

Addressing the costs of climate change

Introduction

Although UK-wide targets have been set for greenhouse gas reduction there has been very little research done on the potential costs of addressing regional-specific climate change. The Northern Ireland Assembly Committee for the Environment agreed in its recent report into climate change, that it would commission its own research into the costs of addressing climate change in Northern Irelandⁱ.

This raises a number of issues about what is meant by 'costs of addressing climate change'. Estimating the cost implications of climate change is a complex and potentially contentious process. It is therefore essential that the Committee is clear about what its aims and the potential limitations of estimating such costs.

This paper seeks to present issues that the Committee will need to consider in order to refine its proposed research on the costs of addressing climate change in Northern Ireland.

1. Definition of 'costs' and 'addressing climate change'

There are two questions that the Committee needs to consider, 'What is meant by 'costs'? and 'What is meant by 'addressing climate change'? A strict definition of costs could be taken to mean the actual financial costs of implementing a range of measures; while 'addressing climate change' could be taken to mean achieving a reduction in greenhouse gas emissions by a certain date benchmarked against a date in the past.

2. Aim of proposed research

If both these assumptions are correct then the aim of the proposed research, based on the current overall NI target, is:

To determine the financial cost of implementing measures in Northern Ireland in order to achieve an 80% reduction in greenhouse gas emissions based on 1990 levels by 2050.

In adopting this approach measures being implemented by the NI Executive that are defined as carbon reduction measures could be identified and then

ⁱ Recommendation 25 **The Committee recommends that, wherever possible, a combination of incentives and penalties should be used to influence behavioural and attitudinal change. Following on from this inquiry the Committee intends to commission its own research to better inform it of the cost implications of addressing climate change in Northern Ireland.**

the financial costs of implementation estimated. Perhaps one of the key problems in attempting to make these calculations is the framework against which they are made. For example the Committee's report indicates that there is no climate change implementation strategy (recommendation 1). The absence of such a strategy and a comprehensive set of targets may present a problem in gathering the information on which to base calculations so this approach may not be so straightforward.

3. Alternative approach

A possible alternative approach relates to the recently established UK carbon budgets. The UK government has set the first three carbon budgets which cap emissions over three 5 year periods (2008-12, 2013-17, and 2018-22). Although there is no specific NI contribution, or indeed any specific regional contribution from Scotland or Wales either, the Committee may wish to consider if any proposed research could estimate the NI contribution to these budgets – in effect determining a carbon budget for NI – and use these estimates as the overall benchmark against which the costs of implementing measures to address carbon reduction could be made. This relates to recommendation 7ⁱⁱ of the Committee's report.

4. Breakdown of cost

The Committee may also wish to consider whether the costs associated with these measures apply solely to the NI Executive or to NI society as a whole. For example, depending on the measures adopted, the cost may have an impact on business owners or taxpayers. The Committee might therefore want to consider whether it is possible to achieve a breakdown of the financial costs of implementing measures across government, non-government sectors as well the cost to the private citizen. This would help contribute to achieving recommendation 8ⁱⁱⁱ of the Committee's report

ⁱⁱ **The Committee recommends that Northern Ireland should underpin its contribution to UK Greenhouse Gas Emission Reduction targets by urgently establishing its own emission targets based on sound local science. Long term targets should be accompanied by short and medium term annual or rolling targets which should be challenging but achievable, encourage attitudinal change, reflect local circumstances for each sector and based on the most cost-effective approach for Northern Ireland.**

ⁱⁱⁱ **Recommendation 8: The Committee recommends that emission reduction targets should be established for each sector in Northern Ireland and obtaining the necessary scientific information to inform sectoral targets should be given a top priority.**

5. Cost of action versus inaction

Also, the Committee may wish to consider the costs of addressing climate change against the cost of *not* addressing climate change in NI. The costs of *not* addressing climate change could be measured in terms of the impacts of climate change on NI e.g. more frequent flooding, and a figure could be estimated for these impacts. There are of course limitations to this approach given that how other countries address climate change will contribute to the positive or negative effects on NI, given that climate change is a global phenomenon. The difficulty therefore lies in attempting to isolate and quantify the cost (on NI) of not taking measures *at the NI level*.

In addition the NI Executive cannot simply exempt itself from its responsibility to contribute to the overall UK targets specified in the Climate Change Act (2008) so the exercise may be academic i.e. there can't be total inaction. However, the merits of doing this may help to set in context (and help benchmark) the cost of implementing measures. It still might therefore be prudent for the Committee to consider this approach particularly given the terms of reference for its inquiry included

3c To identify the costs associated with meeting these obligations and compare them with the costs that will be incurred if they are not achieved.

6. Non-financial impacts

At any time, but particularly in a time of economic recession, prioritisation of expenditure is important to all government departments. Therefore there may also be non-financial 'costs' e.g. reprioritisation of expenditure impacting on the development or implementation of other policies. This is also touched on in paragraph 31 of the Committee's report.

7. Cost-Benefits

Establishing the cost of implementing measures for carbon reduction may raise questions as to the potential economic *benefits* that may arise from these measures e.g. jobs through the development of the 'green sector'. In its inquiry report the Committee has recommended a cost-benefit analysis for every PSA from a climate change perspective (Recommendation 13^{iv}) and it may be that a regional analysis of costs should also include a consideration of the benefits as well.

^{iv} **The Committee recommends that cost-benefit analyses from a climate change perspective should be carried out on all Public Service Agreements.**

8. Constraints

Any financial cost would of course be an estimate and be determined by NI Executive policies (and national policies), targets, incentives, taxes, budgetary constraints etc. They might also be driven by future changes to all of these and any changes to agreed national or international targets in respect of greenhouse gas emissions. The costs would also likely be incurred over several decades, as the Stern report states, to avoid the risks of very severe consequences in the future¹.

Estimating the impact and cost of climate change is a complex and still contentious issue largely due to the uncertainty associated with climate change itself and with the issue of 'discounting'^v i.e. the rate at which global warming damages to future generations should be discounted. All funding of carbon reduction measures at the present is made in the context of reducing future risks and the questions arises as to how much should be discounted because it is *in* the future e.g. what should be the discount rate for estimating the social cost of carbon? Should the Committee proceed with the external research these are issues that can be explored in more depth.

Conclusion

As noted in a working note² for the Stern Review the scale of the climate change issue is such that finding the most efficient feasible response is critical. Determining the cost of this response is therefore key. Estimating the costs of climate change tends to be scenario driven and achieved by modelling techniques coupled with expertise in the fields of climate and economics and potentially other areas as well³. It may be likely therefore that more than one individual will be required to deliver this project depending on the scope of the Committee's terms of reference.

To sum up therefore, the Committee may wish to consider:

- The cost of achieving current targets or the cost of achieving a range of targets over a period of years;
- The potential financial and non-financial cost of inaction;
- Financial and non-financial benefits (may be linked e.g. less flooding (non-financial) then less compensation (financial);
- What financial measures (penalties/incentives) could be taken to ensure targets are met.

¹ The Stern Review: The Economics of Climate Change. Executive Summary

^v The discount rate is the rate of change of the price of one good relative to another.

²Discounting climate change damages: Working note for the Stern review. Cameron Hepburn (with a substantial contribution from Paul Klemperer) Final Draft.

³ The Financial Risks of Climate Change. Association of British Insurers. Examining the financial implications of climate change using climate models and insurance catastrophe risk models. ABI Research Paper, No 19, 2009