

Environment, Climate Change and Land Reform Committee

Climate Change (Emissions Reduction Targets) (Scotland) Bill

SUBMISSION FROM THE CENTRE FOR ENERGY POLICY, UNIVERSITY OF STRATHCLYDE

Introduction/overview of CEP climate policy research

There are two strands to our research at the University of Strathclyde's Centre for Energy Policy relating to climate change policy. First, who ultimately 'pays the bill' for action to meet policy targets. Second, how might a wider range of societal benefits, accruing to the same groups of people 'paying the bill', emerge as a result of taking action(s). These questions are important because climate change policy is particularly subject to 'public good' problems where private costs of actions borne by individuals (e.g. energy bill payers) are generally not offset by delivery of private benefits, or at least benefits that are currently valued by those paying the costs.

The problem is compounded by the fact societal benefits do not necessarily accrue where costs are borne. On the other hand, Scottish action to reduce climate change impacts may deliver benefits that ultimately accrue mainly in other parts of the world.

These issues lead to a range of 'governance traps' around just who takes or is forced to take responsibility for climate change actions. In recent years we have published collaborative peer reviewed research on: the nature of this challenge (e.g. Newell et. al., 2015); the nature of societal benefits that may arise from particular policy actions (e.g. Smith et al., 2017; Turner et al., 2018a, on hydrogen and electrical vehicles); and, the issue of 'who pays' in the context of benefits accruing (e.g. Figus et al., 2017, on domestic energy efficiency).

Understanding which parts of society ultimately pay for and benefit from climate actions provides a solid foundation for developing climate policy that meets wider societal goals of sustainable and inclusive growth. It can help determine both what the overall level of ambition should be (e.g. a 90% or net zero target) and what policy actions should be taken across sectors. Based on this analytical approach, we would argue that target setting and policy actions interact and must be considered together, for example by looking at which currently high-cost and technically unproven options might need to be brought forward at what ultimate cost and for whom under different levels of ambition; or considering what the impact on balance of trade, employment and supply chain activity might be under different scenarios for the pace of action.

Potential societal benefits from Scottish supply chain development to support low carbon solutions

To take one example of the insight that can be derived from asking who ultimately pays and who ultimately benefits, we briefly present here some research that is focused on transport decarbonisation. Our recent research (Turner et al., 2018a) shows the potential economic benefits from supply chain activity to support refuelling of low/zero emission vehicles. We analysed the scenario of battery/hydrogen vehicle refuelling supply chains replicating the domestic upstream linkages observed in the UK electricity and/or gas industries. Using input-output multiplier analysis, we assessed the structure of these supply chains relative to that of more import-intensive petrol and diesel supply, and found that around three times as many jobs may be supported by supply chains for electric-hydrogen options. We also found substantial positive 'multiplier' effects for GDP across the supply chain and wider economy. We found that it is important not to limit supply chain options for technology solutions to traditional manufacturing sectors. Rather in the case of both jobs and GDP, we found that key supply chain beneficiaries are located in service sectors. We also found that the continuing contribution of the oil and gas industry, and its supply chain, is likely to be important in determining the economic contribution made by hydrogen-electric solutions in transport.

These sorts of positive economic effects may not be immediately obvious to those working on policy development where they are using traditional cost-benefit analyses to consider the direct impacts on bounded sectors or groups in society. Considering the wider economic ripple effects of climate actions is critical if we are to move the debate forward and align Scotland's decarbonisation ambitions better with our overall sustainable and inclusive economic growth objectives.

Potential role of low carbon solutions (e.g. CCS) to sustain existing Scottish industries

A further example of the powerful way in which deeper analysis of overall socio-economic impacts can inform climate target setting and policy action comes from our work on carbon capture and storage (CCS). Particularly in the context of the European Union's long term decarbonisation goals, deployment of CCS is considered critical for delivering on a 2050 target in line with Paris. In recent work with the Zero Emissions Platform, we set out the importance of CCS for sustaining existing industries that support thousands of jobs and wider supply chain activity and for enabling growth into the future. Given ongoing uncertainty in the UK around just what the level of government support for CCS development will be (over what timescale), we believe it is essential to communicate clear metrics that set out what the wider societal value of CCS may be.

A key message from the ZEP work was that failure to deal with industrial emissions at home may not only lead to 'carbon leakage' but also to associated leakage overseas of jobs, investment and GDP. Our work also contributed to, and underpins one of the recommendations (#9) of the UK CCS Cost Challenge Taskforce: "Working with industry,

Government to more fully assess value of CCUS to the wider UK economy (including in terms of utilising existing infrastructure, skills capacity, and supporting opportunities for future clean growth and development)” (CCUS Taskforce 2018).

Potential societal benefits from energy efficiency action in Scotland

We turn finally to energy efficiency policy as another area where our research approach can inform decisions about the design of policy and help set these in the context of wider target setting. In analysis of the potential economic benefits of the significant investment in energy efficiency across Scotland’s domestic building stock implied by the Energy Efficient Scotland programme, we found benefits from supply chain activity in actually delivering the programme of retrofits and a - more significant - wider economic boost from the increase in household spending power released by savings on energy bills. We also found the low income households benefit disproportionately from the wider programme (Turner et al., 2018c).

Crucially, these benefits accrue over time and we note two key implications reflected in our work. First, where funding mechanisms are not carefully designed (e.g. loan repayment periods), even households directly benefiting from efficiency improvements may suffer net income losses in early periods. This could be particularly problematic in the case of low income households, and counter-productive where actions aimed at reducing fuel poverty via reduced energy costs negatively affect incomes more generally. Second, the timing and extent of benefits realised depend upon the supply chain being primed and incentivised to invest in its own workforce and capacity by the government’s commitment to a multi-decade programme. In particular, our work shows that where supply chain actors are not convinced of sustained Government commitment to programmes, the full extent of economic benefits may not be realised and there is in fact a danger of negative impacts on jobs and GDP where suppliers have to reallocate their resources one year to the next.

The kind of benefits our work (cited in the EES Route Map and presented in a short policy brief (Turner et al., 2018c) suggests as being possible also depend upon the programme actually delivering the predicted energy savings benefits for households in full. That is, households must realise savings that they can spend elsewhere in the economy. The readiness and capacity of the supply chain are therefore critical. The supply chain acts both as an underpinning means for delivering the wider economic benefits the programme offers and as the locus for job creation and economic activity.

Crucially, our work has assumed that Scottish supply chain capacity will be able to develop. There are two key points to note. First, if Scottish supply chains are not ready, there is a risk of ‘leakage’ to other UK (or overseas) supply chains. Second, even if capacity is ready at Scottish level, it is not necessarily the case that benefits will accrue in the areas where costs are incurred. That is, if (for example) firms based in Glasgow undertake work to improve the energy efficiency of homes in Aberdeen (paid for by the people of Aberdeen), there will be an uneven and inequitable distribution of costs and benefits across Scotland.

It is therefore essential to assess supply chain capacity and potential benefits at a more regional level than has been possible in our work to date.

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