



Centre for Energy Policy

Response to the UKETS consultation – June 2022

Summary

In this response we do not respond directly to the consultation questions, but provide evidence related to analysis undertaken at the Centre for Energy Policy to understand the implications of applying a broad £50 per tonne of CO₂ carbon tax across the UK economy. This analysis looks to the future where carbon taxation could be extended beyond the sectors in, or proposed to be incorporated, into the UKETS. It can be used to inform thinking around scenarios where free allocations are limited and where energy intensive sectors will increasingly bear the burden of carbon pricing unless decarbonisation occurs. A key learning is around the impact that carbon taxation can have if increased costs associated with carbon taxation in energy intensive sectors lead to downstream impacts on wages and prices across the economy more generally. This is likely to occur to a greater degree if more sectors across the economy are included into the UKETS and if the UK deploys carbon pricing ahead of international competitors. Here we find that the overall impacts on the economy will be controlled by producer's ability to moderate taxed energy use (decarbonise), the response of labour markets (wage costs) and the response of exports to increased prices. We also present a range of high level findings around how the recycling of carbon tax revenues and the variation of income tax can affect the distributional impact of outcomes.

About the Centre for Energy Policy

The Centre for Energy Policy (CEP), led by Professor Karen Turner, was established in 2014 and is a multi-disciplinary hub that facilitates research, knowledge exchange and policy engagement on energy and climate issues from a wider public policy perspective

Uniquely, CEPs developing research foundation offers a 'wider view' of energy and climate policy, going beyond technology-driven analyses to consider the wider economic, social, political and, crucially, public policy context of decision making. In particular, CEP has expertise in multi-sector economy-wide modelling for political economy and public policy scenario analyses to investigate in a holistic manor how different actions and options are likely to impact across the wider economy, how and where value is generated and to which actors, sectors and regions it accrues.

1. Introduction and scenario simulation approach

This analysis is presented in two policy brief (available on request from CEP) aimed at building better policy understanding of what the macroeconomic impacts of introducing greater and broader carbon pricing/taxation may be.

Our analysis focusses on identifying and understanding the key principles and mechanisms determining the macroeconomic impacts of introducing a new carbon tax using a multi-sector economy-wide computable general equilibrium (CGE) scenario simulation model.¹ We isolate the impacts of introducing a carbon tax by running staged simulations where nothing else changes.

The illustrative carbon tax rate is imposed at a rate of £50 per tonne of CO₂ (in average use) of (domestic and imported) supply of gas and refined oil/petroleum, varying assumptions about cost

¹ An academic paper is currently under peer review. This fully sets out the foundations, methodology, and results of the research reported here. A draft is available on request from karen.turner@strath.ac.uk.



and competitiveness pressures.² This is in addition to existing carbon prices/charges. We focus reporting on long-run outcomes where the economy is fully adjusted (which we find can take up to 30 years but with 80%/90% of the adjustment taking place within the first 10/15 years).³

Here, we begin by focussing on a central case where the UK labour market is characterised by real wage bargaining, with workers' real take-home wage demands reducing with falling labour demand. This is important, where the relative competitiveness of UK producers falls with relatively price responsive export demand, assuming that (with no other policy intervention) firms have limited ability to substitute away from taxed fossil fuel use in their input mix.

In all cases, we assume government maintains the real value of its spending and transfers, involving increased nominal spending as consumer prices rise. We extend here to focus on how outcomes are affected if government priorities balancing the public budget, and the broad approach to doing so in recycling or recovering revenues.

2. Key findings

In the first brief we established that the **main driver of the macroeconomic outcomes of extending carbon pricing to all sectors of the economy**, via a carbon tax applied via the supply of (domestically produced and imported) refined oil/petroleum and gas, **is the impact on producer costs and competitiveness**. There, using an economy-wide scenario simulation framework, we demonstrated how the **central drivers of the extent of wider economy contraction are producers' ability to moderate taxed energy use and wage costs in determining output prices, and export demand responses to higher prices**.

In the second briefing we present fuller findings of our scenario simulation analyses for the UK, with focus on distributional impacts across different household income groups. We extend to consider the impacts of any attempt to **moderate negative impacts on UK producers and consumers through some extent of revenue recycling, while maintaining priority on wider fiscal responsibility**.

Five fundamental findings emerge:

1. Where the UK is a first mover in adopting broad carbon taxation, all our scenarios point to **negative effects on average household real incomes and the competitiveness of domestic producers**.
2. While the energy and CPI impacts of the carbon tax are regressive, **when effects on real activity levels are incorporated, the real income impacts may be mildly progressive**, provided government maintains the real value of all spending and transfers.
3. The size and characteristics of economy-wide contraction are highly dependent on wage bargaining responses as labour demand falls. **Where workers resist real wage reductions, the costs of the carbon tax are increasingly pushed onto less energy-intensive but more labour-intensive sectors** of the economy.
4. While **negative wider economy impacts can be cushioned by recycling carbon tax revenues**, the net total government revenue increase is always less than the revenue from

² As set out in the first policy brief, the average emissions intensity in use of each of these broad fuel types is estimated using data from the 2018 release of the BEIS Digest of United Kingdom Energy Statistics (DUKES). The new (additional) £50 per tonne tax rate is introduced to the model at the rates of 45p and 16p per £1 respectively on the output prices of the UK 'Refined Petroleum Products' and 'Gas Distribution' sectors and on corresponding imports. It is passed on and paid by all users.

³ We note that there could be important dynamic impacts, particularly where a range of conditions, including both labour supply and demand responses, may be constrained in the short run. Going forward, we will develop our scenario simulation design to fully consider the adjustment process and key drivers of transitory outcomes.



the carbon tax. Thus, **full earmarking of carbon tax revenues to either offset costs to some or all economic actors, and/or to enable further emissions reductions, would lead to an increase in government borrowing.**

5. Reducing **income tax moderates macroeconomic losses by reducing household real income losses while limiting wage pressure and competitiveness loss.** However, with low-income households earning less, it is regressive.

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