

# Carbon emission scheme 'succeeding despite low prices'

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A European Union (EU) programme aimed at reducing carbon dioxide (CO<sub>2</sub>) emissions has made significant progress despite low prices in carbon markets, according to a study at the Universities of Strathclyde and Pittsburgh.

Under the EU's Emissions Trading System (ETS), introduced in 2005 in

response to the Kyoto Protocol, governments set a cap on an allowable total amount of [emissions](#) over a certain period. They also issue tradable emission permits, which allow for one ton of CO<sub>2</sub>.

It is widely considered that carbon markets require [high prices](#) to reduce emissions but many observers believe they often set prices which are considered too low. However, the study by Strathclyde and Pittsburgh has found that the EU ETS saved around 1.2 billion tons of CO<sub>2</sub> between 2008 and 2016, nearly half of what governments pledged to reduce in their Kyoto Protocol commitments.

The study has been published in the journal *PNAS (Proceedings of the National Academy of Sciences)*. Strathclyde's home city, Glasgow, is due to host the next United Nations Climate Change Conference.

Dr. Patrick Bayer, a Chancellor's Fellow in Strathclyde's School of Government & Public Policy and lead author of the study, said: "The ETS was set up to cover some of the most polluting industries." It has focused on very carbon-intensive energy production and manufacturing but there is evidence in other research suggesting that these industries have started to diversify their [business models](#) and to look into adopting carbon-neutral technologies or, at least, are interested in thinking about how to change their operations.

"Firms got an initial endowment of permits free but if they had emissions in excess of what they were allowed, they needed to buy more. If firms are to change their behaviour in the long run, prices of permits should be as high as possible to incentivise them to change away from carbon-intensive production.

"It turned out prices in carbon markets were fairly low, which then caused major concerns for environmentalists and policy-makers, because they felt they might not provide sufficient incentives.

"It depends on the sector or size of firm but we argue that, if firms think of carbon regulation as a long-term project, then they do need to start to change their behaviour."

The study used emissions in sectors not covered by the EU ETS to estimate what emissions would have been in those sectors the system does cover. It found that emissions in covered sectors decreased by between 8.1% and 11.5%, compared to expected emission levels without the EU ETS. This translates to a decrease of around 3.8%, compared with the EU's total emissions during 2008 to 2016.

Dr. Bayer said: "In the energy and electricity markets, we have seen even big players thinking about how they can run their operations when becoming less dependent on fossil fuels. But there can be a threat that, whenever prices in those markets go up, an industry or business becomes exposed to high costs.

"The appeal of carbon markets is that, once they are established with the right rules, you can connect them to other markets. Climate is not concerned about whether emissions are reduced in the UK or Germany or China; so long as they are reduced, that helps to address the problem. If you have carbon markets scattered across the world, you might be able to trade across those markets.

"The UK's future place in the ETS is still up for discussion but all options are on the table. Whether any UK carbon [market](#) would be connected to the European market isn't clear and would probably depend on negotiations with the EU and how trade will be regulated in future relations. Assuming there were agreement on this and some strong economic integration between the two countries, it would probably make a lot of sense to connect those markets. The UK has been successful in decarbonising its economy in the past decade or so and has a strong role to play in continuing to advocate for future decarbonisation"

"The period our study covered, from 2008 to 2016, included the [financial crisis](#) and economic downturn, when demand for the permits reduced. We used a statistical model to account for the effect of the crisis. The emission reductions that we measure are in addition to lower demand for permits due to the economic crisis, energy efficiency targets and climate policies that try to address [carbon](#) emissions."

**More information:** Patrick Bayer et al, The European Union Emissions Trading System reduced CO2 emissions despite low prices, *Proceedings of the National Academy of Sciences* (2020). [DOI: 10.1073/pnas.1918128117](#)

Provided by University of Strathclyde, Glasgow

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