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CLIMATE CHANGE BILL

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This briefing outlines key aspects of the UK Climate Change Bill as it relates to Northern Ireland, focussing on particular on the necessary emission targets to attain 60% and 80% levels by 2050.

Summary of key points

- The body of scientific evidence that human activities are responsible for accelerated climate change is mounting
- Temperature is the best indicator of climate change and in Ireland six of the 10 warmest years have occurred since 1990
- Carbon Dioxide is the most significant contributing greenhouse gas and measures which reduce emissions of CO_2 are the focus of policy priorities towards mitigating the effects of climate change and global warming
- The draft UK Climate Change Bill is currently being considered and is likely to pass through Westminster in spring 2008
- Section 43 of the draft Bill states that "this act extends to the whole of the United Kingdom". The changes in the devolved administrations in Scotland and Northern Ireland could afford an opportunity for possible changes to the extent and implementation of the Bill in these areas
- The Scottish Executive recently announced its intention to introduce a Climate Change Bill to the Scottish Parliament setting a more ambitious emission-reduction target of 80% by 2050
- In 2004, Northern Ireland contributed 2.9% of UK CO_2 emissions; this represented a 3.6% increase over 1990 figures set against an overall downward trend over the same period of -6.7% (England), -14.1% (Scotland) and an increase of +2.3% in Wales
- Attaining CO_2 emission reduction targets of 60% and 80% in Northern Ireland by 2050 would require reductions by 2.6 $MtCO_2$ equivalent and 3.4 $MtCO_2$ equivalent respectively. To reach these targets, Northern Ireland emissions would need to be reduced by an average of 2.1% and 3.7% per annum respectively; given the effects of not attaining reduction targets on the cumulative downward trend, a minimum target of 3% per annum should be considered

Background

While the planet's climate has undergone natural fluctuations over many millions of years, two aspects have singled out the observed current changes in climate to be described as "the biggest problem facing us globally this century. There is no bigger problem. The threat is quite simple; it's a threat to our civilization"[1].

These are the rate of change and the fact that human activities have been implicated as the primary source of warming[2].

The scientific evidence is now compelling and a great deal of attention is being paid to examining the causes and consequences of climate change. In parallel governments have actively pursued policies aimed at reducing carbon emissions in an attempt to halt or minimize the potential effects.

This paper summarises current predictions and policies aimed at managing climate change, and focuses on the emission reduction targets as part of the UK Draft Climate Change Bill, especially as it relates to Northern Ireland.

Climate Change – Current predictions

Carbon Dioxide is the most important human-produced greenhouse gas (GHG) and global atmospheric concentrations have increased from a pre-industrial average of c. 280 parts per million (ppm) to 379ppm in 2005. Its primary source since the pre-industrial period is the combustion of fossil fuels[3].

The latest Intergovernmental Panel on Climate Change (IPCC) assessments[3] report the following key direct observations which indicate that climate change is a reality:

- Eleven of the last 12 years (over the period 1995-2006) rank among the warmest 12 years in the global record of surface temperatures
- Current concentrations of CO_2 far exceed pre-industrial values found in polar ice records of atmospheric composition dating back 650,000 years. Multiple lines of evidence confirm that the post-industrial rise in these gases does not stem from natural mechanisms
- The average temperature of the oceans has increased to a depth of at least 3000m, enabling it to absorb more than 80% of the heat added to the climate system, causing expansion and thereby contributing to sea level rise

[1] Professor Sir David King, Chief Scientific Adviser to the UK government, June 2004.
[2] Oreskes N. 2004. The Scientific Consensus on Climate Change. *Science* 306, p. 1686.
[3] IPCC, IPCC Working Group 1 : The Physical Basis for Climate Change, Assessment Report 4 Final Report, Summary for Policymakers, February 2007

- Accelerated losses in the Greenland ice-cap and polar ice caps has in all probability added to sea levels; a similar effect has been caused by increased snow melt and retreat of mountain glaciers
- The average rate of sea level rise across the globe in the 10-year period 1993 to 2003 (3.1mm per annum) was almost double that for the period between 1961 and 2003 (1.8mm per annum)

The international group of experts (the International Panel on Climate Change IPCC) has noted that continued rises in GHG emissions at or above current rates will cause further warming and lead to a range of changes in global climate systems larger than those observed in the 20th century[4]. The effects on global ecosystems will be profound with the great majority experiencing difficulties in adapting. 40% of species are predicted to become extinct if temperatures >= 4°C above the two decades of the 1980s and 1990s and major world cities are likely to be threatened including London, New York and Tokyo[5].

A range of policy measures have been implemented in an attempt to mitigate against the effects of climate change. At current rates of temperature rise, even a drastic cut in emissions would not halt the process.

The major policies at an international level include the United Nations Framework Convention on Climate Change[6] (UNFCCC) and the Kyoto Protocol[7] .

The Kyoto Protocol is the principal international instrument for tackling climate change and its major strength lies with the mandatory targets on GHG emissions which many of the leading economies of the world have accepted[8].

[4] IPCC Working Group 2: Impacts, Adaptation and Vulnerability, Fourth Assessment Report, Summary for Policymakers, April 2007. Available at: http://www.ipcc-wg2.org/

[5] Stern N. 2006. *Stern review: the economics of Climate Change*. Available at: http://www.hm-treasury.gov.uk/media/*AC/F7/Executive_Summary.pdf

[6] Available at: http://www.unfccc.int

[7] Kyoto Protocol – the main international instrument for tackling Climate Change. Available at: http://unfccc.int/resource/docs/convkp/kpeng.pdf

[8] These are the Annex 1 parties but exclude the USA, Croatia and Australia

Emission reduction targets under Kyoto and at various regional levels

The *Kyoto Protocol* introduced emission-reduction targets which range between -8% and +10% of the signatory countries individual 1990 levels "with a view to reducing their overall emissions of such gases by at least 5% below 1990 levels in the commitment period 2008 – 2012".

In the EU-15, an overall target of an 8% emission cut has been distributed between its member states. There are a range of options by which countries can attain their targets including, for example, creation of 'carbon sinks' (e.g. forests which absorb CO_2 as they grow) and contributing to projects in other areas which result in GHG reductions.

The UK agreed to reduce its emissions to at least 12.5% below 1990 levels[9].

UK/ROI policy

In 1997, the UK committed to a domestic target of cutting emissions by 20% below 1990 levels by 2010[10]. The Draft Climate Change Bill was published in March 2007 and the consultation period ended in June 2007.

The key aspects of the Bill include:

- Legally-binding CO_2 reduction targets (26-32% by 2020 and 60% by 2050)
- Establishment of an independent body to advise on carbon budgets and report on progress
- A Government requirement to report annually on progress to Parliament

The UK Climate Change Programme[11] established the government's priorities and policies for action on climate change at a UK and international level.

The Scottish Executive following their review of the Scottish Climate Change Programme developed a new approach to define what an equitable contribution to UK climate change commitments is in specific emissions-saving terms (called the "Scottish Share"). Between 1990 and 2003 Scotland's economy achieved 29% growth while over the same period CO_2 emissions fell by almost 1.3MtC over the same period (8% below 1990 levels). The Scottish Executive's target of an 80% cut in emissions by 2050 will require an annual reduction by around 3%[12].

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[9] DEFRA *The UK's Initial Report under the Kyoto Protocol*, Nov 2006. Available at: http://www.defra.gov.uk/environment/climatechange/uk/progress/pdf/uk-kyoto-1206.pdf

[10] DEFRA, *Progress towards national and international targets*. Available at: http://www.defra.gov.uk/environment/climatechange/uk/progress/index.htm

[11] Available at: http://www.defra.gov.uk/environment/climatechange/uk/ukccp/pdf/ukccp06-all.pdf

[12] Available at: http://www.scotland.gov.uk/news/releases/2007/06/21152519

The 'Scottish Share' is derived by taking an 8.3% share (Scotland's expected share of the UK population in 2010[13]) of the 20.7 MtC savings expected to be delivered by all devolved policies throughout the UK. If a similar (per capita) approach were to be adopted in Northern Ireland the equivalent figure would approximate to a 2.8% share of the 20.7MtC UK-wide savings – to 5.79 MtC savings.
The Irish government has set a target of reducing GHG emissions by 3% per year in its 5-year Programme for Government.

Carbon Dioxide Emissions in Northern Ireland

Table 1 shows the CO_2 emissions for Northern Ireland between 1990 and 2004[14]. Carbon Dioxide emissions in Northern Ireland have fluctuated from levels of the 1990 base year. By 2004 – the year for which the most recent data is available – emissions had increased by 0.6%. The 2004 emissions level of 16.3 Mt is 3.6% above the level which would be required for attaining the 60% reduction over the period 1990 – 2050 (assuming a linear trend in emission reduction).
A number of trajectories for CO_2 emissions are illustrated in Figure 1:

- current ('actual emissions' based on data in Table 1; blue line),
- 'desired' emissions based on the 1997 UK commitment to reduce emissions by 20% below 1990 levels by 2010 (pink)
- the trajectory of emission reductions based on the draft UK Climate Change Bill target of 60% between 1990 and 2050 (red)
- the trajectory of emission reductions based on a target of 80% reductions by 2050 (as proposed by the Scottish Executive based on Scottish CO_2 statistics; black)
- the required emission reductions to attain the 60% emission target by 2050 from 2004 levels (green)

The emission reduction path from 2004 levels to the 2050 target involves a year-on-year reduction of 0.23 Mt CO_2 (60% reduction) and 0.31 Mt CO_2 (80% reduction).

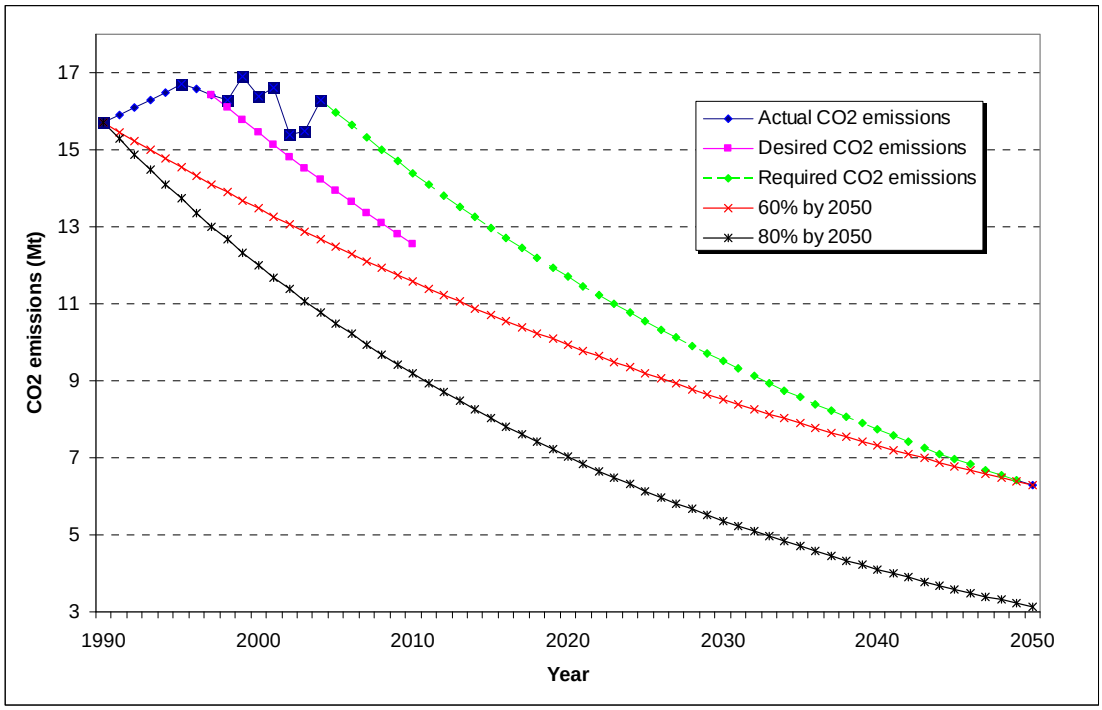
[13] http://www.statistics.gov.uk/CCI/nugget.asp?ID=1352
[14] Baggot L *et al*. 2005. *Greenhouse Gas Inventories for England, Scotland, Wales and Northern Ireland: 1990-2004.*Available at: http://www.airquality.co.uk/archive/reports/cat07/0611081428-419_Reghg_report_2004_Main_Text_Issue_2.pdf

In order to meet the 2010 emissions target, Northern Irish emissions need to reduce by 3.8 Mt CO_2 per year[15].

Table 1. Carbon Dioxide emissions for Northern Ireland (1990-2004)

Year	Carbon Dioxide emissions (Mt)	Change since 1990 (% points)	Difference from required emissions of 60% by 2050 (%)
1990	15.7	-	
1995	16.7	+1.0	+3.0
1998	16.3	+0.6	+2.4
1999	16.9	+1.2	+3.2
2000	16.4	+0.7	+2.9
2001	16.6	+0.9	+3.3
2002	15.4	-0.3	+2.3
2003	15.5	-0.2	+2.6
2004	16.3	+0.6	+3.6

Figure 1. Carbon Dioxide trajectories in Northern Ireland based on actual emissions 1990 – 2004 and projections based on a variety of reduction target scenarios. Note that actual data for some years are interpolated from adjacent years for which data is unavailable (1991 – 1994 inclusive, 1996 and 1997). 1990-2004 data from Baggot et al. 2005. Note that the 'Desired CO_2 target' for 2010 is based on the Kyoto target. The required CO2 emissions are those required to reduce emissions from current levels (the latest year for which data is available)



[15] 2010 target emissions are 20% below the 1990 base year figure (15.7 Mt). Latest emission figure of 16.3Mt (2004). The reduction required of 3.74Mt by 2010 requires a reduction by 4.0% per year.