

The Need for a Unified Carbon Tax System

by Annadonata Taccarelli



King's Policy Journal

KCL Policy Research Centre

Centre for Climate, Energy and Sustainability

Word Count: 2,398

January 2026

The Need for a Unified Carbon Tax System by Annadonata Taccarelli

Introduction

Governments commonly employ environmental taxes as a policy tool to address environmental issues where activities that harm the environment such as burning fossil fuels, creating waste, or emitting carbon, are made more expensive. By raising the cost of these harmful behaviours, environmental taxes encourage people and businesses to shift toward cleaner alternatives. The revenue raised is then used to fund research into cleaner technologies, offer financial support for sustainable alternatives, or pay for environmental cleanup. This method aims to encourage and reward the switch to more sustainable alternatives rather than imposing a direct ban on the environmentally harmful ones.

In the United Kingdom, environmental taxation and carbon pricing mechanisms are spread across multiple sectors. Energy use is targeted through measures such as the Climate Change Levy, which taxes business energy consumption, and the Energy Profits Levy, a windfall tax on oil and gas company profits (HM Treasury, 2022). Transport-related taxes include the Air Passenger Duty, which is imposed on flights (HM Revenue & Customs, 2023) and Vehicle Excise Duty, charged on vehicle ownership (HM Revenue & Customs, 2024). Waste and materials are addressed through the Landfill Tax, discouraging landfill disposal (HM Revenue & Customs, 2024), the Aggregates Levy, taxing raw material extraction, and the Plastic Packaging Tax, incentivising the use of recycled plastic (HM Government, 2021). Finally, carbon pricing is implemented through the UK Emissions Trading Scheme (UK ETS) – a “cap-and-trade” system for mining and extractives, industry, power, and domestic aviation (International Carbon Action Partnership, 2025).

Firms must hold allowances for each tonne of carbon they emit, which can be bought or traded on the market. As the overall cap of emissions gets gradually reduced, the carbon price rises, creating a financial incentive to decarbonise. Together, these instruments are designed to raise government revenue while simultaneously promoting environmental goals. However, following the UK's departure from the European Union, many of these mechanisms were inherited or adapted from previous EU systems, resulting in a fragmented and poorly coordinated framework. This complexity increases administrative costs, complicates compliance for businesses, and often undermines the system's overall effectiveness in supporting the UK's ambition to achieve net-zero carbon emissions by 2050 (Gadenne and Upton, 2025). This fragmentation creates three major problems. First, because pollution is taxed at different rates across different industries and activities, the system is not economically effective – some emissions face high costs while others are barely taxed, meaning the overall price signal fails to reflect the true social cost of carbon. Second, the lack of central coordination leads to taxes overlapping, meaning that some emissions may be effectively taxed multiple times, while others escape taxation altogether. Finally, these environmental taxes are often regressive, placing a disproportionate financial burden on

low-income households.

This essay argues that the current environmental tax system is inefficient and socially unfair and proposes that a single, unified, and economy-wide carbon tax would be a better way forward. Since carbon dioxide and other greenhouse gas emissions are the dominant environmental challenge facing the UK and the primary focus of its net-zero commitment, a carbon tax targeting these emissions directly would address the core issue while simplifying the tax structure. Section 1 will analyse and explain the key inconsistencies within the United Kingdom's current environmental tax system. It will draw upon the changes introduced after Brexit, highlighting how they have affected environmental taxation, as well as examining sectoral coverage gaps, overlapping tax mechanisms, and the disparities in energy taxation among households. In Section 2, we will evaluate the proposal of implementing a single, transparent carbon tax system with revenues redistributed as equal per-capita dividends. This section will identify international case studies to support the argument for a unified carbon tax system.

1. The Inconsistencies of the UK's Current Environmental Tax System

1.1 Post-Brexit fragmentation

The structural complexity of the UK's environmental taxation system is fundamentally rooted in the loss of centralised enforcement after Brexit. Before leaving the European Union, the UK participated in the EU's Emissions Trading Scheme (ETS), which later served as the model for the UK ETS. Although both systems use a similar "cap-and-trade" approach, the EU ETS operated within a centralised and authoritative governance structure. As Faure observes, the EU ETS "fostered top-down climate governance with centralised ETS rule-making" (Faure, 2024, p. 5), reflecting the broader principle of the EU "supremacy of the law" (Faure, 2024, p. 4). Compliance was monitored and enforced by the EU's central institutions, such as the European Commission and the European Court of Justice, ensuring that core environmental standards were uniformly applied across all member states (Collins, 2025). This governance structure was underpinned by core environmental principles embedded in EU primary law. These included the 'precautionary principle' (acting to prevent environmental harm even with incomplete scientific certainty), the 'prevention principle' (addressing environmental damage before it occurs), the 'rectification principle' (correcting harm where it originates), and the 'polluter pays principle' (requiring those responsible for pollution to bear its costs) (Szuda, 2021). These objectives were legally binding obligations that member states were required to follow, enforced with a level of authority and consistency that the UK's post-Brexit system no longer replicates.

Since the Brexit transition, the UK has sought to replace EU-level environmental enforcement through the creation of the Office for Environmental Protection (OEP). However, unlike the EU's central institutions, the OEP's authority extends only to England and Northern Ireland rather than the whole

UK because Scotland and Wales opted to create their own equivalent oversight bodies, creating fragmentation within what was previously a unified regulatory framework (Office for Environmental Protection, 2022, p. 8). Furthermore, the OEP was deliberately designed under the Environment Act 2021 as an advisory and oversight body rather than a sanctioning authority (Office for Environmental Protection, 2021). This means that, unlike the EU system, the EOP cannot directly impose financial penalties on government bodies, but must rely on judicial review, a slower and less certain enforcement mechanism (Wright and Oldfield, 2022). Although since May 2021 the UK has successfully established its own ETS and even committed to stricter annual emissions cap reductions – 5% each year, which is a bigger cut than the EU scheme (Collins, 2025) – this progress has not spread to the rest of its environmental policies. Because there is no longer a powerful, central body enforcing consistent principles, environmental policy application has become largely discretionary and case-dependent. This has produced inconsistent policy outcomes across the economy, where identical levels of carbon emissions can face vastly different costs depending on their source (whether from households, power generators, or specific industrial processes) due to the conflicting interpretations of environmental regulations by businesses and citizens.

1.2 Sectoral coverage gaps

A key weakness of the UK's environmental taxation framework lies in its uneven sectoral coverage. The UK ETS already covers large emitters such as power stations, industrial plants, and domestic aviation. However, road transport falls outside this system entirely, with cars and vehicles being taxed through fuel duty and Vehicle Excise Duty (VED) instead, neither of which is calculated based on carbon emissions per tonne of CO₂. Similarly, in the aviation industry, aviation fuel (kerosene) remains untaxed in the UK and internationally, despite the sector's significant contribution to greenhouse gas emissions. Instead, airlines pay Air Passenger Duty (APD), a tax on tickets that does not reflect the true carbon emissions of flights, effectively subsidising pollution. Both road transport and aviation pay less than the amount of economic damage caused by their emissions (Green Alliance, 2023, p. 10), contributing to the reduction of government funding for net-zero investments, such as public transport, infrastructure, and renewable energy.

1.3 Overlapping tax mechanisms

In addition to uneven sectoral coverage, the UK's environmental taxation framework is characterised by overlapping and duplicative tax mechanisms. Large emitters participating in the UK ETS must purchase allowances for each tonne of CO₂ they emit, but many are also subject to the Climate Change Levy (CCL), a tax on the consumption of gas, electricity and other fuels, and some are further covered

by the Carbon Reduction Commitment (CRC), which applies to high electricity users (Advani, Levell and Stoye, 2011). Given that the interaction between the ETS, CRC, and CCL creates overlap, as a result, businesses could end up paying for the same emissions through several schemes at once, while other emissions remain lightly taxed or untaxed. This unevenness is reinforced by Climate Change Agreements (CCAs), which allow businesses in approved energy-intensive sectors to negotiate reduced CCL rates. From January 2026, eligible firms can reduce their CCL obligations by up to 80% in exchange for meeting energy-efficiency and emissions-reduction targets (Advani, Levell and Stoye, 2011). In practice, this means that companies polluting at similar levels may face very different carbon costs, weakening the overall price signal and preventing it from reflecting the true social cost of carbon.

1.4 Energy taxation across households

By contrast, households are treated very differently. They are not subject to the ETS, CCL, or CRC. Instead, household gas for heating and cooking is taxed at the reduced 5% VAT rate, effectively providing a subsidy of approximately £2.2 billion per year for fossil fuel heating (Smith, 2020). This policy predominantly benefits wealthier households, who tend to consume more energy, due to the vertical distributive effect of carbon taxation. For example, Modelling by Feng et al. (2010) shows that “with a carbon tax of £93 per tonne in the UK, the lowest-income group would spend about 6 per cent of their income on the tax and the highest-income group only 2.4 per cent” (Feng *et al.*, cited in Grantham Research Institute on Climate Change and the Environment, 2020, p. 9). Further scenarios modelled by Browne et al. (2013) observe that even under a smaller carbon tax scenario that excludes transport “around 45 per cent of the lowest income decile are classed as ‘losers’ from the tax (defined as those who experience an overall loss of £52 per year), while the proportion of ‘losers’ in the highest income decile is only 20 per cent” (Browne *et al.*, cited in Grantham Research Institute on Climate Change and the Environment, 2020, p. 9). Hence, although households do not face a direct carbon tax on electricity consumption, they are still indirectly affected through higher energy prices, as power generators pass the costs of emissions compliance on to consumers.

2. The Solution: A Unified Carbon Tax System

2.1 International Examples

International experience shows that a unified carbon tax can deliver emissions reductions while remaining economically and socially viable. Sweden provides one of the earliest and most successful examples. Introduced in 1991, Sweden’s carbon tax directly linked fuel prices to their carbon content and was increased gradually over time, rising from around US\$30 per tonne of CO₂ at introduction to approximately US\$132 by 2018, making it currently the highest carbon tax in the world (Andersson, 2017, p. 3). This approach gave households and firms time to adapt, allowing businesses to invest in cleaner technologies and energy-efficient equipment to adjust consumption patterns without sudden

economic disruption (Government Offices of Sweden, 2025). Sweden combined carbon pricing with revenue recycling through a “green tax shift”, using carbon tax revenues to reduce labour taxes. This helped cut emissions without increasing overall tax burdens or harming employment, illustrating how carbon taxation can support both decarbonisation and economic efficiency (Organisation for Economic Co-operation and Development, 2025). Although this mechanism has since been scaled back, its earlier success demonstrates the importance of linking carbon pricing to broader fiscal reform.

A similar logic is followed in carbon pricing in Canada, where revenues are returned directly to households through the Canada Carbon Rebate. Government data shows that lower income households receive more in rebates than they pay in higher energy costs, a point emphasised by the Minister of Finance Department of Finance Chrystia Freeland, who notes: “every three months, we are delivering hundreds of dollars back to families through the Canada Carbon Rebate – which gives eight out of 10 families more back than they pay – while ensuring big polluters pay their fair share” (Department of Finance, 2024). Together, these cases show that a single, economy-wide carbon tax paired with targeted low-income revenue recycling can reduce emissions while maintaining social fairness and political sustainability.

2.2 A Uniform Carbon Tax with Equal Per-Capita Dividends

Drawing on these international examples, the UK would benefit from replacing its current mix of overlapping instruments – the UK ETS and the various energy, carbon, and waste levies – with a single carbon tax applied equally to all CO₂ emissions across businesses, industries, and households. This would simplify the system, reduce administrative burdens, and ensure that every tonne of carbon faces the same costs, regardless of where or by whom it is emitted. To make sure the system remains progressive rather than regressive, revenues should be recycled through equal per-capita dividends (Corvino, 2025, p. 533). While revenue recycling can take many forms, this approach is particularly transparent and equitable, as all revenue raised is returned directly to citizens through regular payments or rebates, with every individual receiving the same share. As OECD (2020) notes, such transfers prove most effective when “based on income and social indicators, not on overly narrow measures of energy consumption” (Flues and van Dender, 2020, p. 37), allowing support to reach households most exposed to higher energy costs without weakening the incentive to reduce emissions, as Canada operates. Over time, as the UK becomes more energy-efficient reliance on fossil fuels declines, these support payments can be gradually reduced, keeping the system fiscally sustainable while protecting those most exposed to transition costs.

Conclusion

Overall, a unified carbon tax system would help replace the UK's current patchwork of overlapping levies with a clearer, more coherent framework. By applying a consistent carbon price across sectors, such a system would ensure that all emitters face the same incentive to reduce their environmental impact and that the government receives a predictable amount of contribution to fund and support the net-zero investments. To ensure fairness and equity, revenue recycling through equal per-capita dividends is essential to guarantee that low-income households who typically spend a higher share of their income on energy are compensated, helping to even out the distributional impacts of the tax. As demonstrated by Sweden and Canada, a unified carbon tax system paired with targeted revenue-recycling mechanism can support decarbonisation whilst maintaining public trust in the transition. Adopting a similar approach would allow the UK to strengthen the economic effectiveness as well as the social legitimacy of its net-zero strategy and objective.

References

- Advani, A., Levell, P. and Stoye, G. (2011) *Inconsistent and inefficient UK carbon prices*. London: Institute for Fiscal Studies. Available at: <https://ifs.org.uk/articles/inconsistent-and-inefficient-uk-carbon-prices>.
- Andersson, J.J. (2017) *Cars, carbon taxes and CO₂ emissions*. Centre for Climate Change Economics and Policy Working Paper No. 238; Grantham Research Institute Working Paper No. 212. London: London School of Economics and Political Science.
- Collins, P. (2025) 'Carbon tax: your guide to what is happening in the UK', *Selectra*, 24 September. Available at: <https://climate.selectra.com/en/carbon-footprint/tax>.
- Corvino, F. (2025) 'Equal per capita carbon dividends and the waste objection', *Environmental Politics*, 33(6), pp. 529–547.
- Department of Finance Canada (2024) *Government announces Canada Carbon Rebate amounts for 2024–25*. Government of Canada, 1 February. Available at: <https://www.canada.ca/en/department-finance/news/2024/02/government-announces-canada-carbon-rebate-amounts-for-2024-25.html>.
- Faure, M. (2024) *Localization vs globalization of carbon emissions trading: the European Union experience*. Maastricht: Maastricht University.
- Flues, F. and van Dender, K. (2020) *Carbon pricing design: effectiveness, efficiency and feasibility – an investment perspective*. OECD Taxation Working Papers No. 48. Paris: OECD Publishing.
- Gadenne, L. and Upton, B. (2025) 'The tax system is making net zero more costly than it has to be', *Institute for Fiscal Studies*, 25 June. Available at: <https://ifs.org.uk/articles/tax-system-making-net-zero-more-costly-it-has-be>.
- Government Offices of Sweden (2025) *Sweden's carbon tax*. Government.se. Available at: <https://www.government.se/government-policy/taxes-and-tariffs/swedens-carbon-tax/>.
- Green Alliance (2023) *A fair share transport tax: reforming transport taxes*. London: Green Alliance. Available at: https://green-alliance.org.uk/wp-content/uploads/2023/06/Fair_share_transport_tax.pdf.
- Grantham Research Institute on Climate Change and the Environment (2020) *Distributional impacts of a UK carbon tax*. London: London School of Economics.
- HM Government (2021) *Introduction of Plastic Packaging Tax from April 2022*. GOV.UK, 12 October. Available at: <https://www.gov.uk/government/publications/introduction-of-plastic-packaging-tax-from-april-2022/introduction-of-plastic-packaging-tax-2021>.
- HM Revenue & Customs (2023) *Air Passenger Duty and connected flights*. GOV.UK. Available at: <https://www.gov.uk/guidance/air-passenger-duty-and-connected-flights>.
- HM Revenue & Customs (2024a) *Vehicle Excise Duty: Tax Information and Impact Notes (TIINs)*. GOV.UK. Available at: <https://www.gov.uk/government/collections/tax-information-and-impact-notes-tiins>.
- HM Revenue & Customs (2024b) *Excise Notice LFT1: A general guide to Landfill Tax*. GOV.UK, 1 November. Available at: <https://www.gov.uk/government/publications/excise-notice-lft1-a-general-guide-to-landfill-tax> (Accessed: 9 January 2026).

HM Revenue & Customs (n.d.) *Aggregates Levy: detailed information*. GOV.UK. Available at: <https://www.gov.uk/government/collections/aggregates-levy-detailed-information>.

HM Treasury (2022) *Energy Profits Levy factsheet: 26 May 2022*. GOV.UK, 26 May. Available at: <https://www.gov.uk/government/publications/cost-of-living-support/energy-profits-levy-factsheet-26-may-2022>.

International Carbon Action Partnership (2025) *UK Emissions Trading Scheme*. ICAP, 1 August. Available at: <https://icapcarbonaction.com/en/ets/uk-emissions-trading-scheme>.

Office for Environmental Protection (2021) *OEP complaints guidance for public authorities*. Available at: <https://www.theoep.org.uk/oep-complaints-guidance-public-authorities>.

Office for Environmental Protection (2022) *Our strategy and enforcement policy 2022*. Available at: <https://www.theoep.org.uk>.

Organisation for Economic Co-operation and Development (2025) *OECD Environmental Performance Reviews: Sweden 2025*. Paris: OECD Publishing. Available at: https://www.oecd.org/en/publications/2025/03/oecd-environmental-performance-reviews-sweden-2025_409c4061.html.

Smith, L. (2020) ‘VAT discount on domestic gas “mostly benefits wealthier households”’, *Simply Switch*, 29 September. Available at: <https://www.simplyswitch.com/vat-discount-domestic-gas-mostly-benefits-wealthier-households/>.

Szuda, Á. (2021) ‘Environmental principles and the future of environmental policy in the UK’, *Policy Connect*, 14 May. Available at: <https://www.policyconnect.org.uk/blog/environmental-principles-and-future-environmental-policy-uk>.

Wright, D. and Oldfield, K. (2022) ‘The new watchdog: the Office for Environmental Protection’, *Kennedys Law*, 6 April. Available at: <https://www.kennedyslaw.com/en/thought-leadership/article/the-new-watchdog-the-office-for-environmental-protection/>.