate traffic laws. Similarly, [smart phones](#) required a new set of regulations and standards, and entirely new networks to take off.
- Fourth, when the new technology offers better service than the old, at an attractive cost, that technology will become the norm. But in some cases governments may need to mandate the use of the new technology, or prohibit the use of the old. Building standards going into effect next year for the EU will require all new houses to consume almost no energy for heating and to supply the little heat they may need from renewables.

## **Flanking support for faster adoption**

Carbon taxes don't fit this framework. Arguably they can help in the second stage, where cost barriers do play a role. But even here, for several reasons, direct support mechanisms have proven far more effective at stimulating investment in the [new technologies](#).

Governments can more easily adjust the level of direct support in response to changes in technology costs, typically by decreasing the level of support as the new technology becomes cheaper. Carbon taxes, however, are most effective when investors expect them to remain stable or rise over time, which means that any point in time they are either too low to be effective, or too high to be efficient.

Carbon taxes' main value may be as a tool to raise revenue for other support instruments. But they are a political choice, and they do disproportionately burden the rural and less wealthy segments of society. The climate doesn't care how governments choose to raise revenue, but as the recent protests in France demonstrate, people do.

Many of the new energy technologies that we need have already gone through the process of commercialization and become economically competitive, thanks to support policies that have run their course. The key to a fully renewable [energy](#) system is to improve the power grids, adapt the market rules to the needs of renewables, and develop and deploy supporting technologies, like batteries. To push technologies like solar power or [electric cars](#), we need neither [carbon taxes](#) nor new subsidies, but rather new and updated regulatory frameworks and infrastructure networks.

**More information:** Transforming the European energy system. in Making climate change work for us: European perspectives on adaptation and mitigation strategies (eds. Hulme, M. & Neufeldt, H.) 165 – 199 (Cambridge University Press, 2010).

IPCC. Special Report on Renewable Energy. (Cambridge University Press, 2011).

Anne Held et al. On the Success of Policy Strategies for the Promotion of Electricity from Renewable Energy Sources in the Eu, *Energy & Environment* (2007). [DOI: 10.1260/095830506779398849](https://doi.org/10.1260/095830506779398849)

Mette Wier et al. Are CO2 taxes regressive? Evidence from the Danish experience, *Ecological Economics* (2005). [DOI: 10.1016/j.ecolecon.2004.08.005](https://doi.org/10.1016/j.ecolecon.2004.08.005)

Anthony Patt et al. The Case against Carbon Prices, *Joule* (2018). [DOI: 10.1016/j.joule.2018.11.018](https://doi.org/10.1016/j.joule.2018.11.018)

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