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Our experience in the Glasgow Carbon Rationing Action Group (CRAG) has shown us that reducing personal carbon emissions by 50 to 75% below the national average can be achieved at zero cost by simple albeit significant lifestyle changes. We have made these changes voluntarily. Others will require incentives. However, our experience leads me to believe that rapid and dramatic decarbonisation is possible and that it need not rely on expensive and uncertain techno-fixes.

Q1 The Bill creates a statutory framework for greenhouse gas emissions reductions in Scotland by setting a 50% reduction target for 2030 and an 80% reduction target for 2050.

What are your views on the 2050 target and a 2030 interim target proposed in the Bill?

The clear message from the scientists is that there is no more time to lose.

"If there's no action before 2012, that's too late. What we do in the next two to three years will determine our future. This is the defining moment." Rajendra Pachauri, Scientist, Economist and Chairman of the Nobel-winning International Panel on Climate Change, November 2007.[1]

"Arctic ice is in its death spiral." Mark Serreze, NSIDC Climate Scientist, 27 August 2008.[2]

"What happens in the Arctic actually does not stay in the Arctic." Richard Spinrad, NOAA Deputy Chief , October 2007.[3]

"A 50% reduction would stabilise atmospheric CO_2, but only for less than a decade. After that, atmospheric CO_2 would rise again as the land and ocean sinks decline owing to well-known chemical and biological adjustments." IPCC Fourth Assessment Report Working Group I.[4]

The 2050 and 2030 targets are inadequate. A growing body of scientific evidence indicates that atmospheric greenhouse gases are already at unsafe levels[5,6]. In this case, the only reasonable course of action is to start reducing global emissions straight away and to bring them back to safe levels as soon as possible. Scotland is uniquely placed to lead the global race out of carbon.

Scotland can take a lead within the UK…

Unfortunately, as the Bill currently stands, by 2020 Scotland is likely to be well off the pace, even in comparison with the rest of the UK. The UK Climate Change Committee has recommended two reduction targets for 2020: 34% in the absence of a global climate agreement and 42% if an agreement is struck. To achieve these targets, Scotland would have to make cut emissions at an annual rate of 2.7% and 4% respectively over the period 2011-2020[7]. Currently, the Bill permits Scotland to make no significant cuts in emissions until 2020. To reclaim poll position within the UK context, the Scottish Government would have to amend the Bill to incorporate annual cuts of at least 4% from the first year of implementation.
…and globally by setting credible targets.

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[1] http://www.nytimes.com/2007/11/18/science/earth/18climatenew.html
[2] http://www.reuters.com/article/environmentNews/idUSN2745499020080827?sp=true
[3] http://www.usatoday.com/news/washington/2007-10-17-4029351391_x.htm
[4] IPPC Fourth Assessment Report, Working Group I, 2007, Frequently Asked Question 10.3 "If emissions of greenhouse gases are reduced, how quickly do their concentrations in the atmosphere decrease?" available at http://www.ipcc.ch/ipccreports/ar4-wg1.htm
[5] James E Hansen et al, "Target atmospheric CO2: where should humanity aim?", Open Atmospheric Science Journal, vol.2, 2008, pp217-231 available at http://www.columbia.edu/~jeh1/2008/TargetCO2_20080407.pdf
[6] Public Interest Research Centre (2008) "Climate Safety" provides an review of post-IPCC 2007 climate science, available at http://www.climatesafety.org/
[7] Assuming Scottish emissions remain static at between 2006 and 2010. Chapter 14 Fig 14.4 of the UK Climate Change Committee's Report "Building a Low-Carbon Economy – the UK's Contribution to Tackling Climate Change" (2008), available at http://www.theccc.org.uk/reports (and referred to below as UKCCC 2008 Report), gives Scotland's 1990 and 2006 greenhouse gas emissions as 68MtCO_2e and 59MtCO_2e respectively.

The 2050 target is in line with the UK Climate Change Committee's recommendation that an 80% cut from 1990 levels is the UK's fair share of a global cut from 2000 levels of 50%. However, the 80% target is flawed on three counts.

Firstly, it is tantamount to abandoning efforts to limit global warming to the danger threshold of 2 degrees as defined by the IPCC and recognised by the European Union and the UK government[8]. This is because the Climate Change Committee has calculated that a 50% global cut (including an 80% UK cut) results in a better than evens chance of *exceeding* 2 degrees of warming[9]. The IPCC 2007 report states that in order to limit global temperature rise to 2 degrees, emissions must peak by 2015 and fall by 85% by 2050.[10] This is consistent with a cut in Scottish emissions of 95% by 2050 from 1990 levels[11]. To achieve this degree of decarbonisation, the Scottish Government would need to amend the Bill to incorporate annual cuts of at least 7% from the first year of implementation. Such a move would be essential in order to restore Scotland to a position of global leadership in climate change policy.

The Scottish Government must communicate the irrationality of pursuing the current UK proposals and make the moral and economic case for far more ambitious action.

The second problem with the 2050 target is the unacceptable tolerance of risk and excessive aversion to the costs of mitigation that it implies. The Climate Change Committee has estimated that the economic cost of following its proposed trajectory would by 2050 amount to 1-3% of GDP globally and 1-2% of GDP in the UK[12]. These losses translate to a reduction in annual rates of income growth of less than 0.1%! It is nonsense to assume that present and future generations would be unwilling to pay more than this to ensure an inhabitable world for their children and grandchildren. The Scottish Government must clearly communicate the dire consequences of taking insufficient action at this critical juncture and make the moral and economic case for the far more ambitious action that is required in order to safeguard all our futures.

The Scottish Government must persuade itself and others to be responsible in the way it employs the scientific evidence to set policy.

The third flaw applies as much to the notional 95% target as it does to the currently proposed 80% target. Both targets are drawn from IPCC models that adopt the best estimate value of 3 degrees for climate sensitivity[13]. Climate sensitivity is the expected increase in global average temperature as a result of a doubling of atmospheric greenhouse gas concentrations. The IPCC itself suggests that "*policymakers may want to use the highest values of climate sensitivity (i.e. 4.5 degrees) within the 'likely' range of 2 to 4.5 degrees set out by the IPCC…to guide decisions*."[14] This would seem reasonable given that current models do not yet include the faster than expected Arctic ice melt and its potential impact on sea levels and on the degradation of arctic land and sea-bed sinks[15].
If the more responsible climate sensitivity value of 4.5 degrees were to be adopted[16,17], atmospheric concentrations of greenhouse gases would have to be stabilised at no more than

[8] Information Note 7242/05, Council of the European Union, 11th March 2005, available at http://register.consilium.europa.eu/pdf/en/05/st07/st07242.en05.pdf
[9] Refer to Figure 1.11 in Chapter 1 of UKCCC 2008 Report.
[10] IPPC, Climate Change 2007: Synthesis Report, Summary for Policymakers, Table SPM6, available at http://www.ipcc.ch/ipccreports/ar4-syr.htm
[11] This assumes global emissions in 2000 of 44.7GtCO_2e (as per Fig SPM3 of IPPC 2007 AR4), a global population of 9.2 billion in 2050 (as per http://www.un.org/News/Press/docs//2007/pop952.doc.htm), Scottish emissions of 68MtCO_2e in 1990 and a constant population of 5 million.
[12] Refer to p2 of Executive Summary of UKCCC 2008 Report
[13] IPPC, Climate Change 2007: Synthesis Report, Summary for Policymakers, Table SPM6 note (d), available at http://www.ipcc.ch/ipccreports/ar4-syr.htm
[14] IPPC Fourth Assessment Report, Working Group III, 2007, p173, available at http://www.ipcc.ch/ipccreports/ar4-wg3.htm
[15] National Oceanic and Arctic Administration's Arctic Report Card 2008 available at http://www.arctic.noaa.gov/reportcard/
[16] James E Hansen et al, "Target atmospheric CO2: where should humanity aim?", Open Atmospheric Science Journal, vol.2, 2008, pp217-231 available at http://www.columbia.edu/~jeh1/2008/TargetCO2_20080407.pdf
[17] Ken Caldeira et al, "Climate Sensitivity Uncertainty and the Need for Energy without CO_2 Emission", Science , 28 March 2003, vol 299, no5615, pp2052-2054 available at http://www.ecoequity.org/docs/Caldiera_et_al1.Sci.03.pdf

380ppmvCO_2e in order to limit temperature rise to 2 degrees. This is lower than the current concentration of atmospheric CO_2 alone. Returning to these levels will take decades, even if we were to drastically cut emissions overnight. According to the IPCC, *"complete elimination of CO_2 emissions is estimated to lead to a slow decrease in atmospheric CO_2 of about 40ppm over the 21st century."*[18] The Bill's targets must reflect this more precautionary approach.

A simple and equitable framework for decarbonisation must be implemented at the earliest opportunity.

The most important policy move following the enactment of the Bill will be to introduce a meaningful carbon price into all economic transactions. Current policies are failing. This could be done through a carbon tax or an auctioned cap. Crucially, the revenues must be recycled equitably into the pockets of the population at large to provide compensation for the inevitable price rises in carbon intensive goods services and also to facilitate the massive behavioural change that will be required. The Scottish Government should urgently consider how a Cap and Share-type model might be implemented in Scotland.[19]

Summary

The clear message from the scientists is that there is no more time to lose. Scotland can take a lead within the UK and globally by setting credible targets. The Scottish Government must communicate the irrationality of pursuing the current UK proposals and make the moral and economic case for more ambitious action. It must persuade itself and others of the need to take a much more precautionary approach to climate policy. To claim to be showing international leadership, it must at the very least adopt an annual rate of reduction of 7% from 2011. This translates into targets for 2020, 2030, 2040 and 2050 of 52%, 77%, 89% and 95% respectively below current levels. To ensure public support for rapid decarbonisation, the government must implement a simple and equitable framework at the earliest opportunity.

[18] IPPC Fourth Assessment Report, Working Group I, 2007, Frequently Asked Question 10.3 "If emissions of greenhouse gases are reduced, how quickly do their concentrations in the atmosphere decrease?" available at http://www.ipcc.ch/ipccreports/ar4-wg1.htm

[19] http://www.capandshare.org/download_files/Comhar_Cap&Share_Report.pdf