

Wind power delivers £104 billion net benefit to UK consumers

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UK investment in wind energy generated a net financial benefit of more than £100bn for energy consumers between 2010 and 2023, challenging misconceptions about the cost of the green energy transition, a new UCL study has shown.

The study, published in UCL Open Environment, found that between 2010 to 2023 wind-generated energy lowered electricity bills by £14.2bn and cut the cost of natural gas by £133.3bn. When offset by the £43.2bn in green subsidies consumers paid through their bills, the net result was a reduction of £104.3bn in UK energy bills over the 13-year period.

As delegates prepare for COP30 in Brazil, the report's conclusions re-focus attention on the UK's green energy transition and challenge the argument that sustainability, affordability, and energy security are in conflict with each other. Crucially, the study's authors argue that investment in wind energy should be viewed as a public good whereby government support directly benefits consumers and industry.

To assess the financial impact of wind power on the UK energy market, the researchers modelled the long-term Merit Order Effect (MOE), the mechanism by which introducing low-cost renewable energy lowers wholesale electricity prices.

Unlike previous analyses, which have only considered short-term MOE, this approach considers the potential cost of constructing new gas capacity, providing a fuller picture and a more realistic reflection of how the energy market would respond over time. Models that only considered short-term MOE calculated the net benefit at just £0.9bn.

In contrast, this study takes into account that had the UK continued to invest in gas instead of wind generation throughout the 2010s, demand for gas would have significantly increased and therefore led to higher prices today.

However, the UK saw an expansion of wind capacity during this period from just five terra-watt hours (TWh) to 80 TWh, which was 30% of electricity generation in the UK. The study shows that this expansion of wind capacity in fact pushed gas generators out of the market and lowered electricity prices for consumers.

Lead author Colm O'Shea (UCL Geography) said: "Far from being a financial burden, this study demonstrates how wind generation has consistently delivered substantial financial benefits to the UK. To put it into context, this net benefit of £104bn is larger than the additional £90bn the UK has spent on gas since 2021 as a result of rising prices related to the war in Ukraine."

While good news for consumers, these lower market prices mean the wind generators themselves earn less per unit of energy, limiting their own profitability as they cannibalise their own market. The study proves that the profitability of the wind energy sector should not be seen as a measure of its financial value.

Lead author Colm O'Shea said: "The simplistic assessment that the wind industry is a drag on the UK economy is deeply mistaken. It is perfectly possible for the wind industry to be consistently unprofitable without government support yet still deliver a net financial and economic benefit to the country. This study demonstrates why we should reframe our understanding of green investment from costly environmental subsidy to a high-return national investment."

The study also calls into question the fairness of the current funding model. Currently, electricity users pay 100% of green subsidies used to aid the green transition but receive only 18% of the financial benefit. Meanwhile, natural gas users, who pay nothing toward wind investment, have enjoyed 82% of the benefit since 2010.

Co-author Professor Mark Maslin (UCL Geography) said: "The study raises serious questions about the fairness of who funds our transition to renewables and who benefits. Right now, the biggest winners are not the investors, wind generation firms or even electricity consumers who foot the bill for subsidies – it is natural gas consumers, who benefit from reduced household and industrial energy bills."

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“We should look at wind power as a public good, like our schools and roads, where governments and citizens stand to spend a little and gain a lot. Investment in wind is not just environmentally sound, it is economically strategic and is one of the best investments the UK has made in the last decade.”

Notes to Editors

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Colm O'Shea, Piers Horne and Mark Maslin, 'Modelling the Long-Term Financial Benefits of UK Investment in Wind Energy Generation' will be published as a preprint for peer review in UCL Open Environment on Tuesday 28 October 2025, 00:01 UK time and is under a strict embargo until this time.

DOI: <https://doi.org/10.14324/ucloepreprints.290.v1>.

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