

Big Ask Scotland

Include ALL Sources of ALL Greenhouse Gas Emissions

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Friends of
the Earth
Scotland

1. Introduction

The Scottish Government has published a Climate Change Bill which sets mandatory targets to cut greenhouse gas emissions in Scotland by 80% by 2050. We welcome this as an opportunity for Scotland to lead the way in climate legislation. The Big Ask Scotland is Friends of the Earth Scotland's campaign for an effective Climate Change Bill. In principle the Bill includes emissions from international aviation and shipping, and includes all greenhouse gases (GHGs), not just CO₂.¹ Yet it is not clear if the Scottish Bill includes emissions from international aviation and shipping. This briefing outlines why the inclusion of all sources of emissions is fundamental to the effectiveness and credibility of the Bill.

2. International aviation and shipping within the current Bill

It is our understanding that international aviation and shipping emissions are not yet included within the Climate Change (Scotland) Bill. Paragraph 14 states:

The Scottish Ministers may, by order, make provision regarding the emissions of greenhouse gas gases from international aviation and international shipping that are attributable to Scotland.²

This suggests international aviation and shipping emissions will only be incorporated 'by order', and not, has had been suggested previously, within the Bill itself.³ In addition Paragraph 24 of the policy memorandum defines 'Scottish emissions' as:

those greenhouse gases which are emitted in Scotland or which represent the Scottish share of emissions of gases from international aviation and international shipping. In the case of the latter, this recognises that Scottish emissions from international aviation and international shipping will, by their very nature, occur in part outside Scotland's borders.⁴

The use of the word 'or' in this paragraph is crucial. It seems Ministers have given themselves flexibility to decide the Bill should not include emissions from international aviation and shipping. Given the rapid growth rates of emissions from international aviation and the sheer scale of emissions from international shipping, any omission of these would undermine the credibility of the entire framework.

2. Why international aviation and shipping must be included

Aviation is the fastest growing source of greenhouse gas emissions in the UK. Globally, one in five flights departs from or arrives at a UK airport.⁵ In 2005 aviation accounted for 6.3 per cent of total UK CO₂ emissions.⁶ However, due to the extra warming effects of non-CO₂⁷ emissions released at

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high altitude, aviation's real contribution is probably closer to 15-20 per cent. The Tyndall Centre for Climate Change has predicted that unless government policy changes, CO₂ emissions from UK aviation will more than double by 2030 and treble by 2050.⁸ **By 2050, aviation could be responsible for over 30 million tonnes of CO₂ a year, meaning that to deliver an 80 per cent reduction every other sector would have to reduce emissions to zero.**⁹

According to a recent leaked UN report, international shipping accounts for an estimated 4.5 per cent of global GHG emissions.¹⁰ This is more than double the amount previously reported by the International Maritime Organisation.¹¹ Projected growth rates mean that unless measures to reduce emissions are introduced, **world shipping could see a 72 per cent increase in fuel consumption and consequent emissions between 2000 and 2020.**¹²

There is no need to wait until international agreement on apportioning emissions is reached, as states are currently required to report international aviation and shipping emissions as a 'memo item' under the terms of the Kyoto Protocol, and do so using internationally agreed International Panel on Climate Change (IPCC) guidelines.¹³ The UK GHG inventory now uses the most accurate IPCC methodology to calculate international aviation emissions; however international shipping emissions are based solely on fuel bunker sales,¹⁴ and therefore underestimated in the inventory as relatively little fuel is sold in the UK. Therefore, while in the long term a more robust methodology based on consumption should be sought to ensure that Scotland does not simply export emissions, Scottish data could be extracted from the UK GHG inventory and used pending an internationally agreed methodology. This would set a benchmark internationally and again put Scotland at the forefront of legislation to tackle climate change.

3. All Greenhouse Gas Emissions

We welcome the fact the Bill includes all key greenhouse gases (GHGs) covered by the Kyoto protocol. Although the quantities of non-CO₂ GHGs emitted are significantly smaller than CO₂ emissions, they have a global warming potential (GWP) of between 21 and 23,900 times that of CO₂.¹⁵ Based on global warming potential, 20 per cent of Scotland's total GHG emissions are from non-CO₂ sources, and therefore must be covered by the proposed targets.¹⁶

Meeting the Government's headline target of an 80 per cent reduction in GHG emissions would be considerably more challenging by cutting CO₂ alone than by cutting all GHGs. Worse, some sectors could see efforts to minimise CO₂ leading to disproportionate increases in other GHGs: for example, agro-fuel production can lead to an increase in nitrous oxide (which is 310 times more damaging than CO₂¹⁷) that negates or even exceeds the savings made in CO₂ reduction.¹⁸ The most logical and cost-effective approach, and the one the Government has taken, would be to prioritise emissions cuts according to the lowest marginal cost across gases as well as across industries and sectors.

4. Conclusion

We welcome the inclusion of all greenhouse gases in the Bill. Yet we have serious concerns that the Bill falls short of the Government's previous rhetoric around the inclusion of international aviation and shipping. We hope that these sources of emissions will be fully incorporated into the Bill as it moves through Parliament.

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1 The basket of 6 greenhouse gases include carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF₆). From Defra About Climate Change: Greenhouse Gases <http://www.defra.gov.uk/environment/climatechange/about/g-gases.htm>

2 Climate Change (Scotland) Bill (as introduced) online at <http://www.scottish.parliament.uk/s3/bills/17-ClimateChange/index.htm>

3 The Scottish Government's response to the Climate Change Consultation stated:

"Scottish Ministers have taken the bold decision to demonstrate international leadership in this important area by including emissions from international aviation and international shipping within the targets set by the Scottish Climate Change Bill", online at:

<http://www.scotland.gov.uk/Publications/2008/10/response>

4 Policy Memorandum of the Climate Change (Scotland) Bill, online at <http://www.scottish.parliament.uk/s3/bills/17-ClimateChange/index.htm>

5 Bows, A. (2006). Produced in Cairns, S. and Newson, C. (2006). Predict and decide: Aviation, climate change and UK policy. Environmental Change Institute. University of Oxford.

6 Defra. (2007). Estimated emissions of carbon dioxide by IPCC source category, type of fuel and end user: 1970 – 2005.

7 The IPCC calculates that the extra warming effects of aviation amount to 2 to 4 times that of the forcing of its CO₂ emissions alone. See IPCC 1999, 'Aviation and the Global Atmosphere'

8 Bows, A. (2006)

9 Tyndall Centre, 2005, 'Decarbonising the UK: Energy for a Climate Conscious Future'

10 According to a UN report leaked to the Guardian newspaper, international shipping accounts for 4.5% of global GHG emissions.

<http://www.guardian.co.uk/environment/2008/feb/13/climatechange.pollution>

11 OECD Observer, 2007, http://www.oecdobserver.org/news/fullstory.php/aid/2600/Sea_fairer:_Maritime_transport_and_CO2_emissions.html

12 Marintek, 2000, report to the IMO 'Study of Greenhouse Gas Emissions from Ships'

13 See IPCC Guidelines for International Greenhouse Gas Inventories <http://www.ipcc-nggip.iges.or.jp/public/gl/invs1.html>

14 UK Greenhouse Gas Inventory, 1990 to 2006 report to UNFCCC April 2008

15 See Defra on Greenhouse Gas global warming potentials <http://www.defra.gov.uk/environment/climatechange/research/carboncost/step1.htm>

16 Scottish Government Consultation on proposals for a Scottish Climate Change Bill Jan 2008 5.20

17 See Defra <http://www.defra.gov.uk/environment/climatechange/research/carboncost/step1.htm>

18 Crutzen et al, 2007, N₂O release from agro-biofuel production negates global warming reduction by replacing fossil fuels