

CLIMATE CHANGE (SCOTLAND) BILL

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The Climate Change (Scotland) Bill was introduced to the Scottish Parliament on 4 December 2008. It sets targets for reducing greenhouse gas emissions, and introduces a framework for advice and reporting on climate change. It further allows for climate change duties to be placed on local authorities and includes provisions on adaptation, muirburn, forestry, energy efficiency, waste reduction and recycling.

This briefing introduces the Bill and summarises selected stakeholders' views. SPICe Briefing [09/04 Climate Change \(Scotland\) Bill: Waste Provisions](#) is also available, with a further briefing to be published on the forestry provisions in the Bill. Other SPICe climate change briefings are available [online](#).

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CONTENTS

KEY POINTS	3
INTRODUCTION AND GLOBAL CONTEXT	4
WHY IS A BILL NEEDED ANYWAY?	6
DEVELOPMENT OF THE BILL	7
THE CONSULTATION PROCESS	8
PART 1 - EMISSIONS REDUCTION TARGETS	10
MEASURING EMISSIONS	11
SETTING TARGETS – SOME KEY CONSIDERATIONS	13
<i>What is the importance of early action in emissions reduction scenarios?</i>	13
<i>Which greenhouse gases should be targeted?</i>	16
<i>Should targets be based on production or consumption?</i>	17
<i>What should targets be measured against?</i>	19
<i>Should targets be ‘point in time’ or ‘cumulative’?</i>	19
<i>Is there scope for sectoral targets?</i>	20
<i>Will the economic downturn help reach targets?</i>	21
EXAMPLES OF TARGETS THROUGHOUT THE WORLD	22
TARGETS – THE BILL PROPOSALS	24
<i>The 2050 target</i>	25
<i>Interim 2030 target</i>	26
<i>Annual Targets</i>	26
<i>Banking and Borrowing</i>	29
INTERNATIONAL CREDITS	30
AVIATION AND SHIPPING	32
PART 2 - ADVISORY FUNCTIONS	33
<i>Scottish committee on climate change</i>	34
PART 3 - REPORTING DUTIES	34
<i>Enforcement and sanctions</i>	36
PART 4 - DUTIES OF PUBLIC BODIES	37
PART 5 – OTHER CLIMATE CHANGE PROVISIONS	39
ADAPTATION	39
MUIRBURN	39
FORESTRY	42
PROMOTION OF ENERGY EFFICIENCY	43
ENERGY PERFORMANCE OF EXISTING NON-DOMESTIC BUILDINGS	45
RENEWABLE HEAT	46
WASTE	47
PART 6 AND SUSTAINABLE DEVELOPMENT	48
ANNEX I – COMPARISON OF THE UK CLIMATE CHANGE ACT AND THE SCOTTISH CLIMATE CHANGE BILL	49
SOURCES	51

KEY POINTS

- Evidence on climate change is now regarded by the world experts as “unequivocal”.
- The concentration of CO₂ in the atmosphere is higher now than at any time over the past 650,000 years, and “the recent rate of change is dramatic and unprecedented”
- Emissions reductions of 50-85% are necessary to limit temperature rises to 2.0-2.4°C
- The SNP 2007 Manifesto included a commitment to legislation containing “carbon reduction targets of 3% per annum”. The Scottish Government has a commitment to reducing emissions by 2011
- The average decrease in emissions in Scotland since 1990 has been 1.23% though the latest figures showed a 5.4% increase between 2005 and 2006
- The Scottish Government consulted on emissions reduction targets, advice reporting mechanisms and duties on public bodies in January 2008 – 21,000 responses received
- Other consultations relevant to the Bill were carried out later – some were not complete at time of the Bill introduction, others remain uncompleted at publication of this briefing
- The Scottish Climate Change Bill was introduced on 4 December 2008
- The Bill sits within the context of the UK Climate Change Act 2008
- The Bill covers five main policy areas: Emissions reduction targets for greenhouse gases; Advisory functions; Reporting duties; Duties of public bodies relating to climate change; Measures to adapt to climate change and achieve targets
- The Bill sets emissions reduction targets of at least 80% reductions (on a baseline) by 2050, and an interim target of 50% by 2030 – the targets are for the 6 greenhouse gases included in existing international agreements
- The Bill requires annual targets to be set from 2010. These are to be more stringent year on year but with no prescribed limit until 2019, after which they should result in emissions cuts of at least 3% year on year – annual targets will be set in batches of years
- Targets are based on emissions from Scotland, rather than emissions from goods and services consumed in Scotland. Targets are “point in time” rather than relating to all emissions which Scotland could release on an equitable basis to 2050
- The Government is required to take advice before setting annual targets – initially this will come from the UK Committee on Climate Change, but the Bill allows for another body to take on this role, or for a Scottish Committee on Climate Change to be established
- The Bill allows for international credits to count towards the Scottish targets and prescribes no limit on this (the UK Act does require a limit to be set for the UK target)
- The Bill will include international aviation and shipping in Scottish targets, though this will be by order – the Scottish Government is committed to this
- The Bill requires that reporting on the annual, interim and 2050 targets are made to the Scottish Parliament, together with a report on how any excess emissions can be compensated in subsequent years
- The Bill gives Scottish Ministers powers to place climate change duties on public bodies
- Provisions are included to: require Scottish Ministers to publish a programme to address climate change risks; vary permitted times for muirburn; modify functions of Forestry Commissioners to participate in joint ventures for renewable energy, and to release capital from the National Forest Estate; require Scottish Ministers to publish an energy efficiency action plan; extend the role of Energy Performance Certificates in non domestic buildings; promote use of heat from renewable sources; give Scottish Ministers powers to make waste regulations (the latter is outlined in another [SPICe Briefing \(Wright 2009\)](#))

INTRODUCTION AND GLOBAL CONTEXT

The [Climate Change \(Scotland\) Bill](#) (“the Bill”) was, together with [Explanatory Notes](#), a [Policy Memorandum](#) and a [Delegated Powers Memorandum](#), introduced to the Scottish Parliament on 4 December 2008.

The Scottish Parliament Transport, Infrastructure and Climate Change Committee has been designated lead committee, with the Economy, Energy and Tourism Committee, and Rural Affairs and Environment Committee both being designated secondary committees. The Finance Committee had its first consideration of the Financial Memorandum of the Bill on 13 January 2009.

The Bill covers five main policy areas:

- Part 1: Emissions reduction targets for greenhouse gases
- Part 2: Advisory functions
- Part 3: Reporting duties
- Part 4: Duties of public bodies relating to climate change
- Part 5: Measures to adapt to climate change and achieve targets
 - Chapter 1 – Adaptation programmes, including muirburn
 - Chapter 2 – Forestry
 - Chapter 3 – Energy Efficiency
 - Chapter 4 – Waste reduction and recycling

Part 6 of the Bill covers general and miscellaneous provisions. It is understood that the Scottish Government is not considering adding any further subject areas to the Bill during its progress through Parliament, though of course amendments can be proposed by any Member.

There are significant recent global, European and United Kingdom developments which give context to the Bill.

- **Global level** – The current Kyoto Protocol contains commitments to reduce greenhouse gas emissions up to 2012. At the United Nations Climate Change Conference in Poznań (which concluded on 13 December 2008) some progress was made - it was agreed that the first draft of a concrete negotiating text would be available at a [United Nations Framework Convention on Climate Change](#) (UNFCCC) gathering in Bonn in June of 2009, with a view to a final agreement being made in Copenhagen in December 2009 (UNFCCC 2008), where leaders are committed to trying to achieve a comprehensive global deal which can be ratified by all
- **European level** – the European Union has just agreed a new package of climate change and energy measures. The main elements of the package are: reducing greenhouse gas emissions by 20% (30% if a global deal is reached in Copenhagen in 2009, and based on current Kyoto baselines); increasing the proportion of renewable energies to 20%; making energy savings of 20%. These three targets are supported by a package of four elements: an emissions trading scheme, a fair distribution of effort between countries, promotion of renewable energies and CO₂ capture and storage
- The **UK Climate Change Act** received Royal Assent in November 2008. Some of the aspects of the Bill were considered in a Scottish Parliament under a [Legislative Consent Memorandum](#) by the [Transport, Infrastructure and Climate Change Committee](#) (2008c)

and in the Scottish Parliament chamber. A comparison of the UK Climate Change Act 2008 and the proposals in the Bill is available at Annex I. The UK Act¹ :

1. Sets emissions reduction targets in statute. These are for 80% cuts in the net UK carbon account by 2050
2. Requires carbon budgets to be set for 5 year periods beginning 2008-2012
3. Requires that the carbon budget for 2018-2022 is set in a way consistent with a target of reducing the carbon budget by at least 26% by 2020 against 1990 levels
4. Provides for a system of annual reporting by the UK Government to the UK Parliament
5. Creates an independent advisory body. The [UK Committee on Climate Change](#) which was operating in shadow form, is now established to advise the UK Government and the devolved administrations
6. Enables the UK Government and devolved administrations to introduce new domestic trading schemes
7. Sets out a procedure for assessing the risks of climate change for the UK and for an adaptation programme to be developed by the UK Government and other bodies
8. Allows for other policy measures to support emissions reductions, including: Renewable Transport Fuel Obligations; charging for single use carrier bags, waste minimisation & recycling; amendments to Certified Emissions Reduction Scheme; reporting of emissions by companies and persons; and a duty to make annual reports on the efficiency and contribution to sustainability of buildings on the civil estate.

These global, European and UK measures are based on the most recent scientific analyses which show an urgent need for action to reduce greenhouse gases, and to adapt to the impacts of climate change, and in the UK, on the opinion of the newly formed Committee on Climate Change. A key source of scientific analysis is the Intergovernmental Panel on Climate Change (IPCC).

The [Fourth Assessment Report](#) of the IPCC (2007a) states that “warming of the climate system is unequivocal”, and that this warming is “very likely” (with more than 90% certainty) to be due to human activities; and specifically, that it is caused by the increasing levels of greenhouse gases. This report also concludes that emissions reductions of 50-85% are necessary, globally, to limit average temperature rises to 2.0-2.4°C. IPCC stated that the concentration of CO₂ in the atmosphere was (in 2005) 379 parts per million (ppm²), higher than at any time over the past 650,000 years, and “the recent rate of change is dramatic and unprecedented” (IPCC 2007a). Figure 4 in this briefing suggests a CO₂ concentration for 2008 of around 385ppm (NOAA/ESRL 2009). IPCC analysis shows that increases in CO₂ were 30ppm since 1990, a rate of rise which had not been previously recorded over any given 1000 year period (mostly based on ice core data). CO₂ levels of 450ppm are considered to be “dangerous” and equitable to a 2°C temperature increase.

The UK Committee on Climate Change has stated:

“The world needs to aim to limit temperature increases to 2 degrees Celsius (2°C), and to reduce the chance of a 4°C increase to very low levels. Failure to do this would result in adverse environmental impacts with significant human consequences: melting of the Greenland ice caps, extinction of large numbers of animal species, flooding, extreme

¹ A comparison of the Climate Change Act 2008 and the Climate Change (Scotland) Bill is available in Annex I

² As at time of publication of IPCC (2007a) and based on 2005 figures

weather events, ocean acidification and reduction in crop yields. Cutting the levels of greenhouse gases that we emit could significantly reduce the impacts of climate change. But we must act now, and act globally”

This analysis outlines the direct relationship between the emissions of greenhouse gases and temperature rises – what is important is the cumulative amount of emissions in the atmosphere (explained further on page 20) but recognition of the relationship means that there is a requirement to reduce overall emissions. Some argue this must be pursued in an equitable way i.e. where emissions entitlements are distributed around the world requiring developed nations to drastically reduce their emissions whilst others are entitled to a fair share of global emissions – this is sometimes known as contraction and convergence. The principle that developed nations must drastically reduce emissions is that which binds most international and national target setting.

WHY IS A BILL NEEDED ANYWAY?

The UK Act sets overall targets for the UK, but in Scotland, activities to address many of these are in areas devolved to the Scottish Government. The Scottish Government, in its consultation on the Bill stated four reasons for legislation:

1. to drive decisions in government and business
2. to create and enable new means of reducing emissions and adapting to climate change
3. to play our part in global action on climate change
4. to provide a strong example to other countries showing what can be done

Reducing Scotland’s emissions relates to the following sectors in particular, all of which are governed by devolved powers to some degree:

- Heat (including CHP)
- Approval of electricity generating stations
- Renewable sources of electricity
- Transport
- Land use and land use change (this is covered in a more detailed [SPICe Briefing on Reducing Greenhouse Gas Emissions from Land Use, Land Use Change and Forestry](#) (Dowens 2008) The UK Committee on Climate Change (2008a) has been [clear](#) in highlighting the importance of this sector
- Planning
- Waste

The Scottish Government has been questioned in the Transport, Infrastructure and Climate Change Committee (2008a) on whether the spirit of the Bill is already being used:

“Charlie Gordon: Is the Scottish Government already applying the spirit of the proposed Scottish climate change bill?

Stewart Stevenson: I think that it is doing so. With each passing month, year and decade, we will witness more action being taken by this Administration and Administrations around the world, as scientific knowledge increases and we learn how effective the steps that we take are. We will need to ascertain whether we are making the progress that we should be making, and we must be prepared to adapt and respond as we go forward, because we are not dealing with absolute certainty.

SEPA, the Scottish Environment Protection Agency (2008) [published](#) its new Climate Change Plan in December 2008³. The plan sets out SEPA's role in climate change and the actions it will take over the next five years.

DEVELOPMENT OF THE BILL

The [SNP Manifesto](#) (2007) for the general election in 2007 stated:

“In government we will introduce a Climate Change Bill with mandatory carbon reduction targets of 3% per annum and also set a long-term target of cutting emissions by a minimum of 80% by 2050 – above the [then] UK target of 60%”

It is understood that the scientific basis for the development of the Bill has been the work of the UK Committee on Climate Change, though that Committee has only been in existence in shadow form, since March 2008. The Minister for Transport, Infrastructure and Climate Change has [stated](#) in evidence to the Scottish Parliament Transport, Infrastructure and Climate Change (2008):

“Our primary source of input at present is the UK committee on climate change, and we rely on the advice of that highly respected group of scientists. Under clause 36 of the UK bill, which is shortly to become an act, they are required to answer any questions that we put to them. That was embedded in the UK bill as part of our work with the UK Administration to ensure that its bill had the powers that were necessary for us. That is the way in which we will deal with matters of science”

And

“We take note of the interim advice from the United Kingdom committee on climate change - it is an interim body, not yet the full committee—which has reinforced our approach and target”

The UK Committee on Climate Change (2008b) has [said](#) of Scotland's role that:

“The Scottish Government has an important role to play in helping us to meet these carbon budgets by acting to reduce emissions across buildings and industry, agriculture and transport sectors where there is considerable abatement potential”.

The Scottish Government (2008a) commissioned some work from AEA Technology on [Mitigating Against Climate Change in Scotland: Identification and Initial Assessment of Policy Options](#). Though this was only published in November 2008, it is understood to have been used in the development of the Bill. The assessment is part of a wider package of work being carried out by the Scottish Government on options for emissions abatement – this wider package is expected to be complete in summer 2009. Other scenarios work, commissioned from AEA during the previous administration, has also been published recently - [Scottish Energy Study Volume 5: Energy and Carbon Dioxide Projections for Scotland](#) (Scottish Government 2008b).

In January 2009 the Scottish Government (2009a) published a [Technical Note](#) on the targets, pathways and rationale for the 2050, 2030 and annual targets contained in the Bill. Much of this analysis had not previously been available in a published form.

³ The [SPICe Briefing on Averting Dangerous Climate Change](#) (Cook 2007) contains some more relevant information

Some other relevant scenarios work recently published or underway includes:

- Ofgem (2008) - [Electricity Network Scenarios for Great Britain in 2050](#)
- Department of Energy and Climate Change (2008a) – [The Potential for Dynamic Demand](#) (on the electricity grid)
- SUPERGEN [Future Network Technologies](#) Consortium

Members of the Transport, Infrastructure and Climate Change Committee, and the Economy, Energy and Tourism Committee have also taken part in sessions using the GRIP model - [Greenhouse Gas Regional Inventory Protocol](#) – using it to consider what the energy landscape might look like in Scotland in 2050, taking into account the targets set out in the Bill.

THE CONSULTATION PROCESS

The [consultation on proposals for a Scottish Climate Change Bill](#) (Scottish Government 2008c) was launched in January 2008 and included 4 events with key stakeholders, and written submissions were invited in response to 33 questions asked in the consultation. The consultation proved extremely popular, generating nearly 21,000 responses⁴ and this led to a requirement for the Scottish Government to commission external assistance to analyse the responses. Reid Howie Associates' [report to the Scottish Government](#) was published in August 2008 (Scottish Government 2008d). The Executive Summary states:

“A total of 318 written responses were received. Almost 21,000 people responded through 8 campaigns and 420 campaign responses contained additional material to the campaigns' suggested texts. The numbers attending each event ranged from around 30 to 60. The highest number of responses was from individuals. Amongst other respondents, the highest numbers were from public sector respondents, NGOs, and trade and professional organisations. Responses were also received from business and industry, and small numbers from academic and research institutions, schools and a political party”

The analysts were keen to reflect the fact that the purpose of the consultation was “to reflect the range, depth and overall patterns of views rather than to measure and quantify these patterns”. Therefore identical responses generated through campaigns run by non-governmental organisations such as WWF and Friends of the Earth Scotland were batched together.

Responses to consultations of this kind yield two kinds of information – firstly the level of support for the proposals in general (indicated by 21,000 messages generated by 8 different campaigns), and secondly suggestions for their improvement, contained in 318 separate written responses to the questions asked.

The statement that “a total of 318 written responses were received” has been challenged by some parties, notably WWF whose campaign around the consultation resulted in the bulk of the 20,000 “campaign responses” referred to in the analysis.

Of the consultations run on the other provisions included in the Bill, only one, on energy efficiency, had been completed and the Scottish Government analysis of responses published, by the time of the introduction of the Bill (see Table 1 below).

⁴ It is understood this is the most popular consultation since [that carried out](#) for the Smoking, Health and Social Care (Scotland) Bill (Scottish Executive 2004)

Table 1 – Status of consultation exercises run on provisions included in the Bill

Part of the Bill	Consultation status at date of introduction - 4 December 2008	Consultation Status at time of Briefing publication – 15 January 2009
Parts 1-4		
Emissions Reduction Targets; Advisory Functions; Reporting; Duties on Public Bodies	Consultation complete and analysis published in summer 2008	Consultation complete and analysis published in summer 2008
Part 5		
Muirburn	Consultation ⁵ launched 25 August 2008. Analysis of responses not available	Analysis of consultation responses published ⁶ 22 December 2008
Forestry	Consultation ⁷ opened on 4 November, closes 27 January 2009	Rural Affairs and Environment Committee Convenor wrote ⁸ to Scottish Government in December 2008 outlining “dismay and frustration that the Scottish Government’s consultation on its proposals for the Forestry Commission is ongoing and will not close until 27 January. It is extremely unfortunate that we are being asked to commence scrutiny on the proposals without any awareness of how consultees have responded to them”. A reply ⁹ on 22 December stated the Scottish Government was “sorry that we were unable to complete our consultation on the forestry provisions before the Bill was introduced”
Energy Efficiency	Consultation ¹⁰ launched 12 March 2007, analysis published ¹¹ in summer 2008 with a Government response ¹²	Consultation complete and analysed in summer 2008
Energy performance of non-domestic buildings	71 consultation ¹³ responses still under analysis – report expected in January	Awaiting publication of consultation analysis
Renewable Heat	Consultation ¹⁴ on draft renewable energy framework, including a section on renewable heat closed on 1 December 2008	Analysis just commenced with target to publish it, along with responses, by end of January 2009
Waste	Consultation ¹⁵ closed, been analysed, report unpublished	Analysis ¹⁶ carried out by the Caledonia Centre, and published on 19 December 2008

⁵ Scottish Government (2008e)

⁶ Scottish Government (2008f)

⁷ Scottish Government (2008g)

⁸ Scottish Parliament Rural Affairs and Environment Committee (2008)

⁹ Scottish Government (2008h)

¹⁰ Scottish Executive (2007)

¹¹ Scottish Government (2008i)

¹² Scottish Government (2008j)

¹³ Scottish Government (2008k)

¹⁴ Scottish Government (2008l)

¹⁵ Scottish Government (2008m)

Other consultations relevant to the Bill include two strategic documents fundamental to setting the future direction of development in Scotland - The [National Planning Framework 2](#) (NPF-2) (Scottish Government 2008o) and the [Strategic Transport Projects Review](#) (STPR) (Transport Scotland 2008a). The Minister for Transport Infrastructure and Climate Change committed to the Transport, Infrastructure and Climate Change Committee (2008a) that a carbon assessment would accompany both of these documents, though this does not necessarily mean that such an assessment would see a project rejected if its associated emissions were considered too high.

On the STPR, in the Scottish Parliament (2008) the Minister stated:

“Our high-level modelling suggests that, taken together, the overall package of schemes could—compared with business as usual—cut between 100,000 and 150,000 tonnes of CO₂ equivalent per year, which would help us to meet our climate change commitments”

The important factor is that this is based on comparison with a business as usual perspective which the [Report 4](#) of the STPR describes, in paragraph 2.18, would result, in the absence of significant technological or behavioural change, in total road emissions increasing by 10% between 2005 and 2022 (Transport Scotland 2008b). The [Strategic Environmental Assessment accompanying the STPR](#) (Transport Scotland 2008c) shows at least a 9% increase in emissions if all projects are delivered – it is presumed that the 100,000 – 150,000 tonnes referred to above would, at least in part, be down to a projected slower rate of emissions increase.

[Report 1, Section 4 of the STPR](#) (Transport Scotland 2008d) suggests a higher predicted rise of emissions from road transport of “22 per cent [of CO₂] from 2005 to 2022”. It further states that

“On present trends, transport will not contribute to the reduction target”

Many of the key proposals in the NPF-2 will have emissions considerations associated with them (airport expansion, some transport infrastructure) whilst the proposal for a new coal fired power station may have heavy emissions as the “carbon capture and storage” technology on which it would rely has not been demonstrated at a size of over 30MW installed capacity (Longannet, for example, is 2400MW installed capacity).

The power company [Vattenfall](#) is running the 30 MW [pilot plant](#) referred to above, with a view to developing demonstration plants in Denmark and Germany - these could be up and running by 2013 and 2015 respectively (Vattenfall 2009)¹⁷ though would be a maximum size of 350MW.

These examples are given as examples of policy decisions which are technology reliant – if the technology does not come to fruition, Scotland could be locked into an emissions scenario which will make it harder for targets to be attained.

PART 1 - EMISSIONS REDUCTION TARGETS

This is the key substance of the Bill. The lead international agreement on climate change is the [United Nations Framework Convention on Climate Change](#) (UNFCCC). The Convention was adopted in 1992, since when Parties to the Convention have negotiated its implementation. Early negotiations resulted in the adoption of the [Kyoto Protocol](#) in 1997 (United Nations Framework Convention on Climate Change 1997). This established mandatory targets for

¹⁶ Scottish Government (2008n)

¹⁷ The Scottish Parliament Economy, Energy & Tourism Committee intend to visit this project as part of its ongoing Energy Inquiry

greenhouse gas emissions for 38 developed countries (known as Annex 1 Parties) relative to a 1990 base year. The Protocol entered into force in February 2005 following ratification by Russia.

This international agreement is the basis for much of the developing legislation and agreements at global, European, UK and now Scottish level. Target setting is therefore one of the main tools being employed by policy makers to drive forward policies aimed at reducing the emissions of greenhouse gases. The UK Government has now legislated to take this idea forward, and legislatures around the world are beginning to do so too. A comparison of the UK Climate Change Act 2008 and the proposals in the Bill is available at Annex I.

[Changing Our Ways: Scotland's Climate Change Programme](#) published under the previous administration (Scottish Executive 2006), calculated what the “Scottish Share” of UK greenhouse gas emissions would be. This was calculated as 1.7MtC (million tonnes of carbon), derived from taking an 8.3% share (Scotland’s expected share of the UK population in 2010) of the 20.7 MtC savings expected to be delivered by all devolved policies throughout the UK. The then Scottish Executive set a Scottish Target to exceed the Scottish Share by one million tonnes of carbon in 2010. More on the detail of this is available on page 7-9 of Scotland’s Climate Change Programme.

The Scottish Government has not re-committed to the targets in the Scottish Climate Change Programme. Instead, the [Scottish Government Economic Strategy](#) (Scottish Government 2007b) set two targets:

- to reduce emissions by 80 per cent by 2050
- to reduce emissions over the period to 2011 (there is no number associated with this target)

At the time of publication of the Economic Strategy, the Scottish Government had not decided whether the “emissions” mentioned would just be carbon dioxide, or would include other gases.

MEASURING EMISSIONS

Setting emissions reduction targets is a pointless exercise if there is not enough reliable data on which to base them. Under the UNFCCC the UK Government is required to submit national reports on implementation, and for the UK this takes the form of a report submitted to the Department for Environment, Food and Rural Affairs, The Scottish Government, The Welsh Assembly Government and The Northern Ireland Department of Environment by the consultancy AEA.

The most recent [Greenhouse Gas Inventories for England, Scotland, Wales and Northern Ireland: 1990 - 2006](#) (AEA 2008) were published in September 2008¹⁸. This document includes figures available on a Scottish basis. More recently [Greenhouse Gas Emissions Data for International Aviation and Shipping, 1990-2006](#) have been published (Thomas and Thistlethwaite 2008).

The Cabinet Secretary for Finance and Sustainable Growth is keen that the Scottish Government introduce carbon assessment as part of the overall business of Government. In the Transport, Infrastructure and Climate Change Committee (2008b) in [November 2008](#) the Cabinet Secretary stated:

¹⁸ The Full Report and Appendices are available [online](#)

“We are not aware of any other Government that assesses the carbon impact of its total expenditure, nor of any equivalent approach in the private sector. Together with our advisers, we are checking that and seeking to identify similar processes in other countries. Where good examples of existing practice can be found, we will adapt them to our needs. Where solutions are required—in areas such as the total Government spend—we will use the best advice possible to establish methods that are correct for Scotland. Given the complexity of the task and the uncertainties that lie ahead, we have taken a two-strand approach. First, we are seeking to develop a high-level assessment that will be used at the level of the spending review process. We have organised an international workshop conference for the end of November to help us to refine our thinking on the matter.

Secondly, we are about to start work on adapting methods for individual assessments that will be applied at the level of programmes, policies and projects. The committee may find it relevant to know that, in the letter that I issued to the Finance Committee convener in September when we published the budget, I set out the detail of the steps that we are taking to move forward the carbon assessment tool. We are entering a new and challenging area and so the Government will do all in its power to deliver the goal of bringing carbon assessment to the heart of our decision making and enabling that process to be taken forward by the Parliament as part of the scrutiny process”

And

“We will not have it in place by the 2009-10 financial year. As I said in my opening statement, I am working to have it in place by 2009-10. Unless I am mistaken, that extends to the end of 2010”

In his [response](#) to the Scottish Parliament Finance Committee report on the 2009-10 Draft Budget, the Cabinet Secretary for Finance and Sustainable growth stated that (Scottish Government 2009b):

“I understand the interest in a commentary on the climate change implications of various government actions. While we await the development of appropriate assessment tools, I will ask my officials to bring forward proposals for my consideration on how best to provide an interim qualitative assessment of the overall budget”

Building on the UK Climate Change Act 2008, the Whitehall Department of Energy and Climate Change (2008b) is [consulting on](#) the detail of carbon units, the net UK carbon account and carbon accounting¹⁹.

In another development, the Scottish Carbon Accounting Group was [established](#) in April 2008. This Group was developed following the establishment of the [UK Carbon Counting Group](#). Both of these groups are unusual in that their establishment has been driven by elected members of the Scottish and UK Parliaments, rather than Government.

Partly based at the University of Edinburgh the [Integrated Carbon Observation System](#) (ICOS) has been established to conduct research to “decipher the greenhouse gas balance of Europe and adjacent regions”.

¹⁹ This work is being hosted on the Defra website until the DECC website is fully established
providing research and information services to the Scottish Parliament

SETTING TARGETS – SOME KEY CONSIDERATIONS

There are some fundamental considerations to bear in mind when setting emissions reductions targets and some of these are outlined below.

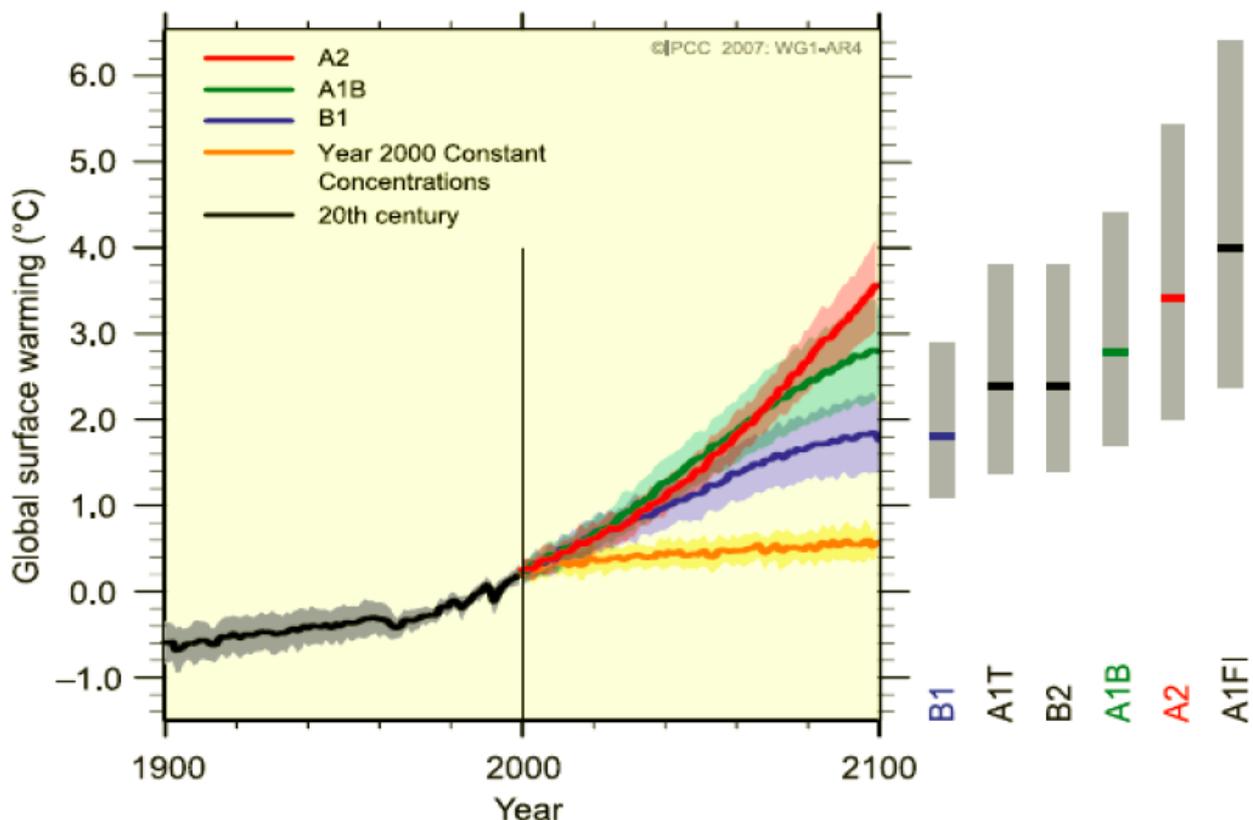
What is the importance of early action in emissions reduction scenarios?

The shape of the emissions curve towards 2050 is important because the cumulative amount of greenhouse gases in the atmosphere is directly related to predicted temperature rises – this means that large early emissions cuts are fundamental.

The IPCC has calculated the greenhouse gas emissions resulting from a number of scenarios that explore alternative development pathways, covering a wide range of demographic, economic and technological assumptions and the resulting emissions. The expected emissions track of these scenarios is given below. The rate of progress in 2008 is already above i.e. worse than, the red line, the A2 scenario, leading to a high degree of global surface warming by 2100 – this scenario is based on a very heterogeneous world with high population growth, slow economic development and slow technological change ([IPCC 2007a](#)).

This direction of global travel illustrates the urgency of the situation, something already set out by [Stern](#) (2006) in his review of the Economics of Climate Change. The sooner action is taken to reduce greenhouse gas emissions, the more likely it will be that a more sustainable track, with a view to reducing global emissions, can be reached. Recommendations by the UK Climate Change Committee for the first 3 UK carbon budgets are based on global emissions peaking in 2015.

Figure 1 - global averages of surface warming (relative to 1980-1999) for the IPCC SRES scenarios

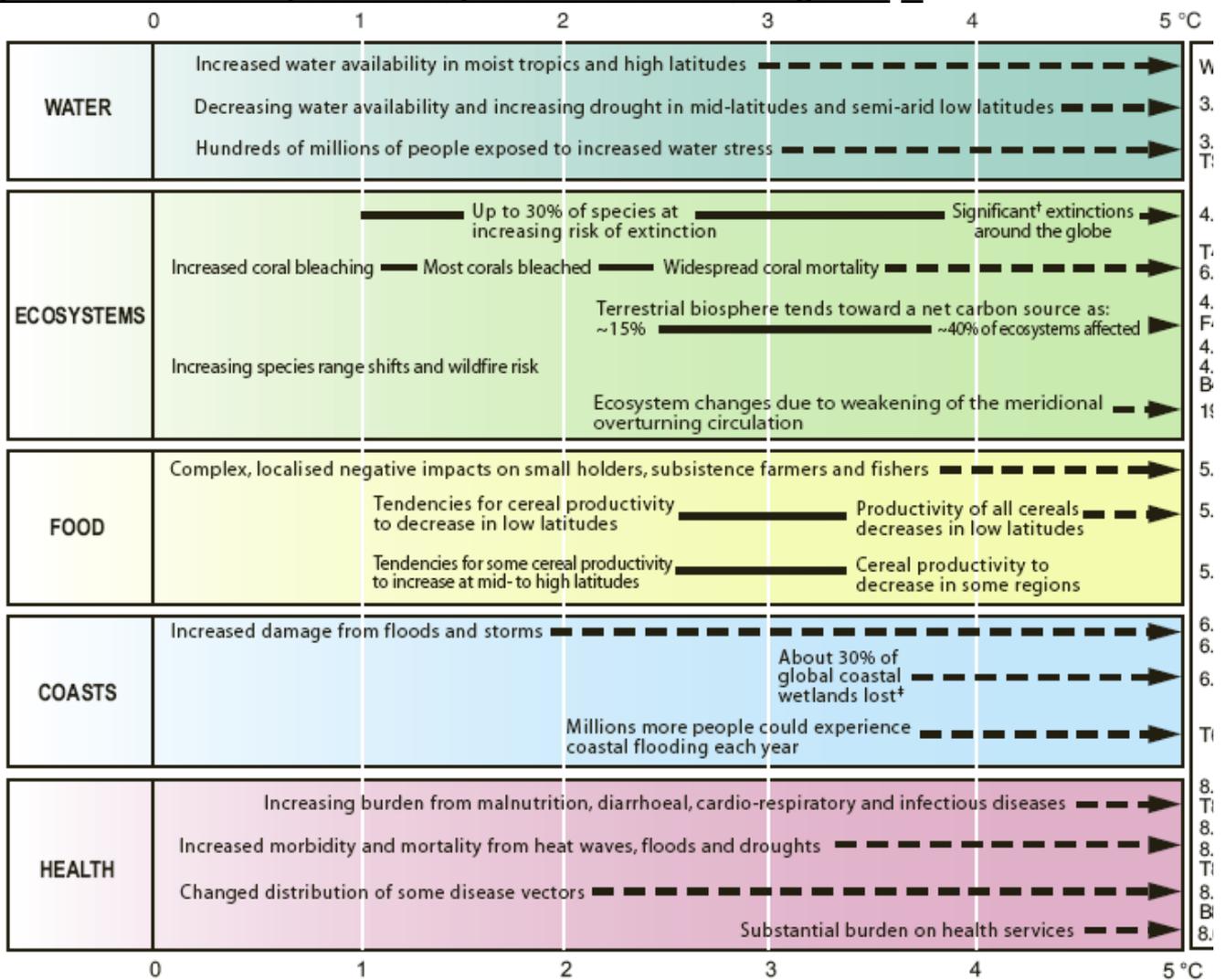


The tracks of the scenarios shown can be summarised as:

- A1 – very rapid economic growth, a global population peaking in mid century and rapid introduction of new and more efficient technologies. A1 is split into three groups describing alternative directions of technological change: fossil intensive (A1FI); non-fossil energy (A1T) and a balanced source approach (A1B)
- A2 - very heterogeneous world with high population growth, slow economic development and slow technological change
- B1 – convergent world with more rapid changes towards a service and information economy
- B2 – intermediate population and economic growth, emphasising local solutions to economic, social and environmental sustainability

Bearing in mind the planet is currently on a track which the scenarios estimate would result in a temperature rise of 4°C, the IPCC impacts chart reproduced below makes for sobering reading.

Figure 2 – Predicted impacts of temperature rises in the range to 5°C



The UK Climate Change Committee (2009a) has [stated](#) that:

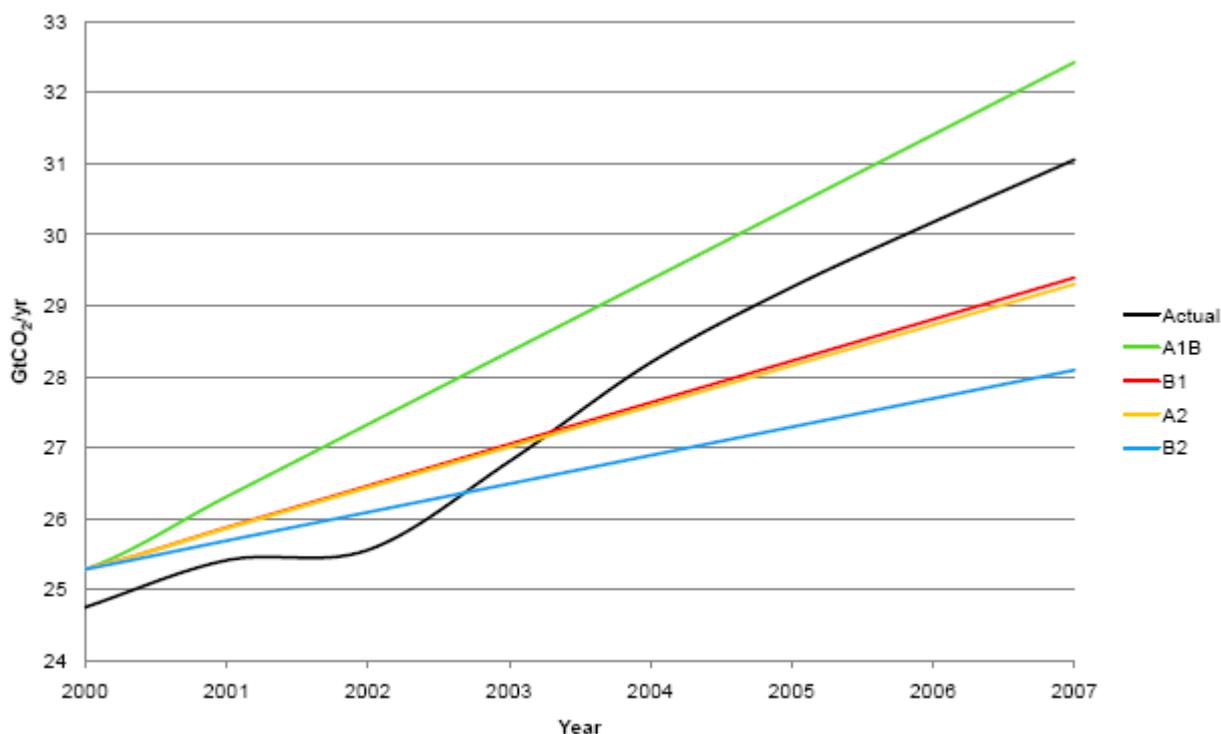
“A reasonable judgement is that the global danger zone starts above about 2°C, and an increase of 4°C or more would represent extremely dangerous climate change. Given that our continued emissions are committing the world to further warming, it is not possible to guarantee that temperatures will rise by less than 2°C this century. As a result, global emissions cuts should be made which keep central estimates of warming as

close to 2°C as possible, and reduce the probability of a 4°C warming to very low levels. Analysis by the CCC and the Met Office Hadley Centre shows that this means emissions reductions should start as soon as possible, to be on a trajectory leading to 50% reductions by 2050”

The [UK Climate Change Committee](#) (2008a) has further developed this work, producing graphs showing actual emissions relative to the IPCC scenarios - these are reproduced below. The black line shows our current emissions track, well above the A2 scenario outlined earlier.

The key point is that actual emissions are already well above most of the scenario tracks identified by IPCC.

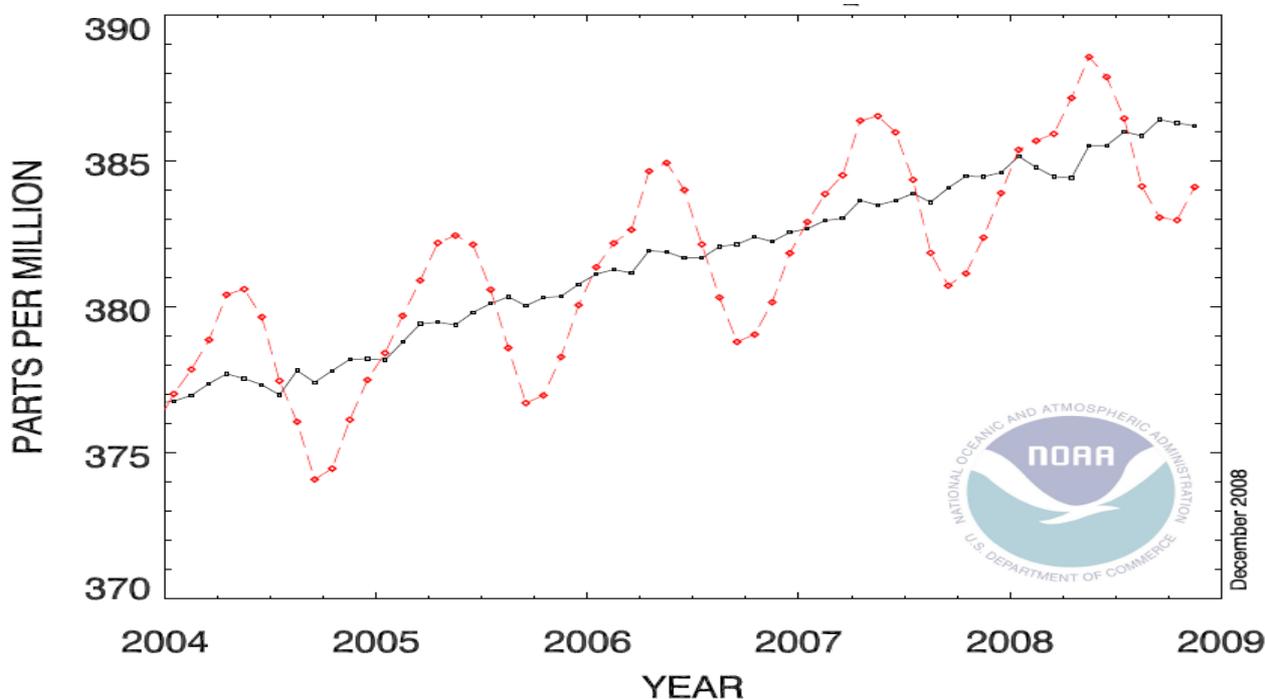
Figure 3 - Global carbon dioxide emissions (excluding those relating to land-use) for scenarios included in the IPCC Special Report on Emissions Scenarios (2000)



Source: IPCC Special Report on Emissions Scenarios (2000) and Global Carbon Project. Errors around actual emissions are about 5%.

The most up to date figures for carbon dioxide in the atmosphere are measured at the [Mauna Loa Observatory, Hawaii](#) (NOAA/ESRL 2009). These are shown below and confirming a continuing steady increase in global concentrations in which any mitigation measures to date have been matched by growth.

Figure 4 - Trends in Atmospheric Carbon Dioxide – 2004-2009



Which greenhouse gases should be targeted?

The gases which are most prevalent in the atmosphere (nitrogen and oxygen) exert almost no greenhouse effect. Water vapour is the most prevalent greenhouse gas, followed by carbon dioxide, and then a number of other gases (IPCC 2007b). This leads to the question as to why water vapour is not targeted for control. IPCC (2007c) states that “clouds exert a blanketing effect similar to that of the greenhouse gases; however, this effect is offset by their reflectivity, such that on average, clouds tend to have a cooling effect on climate”.

As an [article in New Scientist](#) (Chandler 2007) explains, there are two further key considerations:

1. Water vapour only stays in the atmosphere for a few days – other greenhouse gases last for decades
2. Human activity is not greatly adding to the level of water vapour in the atmosphere, whilst it most certainly is adding the other greenhouse gases

Carbon dioxide and five other key gases – methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride - are targeted by emissions reduction target setting under international and national agreements. The five latter are produced in much smaller quantities but are much more powerful in their greenhouse effect per unit volume - this is known as Global Warming Potential (GWP). For instance, one tonne of methane, which has a GWP of 25 can be represented by 25 tonnes of carbon dioxide equivalent (tCO₂e).

There are other greenhouse gases – such as CFCs (chlorofluorocarbons), which have been targeted under other international agreements such as the [Montreal Protocol](#).

When the UK Climate Change Bill was introduced to the UK Parliament it only contained targets for carbon dioxide, with late amendments bringing in the other 5 key gases. This puts the UK legislation on a similar footing to international agreements.

Should targets be based on production or consumption?

One key consideration when setting emissions reduction targets for Scotland is whether targets should focus on those emissions produced in the geographical area of Scotland, or whether all emissions associated with activity in Scotland should be included. The consultation on the Scottish Bill (Scottish Government 2008c) explored this topic considering:

- the emissions from goods and services **produced** in Scotland. Sometimes these are referred to as “direct emissions” or “source” emissions
- the emissions from goods and services **consumed** in Scotland. Sometimes these are referred to as “indirect emissions” or “end-user” emissions

The consultation further stated:

Direct emissions are those emanating from activities in Scotland: such emissions form the basis for the Greenhouse Gas Inventories - and for existing international emission reduction agreements. But, as part of the global economy, most of the products Scotland consumes are produced outside Scotland. This external production activity also causes emissions, so-called indirect emissions. Such indirect emissions are not reflected in the Inventory”

The consultation further reflected that the methodologies under development to measure consumption based emissions were “not yet sophisticated enough and so it is not proposed to pursue such an approach at this time” and “It is considered that the only workable option is to set a target based on the emissions that we produce in Scotland”. This means that emissions associated with goods exported from Scotland are included, but that emissions associated with imports are not.

The analysis of responses states (Scottish Government 2008d):

“it was difficult to assess definitively how many responses favoured either source [i.e. production] or end-user [consumption] methodologies. Among those who did express a preference, there was a broadly even split, but around a third of respondents who supported the use of a source-based methodology, suggested that at least some form of reporting of end-user emissions was also required, even where this was not proposed as the basis of the target. A wide range of arguments in favour of the use of each methodology were advanced by respondents (whether or not they favoured that particular approach).

Whatever the approach to source or end-user based methodologies, around a third of respondents who addressed question 3 considered that there was a need to have some way of including measures for energy efficiency and / or renewable electricity (which need not necessarily be statutory targets). Most appeared to suggest this in addition to the main target based on source or end-user methodologies and a range of possible specific targets were also suggested by some. The importance of incentives to encourage action in these areas was acknowledged by a number of respondents”

A new standard (launched by BSI British Standards, the Carbon Trust and Defra) provides a consistent way of counting the greenhouse gas emissions embedded in goods and services

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throughout their entire life cycle – from sourcing raw materials, through to manufacture, distribution, use and disposal. More [information](#) on the standard – called PAS 2050 - is available on the website of the Carbon Trust (2008a), together with an explanatory [press release](#) (Carbon Trust 2008b)²⁰.

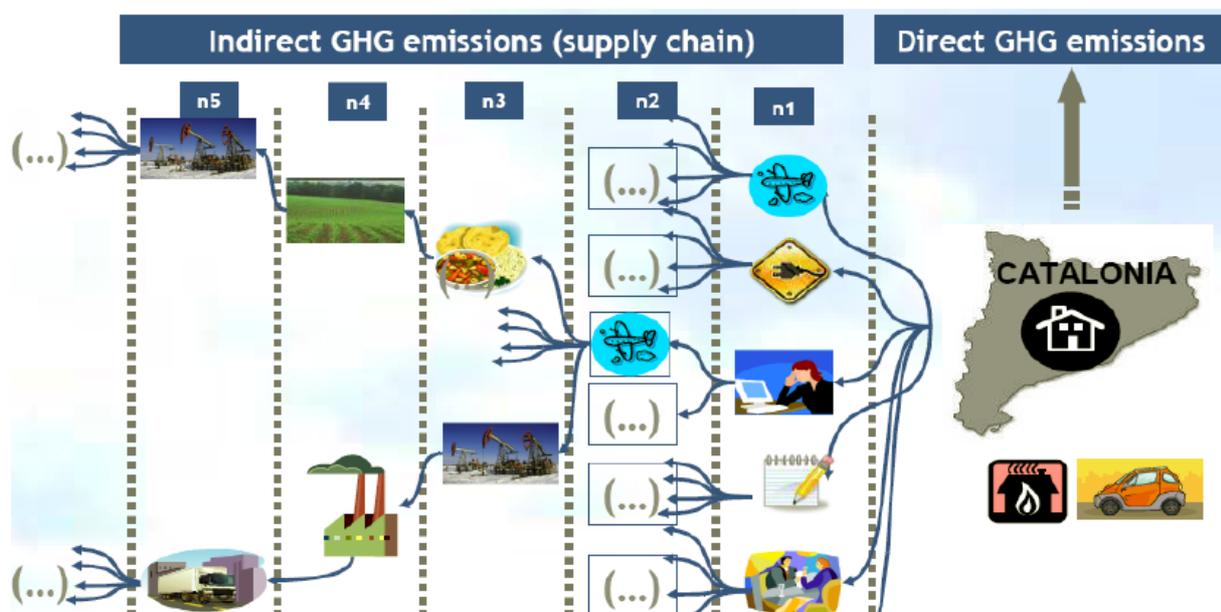
In evidence to the Transport, Infrastructure and Climate Change Committee (2008a) the Minister for Transport, Infrastructure and Climate Change has [stated](#):

Stewart Stevenson: We intend that the legislation will be flexible enough to allow the Scottish Government to respond to international agreements that would result in the adoption of a consumption-based model.

The Policy Memorandum does not seem to develop this line any further. The Scottish Government does have the Ecological Footprint as a key National Indicator – the theory behind this is that the “ecological footprint estimates the land and sea area needed to provide all the water, transport, food, materials and energy (including embedded energy) we consume, wherever they come from. It also takes account of the emissions generated from the fossil fuels we burn and determines how much land is needed to absorb our waste. This estimates the 'carrying capacity' of the planet and compares it with human consumption.” ([Scottish Government](#) 2007). SEPA, amongst others, [supported reporting](#) on a consumption measure (Scottish Government 2008q).

The [Catalan Office of Climate Change](#) is carrying out a study on a consumption based approach to measuring greenhouse gas emissions, that is taking into account the emissions from activities which take place abroad, but which provide goods or services for Catalonia, as well as those emissions which originate from the land mass of Catalonia. The basis of this theory is illustrated below:

Figure 5 – Illustration of direct and indirect emissions in Catalonia



²⁰ To download the specification itself, together with the guidelines, see the [BSI British Standards website](#)

What should targets be measured against?

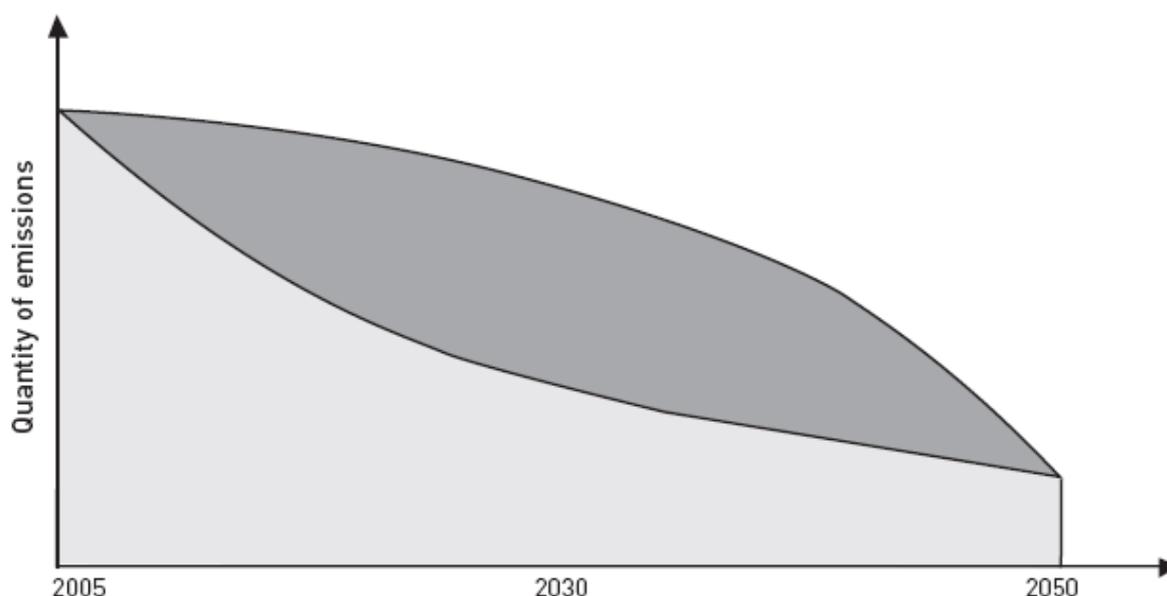
Targets can take a number of forms, but they always require a 'baseline' figure, that is a figure at a point in time against which a target can be set. For the 6 key gases, recognised baselines were developed under the Kyoto Protocol, and the Bill proposals reflect this. The Committee on Climate Change also uses these baselines which are 1990 for carbon dioxide, methane and nitrous oxide, and 1995 for hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride.

Should targets be 'point in time' or 'cumulative'?

The nature of greenhouse gases in the atmosphere is such that whilst it is important to be aware how much is being emitted every year, more important is the cumulative amount of emissions which are in the atmosphere at any one time. This is because the 6 key gases highlighted earlier in this briefing all stay in the atmosphere for a period of time and so any emissions made, for example, in 2009, will add to those already there, and so the blanketing effect, increasing the greenhouse effect, will become more of an issue. Carbon dioxide, for example, stays in the atmosphere for approximately 100 years.

This is illustrated in the following graph reproduced from the Scottish Government consultation on the Bill proposals which shows two possible tracks to the same point in time target (Scottish Government 2008c).

Figure 6 - Illustration of the affect on total emissions over time of different emissions reduction trajectories



Two options are therefore available:

- Point in time - an end point, with targets of some kind along the way is considered important to focus policy direction.
- Cumulative – considers the overall level of emissions in the atmosphere

[Professor Kevin Anderson](#) from the [Tyndall Centre for Climate Change Research](#) has carried out research which develops the concept behind the graph in Figure 6. Anderson argues that

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because cumulative emissions are the important factor, so it is possible to calculate what emissions are available to, for example, the UK up to 2050. Anderson calculates that, as at 2007, the UK had already emitted one quarter of the budget available until 2050. This means that the percentage reductions required from now on are of an order of 9% year on year in order to help reduce the levels of greenhouse gases in the atmosphere to a level that will have a better probability of avoiding dangerous climate change. This [work](#) (Anderson 2007) has been presented in many places, including the Scottish Parliament and Scottish Government.

The Scottish Government consultation concluded that:

It would be possible to construct a target for the total amount of emissions that could be released to 2050. Such a target, if met, would give greater certainty about the level of Scotland's contribution to the global effort to tackle climate change than a single point percentage reduction target.

However, the Scottish Government concluded that to use a cumulative target would mean:

“greater emissions reductions will be required in the short run which may force the government to implement measures which are not cost-effective”

And

“A cumulative target would give less flexibility with which to meet some of the great uncertainties in tackling climate change”

The Government did however state that it:

“recognises the advantages which a cumulative approach can bring, and therefore proposes to adopt a cumulative approach to interim emissions budgets”

Is there scope for sectoral targets?

The UK Committee on Climate Change (2009b) has considered the [contributions](#) different sectors can make towards reducing emissions. The consultation on the Scottish Bill and the Bill itself give little or no discussion on sectoral targets. The consultation did not ask a question relating to them but some respondents raised the subject anyway. The Sustainable Scotland Network stated that it:

“would strongly support government action to divide up the Scottish emissions budget and give allocations to sectors or local areas. SSN opinion suggests that we need to get to the stage of having a clear understanding of individual local authority and local authority area ‘carbon emissions budgets’ which local authorities (and Community Planning Partnerships) can manage”

The analysis of responses to the Bill (Scottish Government 2008d) states that “A number of respondents suggested that there should be targets (or at least measurements) available at levels below Scotland, whether these are defined by area or by sector” but gives no ready indication as to how many respondents this actually means. Other respondents ruled out sectoral targets.

The Minister for Transport, Infrastructure and Climate Change has commented on the matter in evidence to the Transport, Infrastructure and Climate Change Committee (2008a):

Stewart Stevenson: It is important that every sector contributes to the climate change agenda and to the reduction in CO₂ and other greenhouse gases. The current reporting has something like a plus or minus 6 per cent margin of error. When we disaggregate down to sectors, particularly some of the smaller sectors, the margins of error make it extremely difficult to understand what is happening. Rather than set sectoral targets, it is more important to ensure that we understand the effects of all the actions that have been taken in different sectors. Things will not be smooth in individual sectors and will depend on specific interventions. In many ways, sectoral emissions targets are economically inefficient because the various sectors will be able to make positive interventions at quite different points. To imagine that we can have sectoral plans that run in parallel does not accord with scientific advice.

Will the economic downturn help reach targets?

Some are considering that the current economic downturn may make it easier for emissions targets to be reached, though given the cyclical nature of the economy it would appear that economic development in the medium term would see a return to higher levels of growth, with associated emissions.

If the stated aim of (every) government is to move towards a low carbon economy, then a drop in emissions as a result of an economic downturn is only likely to be a “success”, in emissions terms, in the short term.

Sir David King, the ex-UK Government Chief Scientist, and now Head of the Smith School of Enterprise and Environment at the University of Oxford is of the opinion that the current economic situation represents a chance to move towards a lower carbon economy, however he is on the record as stating (BBC 2009):

“this is an opportunity to see that we use the public borrowing to spend ourselves not only out of a recession, but also into a better economy, a better state, and by that I mean to decarbonise our economy.

And when asked for an opinion on the current UK Government economic policy stated:

“I am massively disappointed. I don’t want to beat about the bush. I think this was an opportunity to invest in a low carbon economy and emerge in a much stronger place and I don’t see that opportunity being grabbed at the moment

Some business representatives see any environmental taxes as a burden, and may only encourage the view that less ambitious targets each year are acceptable to allow the economy to adjust, though the [CBI Scotland submission](#) to the Scottish Bill consultation was unequivocal (Scottish Government 2008r):

“business is committed to working in partnership with Government and consumers to tackle climate change, and believes that with the right policy mix and effort, this can be achieved in a cost-effective manner”

The Minister for Transport, Infrastructure and Climate Change explored this issue in evidence to the Transport, Infrastructure and Climate Change Committee (2008a)

The Stern report said that up to 20 per cent of our gross domestic product could be affected if we take no action and that it will cost us 1 to 2 per cent to take action. When

pressed on that, Lord Adair Turner²¹ put it into perspective by saying that if—and the "if" is bigger now than it was when he said it—annual growth is 3 per cent, the growth that we would expect to deliver in January 2050 will instead be delivered in July 2050. That provides some context and demonstrates that the economy is a consideration in relation to the UK Climate Change Bill, which will affect Scotland, and the proposed Scottish climate change bill. However, as Sir Nicholas Stern said, taking no action would be the economically irresponsible course; acting is the economically responsible course.

EXAMPLES OF TARGETS THROUGHOUT THE WORLD

Countries, states and regions are beginning to set targets to reduce their greenhouse gas emissions. As explained earlier, most developed countries now understand their obligation to reduce emissions under a fair regime which allows developing countries to continue to do so whilst developed areas move towards a low carbon economy. This principle of contraction and convergence is beginning to be played out in some developed countries, for example those listed in Table 2 below. Of course, developing countries are also taking steps to reduce their emissions, for example see climate change strategies from:

- China [National Climate Change Program](#)
- India's [commitment](#) (Treehugger 2007) to a [climate change strategy](#) (BBC 2008)
- Bangladesh [Climate Change Strategy](#)

Table 2 – Emissions targets in higher polluting developed countries

Country or area	Target	Comments and additional information
United Kingdom	80% reduction in emissions by 2050, with accompanying carbon budgets to map the way	More on the comparison between the UK Climate Change Act and the Scottish Bill is available at Annex I
Australia	Reduce emissions by 60% of 2000 levels by 2050 with a medium-term target range of 5-15% below 2000 levels by 2020 (which equates to 4–14% below 1990 levels). The bottom of this range represents an unconditional commitment by Australia to reduce emissions even if no international agreement to do so is reached. The top of the range represents the emissions reductions Australia is prepared to undertake in the context of global agreement under which all major economies commit to substantially restrain emissions	Australia has now ratified the Kyoto Protocol, though its new targets have come in for some initial criticism (Adelaide Now 2008). Australia has also committed to introducing an emissions trading scheme. A factsheet (Australian Government Department of Climate Change 2008a) and the new climate change white paper are available (Australian Government Department of Climate Change 2008b)
France	France has legislation – " Loi n°2005-781 du 13 juillet 2005 de programme fixant les	France must produce a "climate plan" which is updated every two years, and implement any national actions.

²¹ Lord Adair Turner is Chair of the UK Climate Change Committee
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	<p>orientations de la politique énergétique” which is an energy law enacted in 2005 and which sets an objective for France of reducing emissions by 3% each year. A translation of Article 2 suggests that the 3% reduction is an “aim” rather than a legally binding target. Article 2 of this law also suggests that developing countries, including France should aim for a four to five-fold reduction in emissions by 2050 (Source: Ares 2008) House of Commons Library Research Paper on the UK Climate Change Bill)</p>	
Ireland	<p>Ireland has a commitment to cut emissions by at least 20% on 1990 levels by 2020 and a reduction of 30% by 2020 ‘provided that other developed countries undertake comparable reductions and the more advanced developing countries make a contribution in line with their capabilities’</p>	<p>More information can be found in Ireland's National Climate Change Strategy 2007-2012</p>
Sweden	<p>The Swedish Parliament in 2006 adopted legislation stating that emissions for Sweden in 2020 should be 25 per cent lower than 1990 emissions though has been due to introduce further climate change legislation. Sweden does not yet appear to have committed to annual targets, but has ‘checkpoints’ for its policy</p>	<p>The Swedish Government's Commission on Oil Independence presented, in 2006, proposed measures and targets to create conditions necessary to eliminate Sweden's dependence on fossil fuels for transport and heating by 2020. The Swedish Prime Minister was a member of the Commission. More on the Swedish approach is available online</p>
USA – current policy	<p>The USA is committed to reducing the greenhouse gas intensity of the American economy by 18 percent over the 10-year period from 2002 to 2012.</p>	<p>Rather than an overall measure of emissions, greenhouse gas intensity is the ratio of greenhouse gas emissions to economic output. Some politicians have suggested their own climate change legislation, and the Congressional Research Service (Ramseur and Yacobucci 2007) has written a report examining such legislation. Information on how individual US States have taken measures to reduce greenhouse gas emissions can be found in another CSR Report (Ramseur 2007) and in publications from the Pew Centre on Global Climate Change (2009) and the World Resources Institute (2008)</p>
USA – policy post inauguration of Barack Obama	<p>Barack Obama has committed to implement an economy-wide cap-and-trade program to</p>	<p>Obama has already set out plans to double the use of renewable energy in the USA over the next three years and set out a goal of retrofitting</p>

	reduce greenhouse gas emissions 80 percent by 2050, and to make the USA a Leader on Climate Change (Office of the President Elect 2009)	more than 75 percent of federal buildings and 2 million homes to make them more energy-efficient. Obama has plans to help the automotive industry but only if they develop new battery technologies, and produce the next generation of fuel-efficient cars (Grist 2009)
California	Governor Schwarzenegger signed Executive Order # S-3-05 on June 1, 2005. The Executive Order established greenhouse gas targets: <ul style="list-style-type: none"> • By 2010, Reduce to 2000 Emission Levels • By 2020, Reduce to 1990 Emission Levels • By 2050, Reduce to 80 percent Below 1990 Levels 	Detailed information on California's climate change programme is available online . Some information on how California seeks to attain the targets can be found online .

The WWF (2007) report [Climate Solutions](#) includes some more country specific information. Page 34 onwards gives some case studies which contain information on existing targets on energy efficiency and associated measures.

Some other examples are cited on the website of [The Climate Group](#), 'an independent, nonprofit organization dedicated to advancing business and government leadership on climate change'. and in [SPICe Briefing Climate Change: World Summit of Regions](#) (Cook 2008).

TARGETS – THE BILL PROPOSALS

The Bill establishes the term “net Scottish emissions” which is the amount of Scottish emissions minus the amount of Scottish removals (emissions could be removed, for example, through trees being planted, or international credits being purchased on the market). The Scottish Government consultation on the Bill asked what should be covered in any Scottish legislation, with majority support that this should include all 6 greenhouse gases catered for under the Kyoto Protocol and in line with UK Bill and the Climate Change Committee viewpoint. As referred to previously, the ‘baseline’ referred to in this instance is the recognised international reporting baseline for the six greenhouse gases included under the Kyoto Protocol. This measuring mechanism is considered relatively uncontroversial.

The Bill introduces some important terms:

- “Scottish emissions” – this is greenhouse gases which are emitted in Scotland or which represent the Scottish share of emissions from international aviation and shipping
- “net Scottish emissions” – this is Scottish emissions minus removals – removals of greenhouse gases can take place due to land use, land use change and forestry (see [SPICe Briefing](#) on this topic (Dowens 2008))
- “net Scottish emissions account” – this is a point of reference against which targets can be measured. It is the net Scottish emissions defined above plus or minus any carbon credits credited or debited to the account – for example credits purchased to offset Scottish emissions

The Bill proposes two 'point in time' targets, that is for:

- A reduction in the net Scottish emissions account for the year 2050 that is at least 80% lower than the baseline
- A reduction in the net Scottish emissions account for the year 2030 that is at least 50% lower than the baseline

The Bill further proposes annual targets which will be set in batches, the first being for 2010 to 2022 and which will coincide with the carbon budgets being set under the provisions of the UK Climate Change Act 2008. The UK Committee on Climate Change (2008c) has already [proposed levels](#) for the first three carbon budgets (to 2022). The Policy Memorandum states that whilst the Bill may not set this in statute, "Prior to 2020, the Scottish Ministers will be expected to set annual targets which build towards delivering emissions reductions of at least 3% each year".

One important consideration is that targets expressed in percentages will always equate to an actual amount of emissions. For example, a percentage cut in emissions from one year to the next still relates to a certain tonnage of greenhouse gases which can be emitted.

The 2050 target

The Bill sets a target that greenhouse gas emissions in 2050 must be at least 80% below the baseline.

The consultation document on the Bill (Scottish Government 2008c) gave some explanation into the development of the target concluding that "the target needs to be more ambitious than what current technologies can deliver in order to help provide an incentive to develop new technologies, yet not so challenging as to be unachievable and therefore redundant". Elsewhere in the consultation, reference was made to measures beyond those technological ones referred to above which could allow ambitious targets to be set. The consultation states:

"the Scottish Government recognises that there are some measures that could be included in the Scottish Climate Change Bill which could contribute to this effort by enabling or requiring more action to be taken in specific areas and ensuring that such action is carried out in a responsible and sustainable fashion, balancing the immediate and local impacts with the aim of reducing emissions and meeting the 2050 target"

The Policy Memorandum cites, as the scientific basis for the target, the Fourth Assessment Report of IPCC, which concludes that emissions reductions of 50-85% were necessary, globally, to limit average temperature rises to 2.0-2.4°C.

On 11 November 2008, the Transport, Infrastructure and Climate Change Committee (2008a) asked for sight of any scientific analysis that had gone into the development of targets in the Bill. Subsequent to this, in correspondence to the Convener of the Committee, the Minister stated

"a technical note will be provided for the Committee detailing the thinking behind the planned emission reductions and trajectories. Our intention is to submit this to the Committee in early December"

The Technical Note referred to above was [finally submitted to the Committee](#) in January 2009, together with a further "[Factual Briefing Document](#)" on the Bill (Scottish Government 2009a and 2009c).

The UK Committee on Climate Change has endorsed the level of targets set in the Bill stating that “such an objective is attainable at a manageable economic cost”.

Interim 2030 target

The Bill sets a target that greenhouse gas emissions in 2030 must be at least 50% below emissions reported for 1990. In evidence the Minister for Transport, Infrastructure and Climate Change discussed the rationale behind the target (Transport, Infrastructure and Climate Change Committee (2008a):

“Rob Gibson: On annual targets and the mid-point target, is there a scientific, as opposed to mathematical, basis for choosing a target of reducing emissions by 50 per cent by 2030?

Stewart Stevenson: We set ourselves a significant challenge by choosing the figure of 50 per cent for the mid-point. That figure is clearly on the relatively smooth curve to the 80 per cent reduction by 2050 target. We are mandated to provide a complete review of whether we have achieved that reduction by 2030 in order to show that we are on target to deliver on the 80 per cent reduction target by 2050. We have, of course, drawn on what the committee on climate change has said and on other scientific information. We chose the figure; it was not delivered to us by others”

The smooth curve which the Minister referred to was not illustrated anywhere in the Bill consultation, or in the Bill accompanying documents. An illustrative curve was made available in the additional technical note referred to above and is reproduced on page 27 of this briefing.

On whether the mid-point target could be amended upwards if the scientific advice showed that that was required, the Minister stated “It is not a limit—it could be amended upwards” (Transport, Infrastructure and Climate Change Committee 2008a)

AEA, in their [response](#) to the Scottish Government consultation stated (Scottish Government 2008r) :

A 2020 target would fit best with other national and European targets. However we can see benefits in setting a shorter term target.

AEA may be referring to the UK interim target which is for a 26% emissions reduction (CO₂e) by 2020.

Annual Targets

The 2050 and 2030 targets set the overall framework for reducing Scotland’s greenhouse gas emissions, but the Bill also sets a framework for annual targets. The SNP Manifesto gave a commitment to “mandatory carbon reduction targets of 3% per annum”. The Bill does make a requirement for Scottish Ministers to set annual targets, but the requirement for these to be 3% less than the previous year is only mandatory from 2020. Until then, it only requires an (unquantified) annual reduction.

The Bill consultation did not ask for a view on 3% year on year annual cuts, but respondents, especially NGO campaigns (supported by thousands of responses) called for the Bill “to include statutory targets of at least 3% year on year emission reductions” (for example [Scottish Government](#) 2008s).

The Bill proposals for annual targets are for:

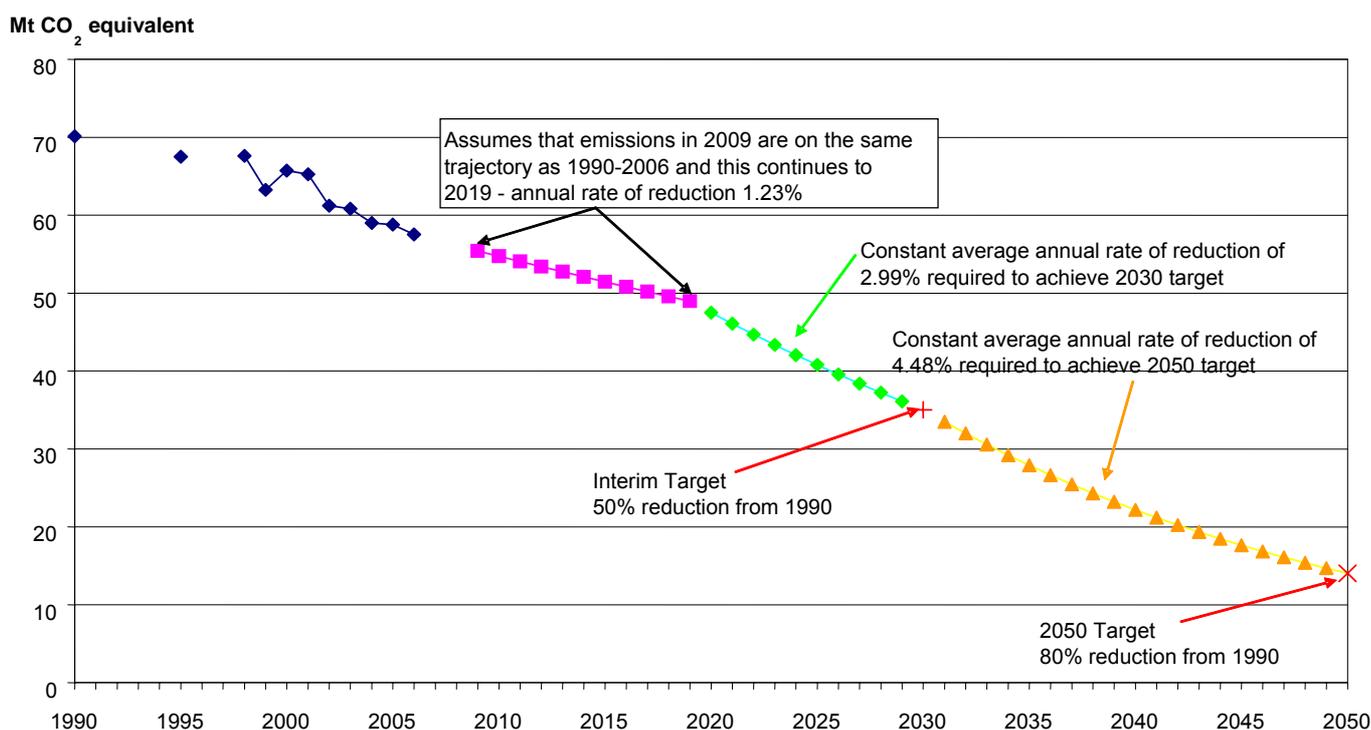
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- The annual target for the year 2010 being an amount which is less than the estimated net Scottish emissions account for 2009.
- The emissions reduction targets for each year in the period 2011-2019 being an amount which is less than the target amount for the previous year.
- In the period 2020-2050 the annual percentage rate of reduction in greenhouse gas emissions being driven by targets which must be at least 3% lower than the target for the previous year.

The Policy Memorandum states “Prior to 2020, the Scottish Ministers will be expected to set annual targets which build towards delivering emissions reductions of at least 3% each year”. Cuts of 3% year on year are not statutorily provided for in the Bill until 2020 and so the policy intention can be read as the Scottish Government considering that before 2020 it is unlikely that 3% year on year targets could be met. This is backed up by the [Technical Note](#) provided to the Transport, Infrastructure and Climate Change Committee which includes six scenarios, none of which track emissions cuts of 3% year on year to 2020.

The Scottish Government did do a calculation showing that if emissions continued to reduce at 1.23% per year (the average fall between 1990 and 2006), then an annual average reduction of 3.95% would be necessary to achieve an 80% reduction by 2050. This track was not illustrated in the form of a graph, but the Note does include a graph showing what an emissions track could look like – it shows the 2030 target being hit based on emissions reductions of 1.23% per year to 2019, and reductions of 2.99% thereafter until 2030, after which emission cuts would need to be 4.48% per year). This graph is reproduced below but should be read with some caveats in mind, which are outlined after the graph:

Figure 7 - Greenhouse gas emissions - 1990 to 2050 includes international aviation & shipping & takes account of trading in the EU Emission Trading Scheme in 2005 and 2006



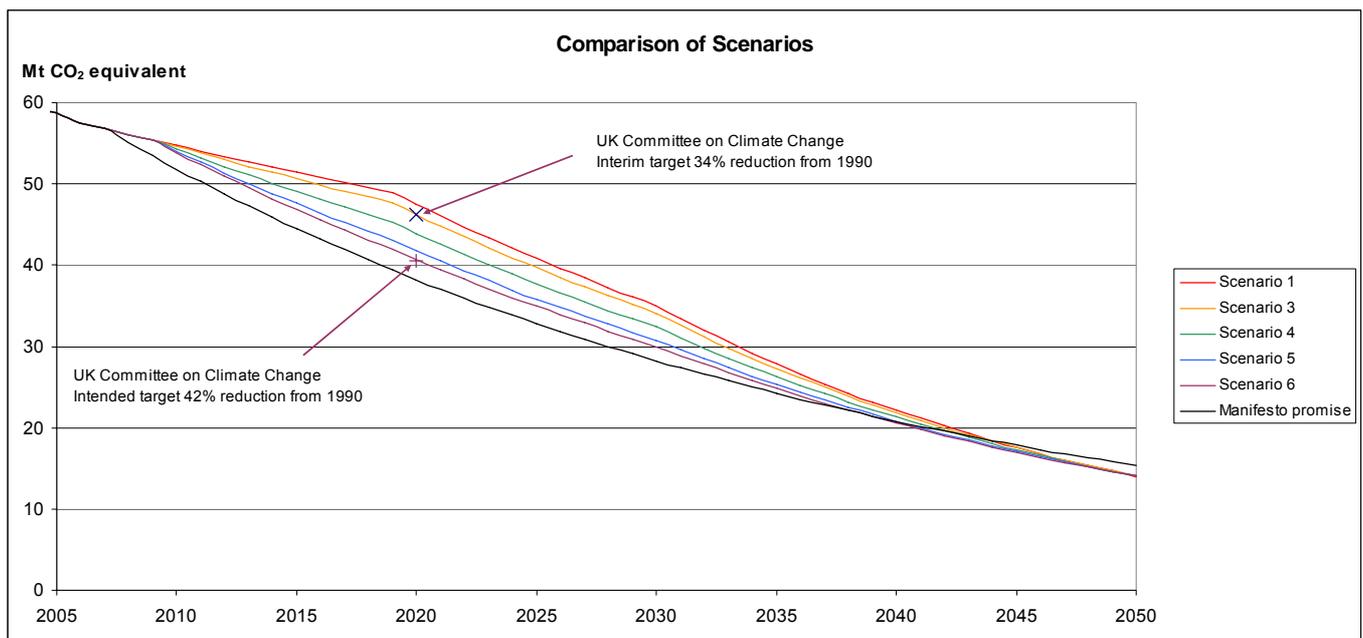
Caveats to be considered are:

- The Scottish Government assumes that greenhouse gas emissions in 2009 will follow a similar trend as the average fall across the years 1990-2006. This average figure (including emissions trading in 2005 and 2006) is massively influenced by industrial closures such as Ravenscraig in the 1990s. Between 2005 and 2006 net greenhouse gas emissions increased by 5.4% ([Scottish Government 2008t](#))
- The Technical Note states that “Before setting the levels for annual targets, Scottish ministers will be informed by the advice of the UK Committee on Climate Change. This advice is expected to detail the optimal, most cost effective emissions reductions options to pursue” – it is not clear whether this advice has been requested yet.

The emissions track shown above is not that which follows the theory outlined by Anderson earlier in this briefing which called for larger cuts to happen first.

The Scottish Government did not publish any more illustrative graphs showing the other emissions tracks it had calculated. WWF Scotland produced an illustrative graph showing the different scenarios compared on one graph – this is reproduced below:

Figure 8 – Comparison of scenarios published in Scottish Government Technical Note



Source: WWF Scotland

Before this analysis on emissions tracks was available, SPICe estimated the course of emissions simply on the basis of annual percentage reductions of CO₂e. This does not include international aviation and shipping, nor does it include credits from the European Emissions Trading Scheme, but the shape of the curves show different available tracks. The source data is the most recent [Greenhouse Gas Inventories for England, Scotland, Wales and Northern Ireland: 1990 - 2006](#) (AEA 2008).

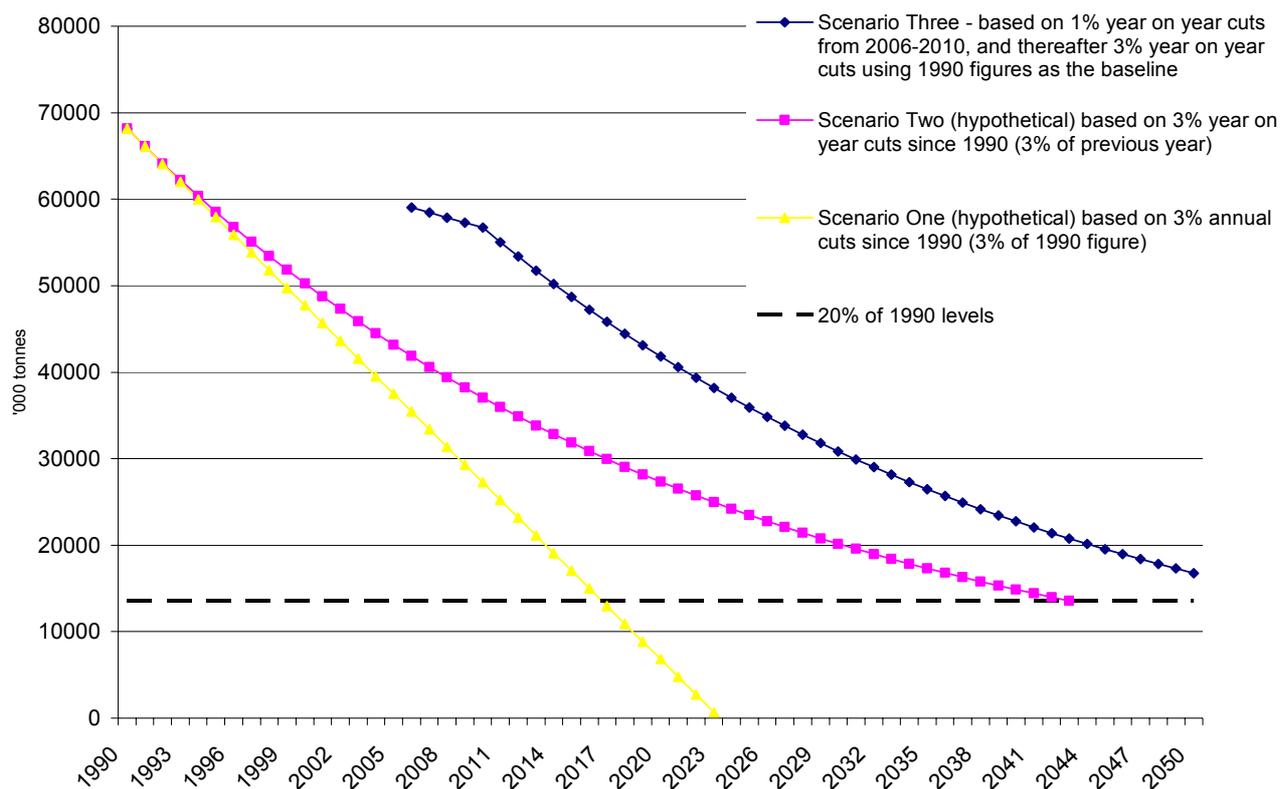
SPICe Scenario One – this shows what the track would have looked like had 3% annual cuts been made from 1990 (i.e. 3% of the figure as at 1990). Obviously this didn't happen but is included for illustrative purposes.

SPICe Scenario Two – the baseline year is 1990 and emissions cuts are based on 3% year on year from that date – in other words this shows what the emissions track would have looked like if emissions were being cut 3% year on year from 1990. In this scenario, 80% cuts would have been reached:

- For CO₂ – at the end of 2042
- For CO₂e – also at the end of 2042

SPICe Scenario Three – this includes the latest figures for 2006, and includes a one percent year on year emissions cut until 2010, and a three percent cut year on year thereafter. The results give a 75% reduction on 1990 levels by 2050.

Figure 9 – SPICe calculated emission tracks



Banking and Borrowing

In the consultation on the Bill, the Scottish Government proposed the concept of banking and borrowing from previous or upcoming carbon budgets (or in the case of the Scottish Bill batches of annual targets, or year on year annual targets). At the [Transport, Infrastructure and Climate Change Committee](#) (2008a), the Minister for Transport, Infrastructure and Climate Change indicated that this policy measure had been dropped:

“The Convener: On carbon targets, the consultation mentioned the concept of banking and borrowing from previous or upcoming carbon budgets, but the Scottish Government's response to the consultation makes no reference to that concept. Why not?

Stewart Stevenson: That is because we are not doing it.

The Convener: There will be no facility for banking or borrowing.

Stewart Stevenson: That is correct”

In Part Three of the Bill, provision is made for the Scottish Ministers to produce a plan to compensate in future years should annual targets not be met.

The UK Climate Change Act 2008 does allow UK Ministers to bank and borrow between budgetary periods.

INTERNATIONAL CREDITS

Emissions of greenhouse gases have the same effect in the atmosphere no matter where they are emitted. International acceptance of this scientific concept has led development of schemes where emissions can be reduced where it is most cost effective to do so – and so the concept of emissions trading has developed. SPICe Briefing 08-72 [Emissions Trading](#) (Dowens and Cook 2008) explores the concept of emissions trading, explores how it has been used in the past, and considers how the mechanism is currently used to reduce the emissions of greenhouse gases.

The Bill and accompanying documents say little on the concept, but in the consultation on the Bill, the Scottish Government (2008c) floated the idea that it would:

“allow international credits to be counted towards its targets. These would only be credits verified by international processes supporting the Kyoto Protocol – either clean development mechanism (CDM) or joint implementation credits (JI). Allowing international credits also helps to make a stringent target more credible. Even if new technologies and behavioural change are not having sufficient effect, the Scottish Government can ensure our targets are met by buying international credits. Any use of international credits would be in line with the international principle of ‘supplementarity’ established under the Kyoto Protocol. This means that the primary focus must be emissions from within Scotland, and that international credits should only be a minority of our emissions reductions. However, the Scottish Government does not propose to set a statutory limit on the amount of international credits that can be used. This would provide greater flexibility and lower costs to meeting the targets, and provides a mechanism to rectify any deviation from the emissions reduction pathway. The Scottish Government would propose to obtain independent advice on what the appropriate usage of international credits would be”

The Bill does indeed allow for international credits to be counted towards Scottish targets, with no limits prescribed on this practice. This is a different approach from that taken in the UK Climate Change Act where the legislation (Explanatory Notes 2008):

“places a duty on the Secretary of State to set a limit on the “net amount of carbon units” that can be credited to the net UK carbon account in each budgetary period”

The Act further requires that the Secretary of State has to:

take into account the Committee on Climate Change’s advice under section 34(1)(b) (advice on the extent to which a budget should be met by reducing domestic emissions and by the use of carbon units), and to consult the devolved administrations, before setting the limit.

The view of the UK Committee on Climate Change (2008d) is that the imperative must be to reduce domestic emissions in the first instance. They say:

There should be no limit on the use of credits bought from the rest of Europe (i.e. EUAs) to meet the budgets, but the use of offset credits (e.g. CDM) should be tightly controlled, particularly to meet the Interim budget

And

The overall result of these recommendations would be that in the Interim budget case, less than 10% of required emissions reductions would come from purchase of offset credits, with the remaining 90% coming domestically or from elsewhere in the EU. In the Intended budget case, domestic effort would be higher, but up to 20%

Installations based in Scotland are already involved in the main existing emissions trading scheme – the European Union Emissions Trading Scheme (EU ETS). It is not easy to get information on credits which have been purchased by installations which are based in Scotland and included in the EU ETS, over and above their allocations for any set year. The Emissions Trading Registry has informed SPICe that “This information is confidential and market sensitive. This is not information that is publicly available or required to be under the Registry Regulations”.

Some of the views put forward in responses to the Bill consultation on the issue of international credits are reproduced below.

The Sustainable Scotland Network [said](#) (Scottish Government 2008u):

“credits that count toward the Scottish target should be limited and that their use should be regarded as a ‘measure of last resort’, with emissions avoidance and emissions reduction given priority”

The Royal Commission on Environmental Pollution [said](#) (Scottish Government 2008v):

“Our main concern is that developed countries should reduce their own emissions from their currently relatively high per capita levels, with the great majority of this coming from domestic reductions, and one of the tasks of the advisory bodies to the Scottish Government should be to recommend what the domestic proportion should be”

Scotland’s Climate Change Business Delivery Group [said](#) (Scottish Government 2008w):

“The Scottish targets should be primarily focused on Scottish domestic emissions, demonstrating clear leadership and stimulating innovation at home as well as active partnership internationally with developing countries. This focus will help Scotland reap investment opportunities arising from economic decarbonisation”

The Confederation of British Industry felt as much flexibility should be built in as possible, [stating](#) (Scottish Government 2008x):

“International credits should be counted towards Scottish targets. There should be no limit on the face of the Bill, rather, the Scottish Government should seek advice from the Climate Change Committee as to an appropriate limit for each carbon budget period”

In response to a question at the Scottish launch of the Committee on Climate Change’s first report, the Cabinet Secretary for Finance and Sustainable Growth stated that the Government intention is to reduce domestic emissions in the first instance before considering the purchase of credits.

AVIATION AND SHIPPING

Detail on the science behind the effects of aviation on climate change is available in a House of Commons Library [Research Paper on Aviation and Climate Change](#) (Smith and Bolton 2008). The International Maritime Organisation, a specialist agency of the United Nations has a [variety of resources](#) on shipping and climate change.

Emissions from domestic aviation and shipping are already included in the UK Greenhouse Gas Inventories.

Aside from the scientific issues, international aviation and shipping are difficult problems both politically, and methodologically. This is because there has never before been a need to attribute emissions from these sources to a particular country; the difficulty of doing so has led international policy agreements (e.g. Kyoto) simply to ignore the issue. It is however recognised that these are important and growing sectors, which require to be factored in to mitigation policies. In the UK, progress on data has been made recently in the publication [Greenhouse Gas Emissions Data for International Aviation and Shipping, 1990-2006](#) (Thomas and Thistlethwaite 2008). This breaks down figures to a Scottish level, though states, for shipping:

There is no agreed international protocol that defines how a sub-UK split should be made and to provide an indicative allocation of the international shipping emissions by DA; the UK data has been split across England, Scotland, Wales and Northern Ireland based on annual port movement data available taken from the DfT annual publication "Maritime Statistics", Table 1.1: All ports traffic (kt). These data do not provide a distinction between domestic and international shipping and hence are used to disaggregate both UK domestic and international shipping emissions.

The Bill consultation stated that:

"The Scottish Government's view is that international shipping emissions (as with international aviation emissions) are best addressed at international level"

And

"As methods for apportioning aviation and shipping emissions within an international framework develop and are agreed internationally, it may become possible for these emissions to be satisfactorily included in Scotland's reduction targets and there will be scope in the Bill to include these sectors in the legislative framework at a future date"

In a move beyond this position, the Scottish Government's intention is to include the Scottish share of emissions of gases from international aviation and international shipping in overall targets, though it is recognised that these emissions could occur elsewhere in the world. However, the Bill does not explicitly allow for this on the face of the Bill – instead it states Scottish Ministers "may" make provision, by order, for a proportion of emissions from international aviation and shipping to be attributed to Scotland.

It is understood that the reason for this relates to Bill drafting issues rather than policy intention. However the requirement for an order is accompanied by a requirement that Scottish Ministers must seek advice (most likely from the UK Climate Change Committee in this instance). Unless the Scottish Ministers have already asked for this advice, this may delay the inclusion of emissions from aviation and shipping. The Scottish Government Factual Briefing Document states:

“an order will be laid in the Scottish Parliament in time for these emissions to be included in the first batch of annual targets”

The UK Climate Change Bill does not include emissions from international aviation and shipping in its targets at the outset – instead, these could be included if required by regulations. However the Act requires that reporting on international aviation and shipping is still a requirement. On this point the UK Climate Change Committee states (their bold):

The target should cover all Kyoto GHG s and all sectors including international aviation and shipping. To the extent that international aviation and shipping emissions are not reduced by 80% more effort would have to be made in other sectors.

The point made by the UK Climate Change Committee that should emissions continue to rise in the aviation and shipping sectors then more effort would be required in other sectors is relevant given discussions currently under way in the Scottish Parliament regarding the National Planning Framework 2 which includes proposals for airport enhancements. It may be that such enhancements in Scotland would allow more direct flights to/from Scotland (rather than going via English airports) so would reduce emissions though to be certain information would be required on variables such as routes taken, efficiency of aircraft, and numbers of flights and passengers.

The BAA response to the consultation on the Bill focused on domestic aviation, figures for which are already included in the UK Climate Change Act and the Bill targets. BAA [state](#) (Scottish Government 2008hh):

In light of the considerable progress made in including aviation in the ETS and the clear potential for the scheme to ensure aviation meets its environmental obligations, BAA Scotland believes that domestic aviation should not be included in Scottish Climate Change Bill targets. Additional targets set at a Scottish level could potentially distort an EU wide market and place Scotland at a distinct competitive disadvantage. UK domestic aviation will be included in the EU wide scheme and given the ability of airlines to easily relocate from less competitive markets, we believe that any unilateral action taken in Scotland could potentially harm this vital industry and Scotland’s competitive position.

PART 2 - ADVISORY FUNCTIONS

The Bill provides for advisory functions to be conferred on an existing organisation, or a new Scottish Committee on Climate Change. This is a very similar position to that set out in the consultation on the Bill.

The advisory functions allowed for in the Bill are wide ranging. Section 19(3) lists these as including “providing advice, analysis, information and other assistance to the Scottish Ministers in respect of Ministers’ functions relating to setting and modifying annual targets, and which greenhouse gases should be included in targets”. Section 22 also requires an advisory body to express a view on the use of domestic action or the use of carbon credits to meet annual targets.

Furthermore the advisory body must prepare an annual report on progress towards annual targets; the interim target; the 2050 target; whether these are likely to be achieved; and further effort required to achieve annual targets.

Section 26(2) of the Bill states that:

The Scottish Ministers may not give the advisory body guidance as to the content of any advice or report

However, sections 19(4)(c) and (d) state that in designation an advisory body, Scottish Ministers can, in the order designating the body provide “for the information that advice must contain” and “for the factors to which the body is to have regard in giving that advice”. Some of this seems to mirror powers in clause 41 of the UK Climate Change Act 2008, though could be explored further.

The UK Committee on Climate Change, referred to frequently in this briefing, operated in shadow form from March 2008, and was given a statutory basis under the UK Climate Change Act 2008. This also requires the Committee to copy advice it gives to the UK Government to the devolved administrations. Importantly however, it gives Scottish Ministers the power to be provided with advice on climate change matters.

Scottish Ministers have committed to using the UK Committee on Climate Change. In its Factual Briefing Document the Scottish Government states:

This situation will be reviewed and if it is concluded that a dedicated Scottish body would provide advice and scrutiny more suited to Scotland’s particular circumstances, the provisions enable equivalent powers to be conferred upon an existing Scottish public body or for a Scottish Committee on Climate Change to be established.

Scottish committee on climate change

It is not clear which existing body might be deemed suitable for advisory functions to be given to, though an obvious candidate may be SEPA. The Bill allows the Scottish Government, by order, to create a Scottish Committee on Climate Change to carry out the advisory functions in the Bill. This would allow a specific body to focus on the issue, rather than being part of another organisation, and would presumably allow for more focused analysis of climate change based on variables which are different in Scotland than in the rest of the UK.

Schedule 1 to the Bill outlines that the Committee would be established as a body corporate, and that its members and employees are not to be regarded as civil servants. Members of the Committee would be appointed by Scottish Ministers, and many of the functions would mirror those carried out by the UK Committee on Climate Change.

It is understood that the Stop Climate Chaos Scotland coalition may be advocating a “Climate Change Commission” approach, whereby a Scottish advisory body would be appointed by and report to the Scottish Parliament rather than Government.

PART 3 - REPORTING DUTIES

The Policy Memorandum states that “it is intended that the Scottish Ministers be subject to strong and robust reporting requirements” and it does seem that the proposals seem to be stronger and more focused than those outlined in the Bill consultation. The Bill specifically requires that Scottish Ministers report to the Scottish Parliament, with requirements as follows:

- Annual reporting duty – if the annual emissions target is not met, the report should explain why
- Report and statement on proposals and policies designed to meet future annual emissions targets

- Report and statement on proposals and policies designed to compensate for exceeding annual emissions targets – this applies where the net Scottish emissions account exceeds an emissions target
- Final statements for 2030 and 2050

Section 34 of the Bill requires that Scottish Ministers, after laying a report under the categories above, should make a statement to the Parliament relating to the report. Furthermore, the Bill states that Scottish Ministers must also:

“as soon as reasonably practicable after doing so, and in so far as reasonable practicable, meet with the persons who convene and chair such committees of the Scottish Parliament as are for the time being appointed by virtue of standing orders”

It is difficult to envisage what factors would deem such a meeting as not being reasonably practicable – however as the Parliament operates at the moment, the [Convenors Group](#) holds its meetings in private, though meeting papers and notes of meetings are published online.

Section 29(3)(b)(ii) requires that annual target reports should contain information on carbon credits which have been purchased in the target year. As outlined earlier, information on such credits does not appear to be readily available in the public domain, though may be to the Scottish Government.

Section 29(4) requires that annual target reports should contain information on electricity consumption and generation for the target year. The Bill, nor accompanying documents give no reason why this sector has been singled out, though it is possible that it relates to the fact that around a fifth of electricity generated in Scotland at the moment is transmitted through interconnectors to England and Northern Ireland.

One of the issues in considering reporting on emissions is the time delay for emissions to be reported once they have been emitted – this was explored in the Transport, Infrastructure and Climate Change Committee (2008a):

“Stewart Stevenson: The bill will set budgets with annual components so that we will be able to see exactly what we will have to do and give maximum notice. It is not a matter of the Government doing things on its own; every person and all enterprises in the community have to be part of the process.

Rob Gibson: I have been leading up to an issue that I asked about earlier in the year. I asked the Government why it takes 20 months for Scottish greenhouse gas inventory emissions figures to become available. Has the Government done any work in the meantime to speed up that process? Are you able to collect data more quickly on gases other than CO₂ in that fashion?

Stewart Stevenson: We have done some work. However, it is a complex task and our data have to be disaggregated from the United Kingdom data, which entails further work. We want to get the figures as quickly as possible. If the data are received the best part of two years behind the actual event, then responses to an adverse situation will be two years late, so the response will not be as good as would have been looked for. That would be embedded in the system, so there is a key interest in shortening the time involved.

Obtaining data is complex: it is not just a question of sticking a probe up into the atmosphere and measuring CO₂. We have to consider the activities in our economy and

estimate their effects. We are looking into ways of developing provisional views that will help us to get moving before the final definitive figures become available”

Enforcement and sanctions

Targets set in statute (or even in policy documents of weight) tend to focus the minds of administrations by applying a degree of political, legal and moral pressure, even if financial or legal sanctions are not involved.

The Bill states that the Scottish Ministers “must ensure” that the annual targets, as well as the 2030 and 2050 targets, are not exceeded. However the issue of sanctions for not hitting greenhouse gas emissions targets is a complicated one – this is because it has not easy to see how they might work i.e. government could need to fine itself²². As discussed, at a basic level the Bill places a requirement for Scottish Ministers to report to parliament if annual targets are not met (section 31).

As regards further sanctions, the consultation on the Bill (Scottish Government 2008c) states:

Suggestions for sanctions or other means of enforcement or accountability included:

- Financial penalties or budget sanctions (which could be re-cycled to fund other developments)
- Opportunity for legal challenge in court
- Judicial review
- Establishment of a call-in mechanism for new plans, programmes or strategies that would increase greenhouse gas emissions (e.g. so that a Minister would have to justify approval of such a plan programme or strategy to Parliament in advance of giving it the go-ahead”).

Further analysis of sanctions is given in paragraphs 4.18 – 4.21 of the consultation document, however sanctions for missing emissions targets are not discussed in the Policy Memorandum.

Under the UK Climate Change Act 2008 the only sanction beyond Parliamentary scrutiny would be for the courts to determine that the law has been broken and then oblige the Government to remedy this. Another view is that the reporting mechanisms contained within the Act, plus the independent Committee on Climate Change, should be robust enough to hold the Government to account. In addition it may be that the very fact of having targets in statute will make Ministers and civil servants work harder to achieve them and embeds the commitment across different complexions of government.

Debate on the UK Climate Change Bill explored this. In the House of Lords, Lord Crickhowell stated (prior to his proposed amendment being defeated) (Ares 2008):

Instead of trying to pin everything on the nation reaching its target in 2050, the amendment would create a duty to deliver everything that makes the objective possible. While a civil servant or a Minister is never likely to be held responsible for the non-achievement of the 2050 target, one can envisage Parliament and even the courts holding them responsible for the production of policies that are clearly in conflict with that objective.

²² One general resource on the topic which may be of interest is the Macrory report on [Regulatory Justice: Making Sanctions Effective](#)

[McMaster](#) (2008), published in the Journal of Environmental Law, has written on the sanctions contained in the UK Bill as it was introduced. In particular McMaster picks up on the recommendations of the [Joint Committee on Climate Change](#), which suggested stronger sanctions to be contained in the Bill.

A couple of examples from state legislatures in the USA are available:

- **Massachusetts** - the recent Global Warming Solutions Act now requires emissions to be reduced by 25 percent from 1990 levels by 2020 and 80 percent by 2050. It is [reported](#) that the legislation includes tough penalties, with fines of as much as \$25,000 a day for violations
- **California** – has targets to reduce emissions to 80% below 1990 levels by 2050. [Executive Order S-3-05](#) improved co-ordination between Californian agencies, and required that progress towards the targets be reported on biannually. Furthermore it requires that reporting takes place on the impacts of climate change on California. The Order does not make reference to sanctions – it seems to rely on a wide ranging set of reporting requirements. The [Californian Global Warming Solutions Act of 2006](#) fleshed out more detail. The Legislative Counsel's Digest to the Bill (essentially a preamble) states that (my bold):

*Because the bill would require the state board to establish emissions limits and other requirements, **the violation of which would be a crime**, this bill would create a state-mandated local program.*

Without legal advice it is difficult to tell who would be judged to have committed the crime referred to above, though in any case it appears to refer to the requirement to establish emissions limits, not to attain them. The California Air Resources Board (CARB) has published a Climate Change Draft Scoping Plan to reduce California's greenhouse gas emissions by 30 percent over the next 12 years – see the [press release](#) (CARB 2008a) and [draft plan](#) (CARB 2008b). The draft plan seems to continue to rely on robust reporting mechanisms, though allied with enforcement on the ground.

PART 4 - DUTIES OF PUBLIC BODIES

The consultation asked seven general questions on the types of public duties that could be placed on the public sector to help achieve climate change targets and policy ambitions.

Cosla [responded](#) to the consultation on the Bill stating (Scottish Government 2008y):

“COSLA has no issue with the proposal to bring forward enabling powers so long as any duty imposed on the public sector to take specified actions on climate change or other specified environmental issues is backed up with the appropriate resources to enable those duties to be carried out and that reporting on any new duty be fully integrated into the Single Outcome Agreement process”

And

“Some thought might be worthwhile around the objectives of a climate change duty being best achieved by strengthening and re-focusing the existing Best Value and Community Planning legislation, wherein local authorities are required to discharge their Best Value and Community Planning duties in “a way which contributes to the achievement of sustainable development”. Achieving the objectives of a climate change duty through this

approach would require improved, climate change-focused Best Value (and also Strategic Environmental Assessment) statutory guidance. This could be an iteration or extension of the Best Value and Sustainable Development Toolkit, which some local authorities are already using to inform performance management and improvement, and which has support from all key stakeholders”

The Bill contains very wide ranging enabling powers for Scottish Ministers to “if they consider it appropriate to do so, by order, make provision relating to the imposition on public bodies of duties relating to climate change”.

The Bill is very open on what these duties might be and discussions in the Transport, Infrastructure and Climate Change Committee left the possible duties open to a degree of interpretation:

Des McNulty: What duties does the Scottish Government envisage that it might be necessary to place on public sector bodies under the Scottish climate change bill, and what powers are likely to be contained in the bill to allow duties to be imposed?

Stewart Stevenson: The 32 local authorities have already signed up to a common declaration on climate change. We hope and believe that public bodies are already planning to and will respond to the climate change agenda. However, we expect to include in the bill a provision to enable the Government to take a stronger lead with public bodies to ensure that the appropriate contribution is made.

Des McNulty: Will that be in the form of encouragement rather than constraint?

Stewart Stevenson: Encouragement will always be the more effective option. We must all be in this together. It simply will not work if we are dragging a reluctant bride up the aisle to the climate change wedding. Persuasion is far preferable to coercion. Nevertheless, we will have the necessary powers to ensure that we meet Scotland's climate change targets. I hope that they are never used.

Des McNulty: Some bodies, such as Scottish Water, are required to take account of sustainability. That was the kind of measure that I was thinking about.

Stewart Stevenson: Scottish Water is already considering siting renewable energy sources on many of its new plants. The new designs for waste water treatment plants and so on are already beginning to incorporate renewable energy technology. That serves two purposes. Scottish Water has one of the biggest energy bills of any enterprise in Scotland—we can all help by turning the tap off when we do not need to leave the water running. Scottish Water has a fundamental opportunity to do something about that, so there is an economic driver. Scottish Water is also aware of the fact that it is part of the natural environment in delivering a first-class product and that it must respond to the climate change agenda. The chairman and chief executive of Scottish Water have discussed that with me on several occasions, both formally and informally.

Other legislation that has been passed by the Scottish Parliament has included duties which have been placed on public bodies, for instance the Nature Conservation (Scotland) Act 2004 placed a duty on public bodies and office holders to further the conservation of biodiversity, and the Water Environment and Water Services (Scotland) Act requires that Scottish Ministers, SEPA and the responsible authorities must “act in the way best calculated to contribute to the achievement of sustainable development”. The duty of Best Value in the Local Government in Scotland Act 2003 requires that “the local authority shall discharge its duties under this section in a way which contributes to the achievement of sustainable development”.

PART 5 – OTHER CLIMATE CHANGE PROVISIONS

ADAPTATION

The UK Secretary of State is required, under the UK Climate Change Act 2008 must lay a report before the UK Parliament containing an assessment of the risks for the UK of the current and predicted impact of climate change. The Bill requires that when this happens, Scottish Ministers must “as soon as reasonably practicable” lay a programme addressing the risks in the report for Scotland, and more generally setting out the Scottish Ministers thinking in relation to adaptation to climate change, and for the second report on, for this to include as assessment of progress towards objectives set out in the previous programme. The first UK report must be produced by around the start of 2012, with a further report in 2017.

Key related policy developments include the developing Scottish Adaptation Strategy, and the publication of the UK Climate Projections (which had been due for publication in autumn 2008). The UK Climate Change Committee is to set up a sub-committee on adaptation.

MUIRBURN

Muirburn is a (mainly upland) land management technique, and is the act of controlled burning of vegetation on open, treeless, semi-natural habitats (including muir or moorland) and involves the burning of vegetation – gorse, heather and grass – to stimulate new growth. For the most part the practice is carried out by land managers such as hill farmers, crofters, estate managers and gamekeepers. The core purpose of muirburn is to enable the provision of fresh food sources on rough grassland or managed moorland for livestock, game and wildlife, and the removal of older vegetation which can act as a source of fuel for wildfires. A significant area of Scotland is covered by moorland, grassland and peatland. According to the Policy memorandum this runs to 8.7% covered by heather moorland; 15.7% by heather moorland and peat mosaics; and 14.5% by rough grassland and moorland mosaics (Policy Memorandum 2008). The Scottish Government published its [Muirburn Code](#) in April 2008 (Scottish Government 2008z).

Paragraph 54 of the Policy Memorandum states:

“The majority of Scottish soils are organic and most of the UK’s peat resource is in Scotland. 50% of the UK’s total soil carbon store is in Scotland and 80% of this is in peat. The approximate carbon storage is three thousand million tonnes of carbon. The majority of the land on which muirburn is carried out lies on top of these soils. Controlled burning aims to burn the vegetation above the height of the soil and for the fire not to penetrate into the soil and peat. Although carbon dioxide and nitrous oxide are released through muirburn, by burning, in particular, old heather, new heather growth is encouraged and plant density increases. The quantity of greenhouse gases released from burning can be minimised”

The dates on which muirburn can take place are set down in statute (the Hill Farming Act 1946). The provisions in the Bill allow Scottish Ministers to amend, by Order, these dates to adapt to the effects of climate change – temperatures have risen in every season of the year; Scotland is 20% wetter now than in 2004, with an increase in precipitation of almost 70%; the snow season has shortened; the number of frosty days has reduced by a quarter; and as a result the growing season has lengthened considerably (Policy Memorandum 2008) and there is concern that the ecology of these areas could now be compromised by burning within the currently permitted limits (dates, altitude, etc).. The Scottish Government has no expectation that the current

muirburn season would need to be changed immediately. (Scottish Government Factual Briefing Document 2009a).

Muirburn was mentioned specifically by some respondents to the Scottish Climate Change Bill consultation, for instance the RSPB Scotland (2008) [response](#) stated (Scottish Government 2009aa):

“RSPB Scotland would like to see changes to the legislation covering muirburn under the Hill Farming Act 1946. Recent published studies show the growing season starting up to three weeks earlier in much of Scotland since 1961, with predicted changes of a similar magnitude over the next decade, as a result of climate change. The breeding season for moorland birds is similarly advancing in spring and therefore it is important that the legislation allow for changes to the muirburn dates”

The Game and Wildlife Conservation Trust (2008) stated in its [response](#) that (Scottish Government 2009 bb):

“The Trust seeks support for research into the best practice activities of muirburn and grazing that will maintain and enhance carbon storage in moorland ecosystems and allow the species associated with these upland areas to adapt to climate change. We would urge support for research into wildfire risk scenarios, agreement on best practice managed fire regimes to reduce wildfire risk and the development of enhanced public awareness strategies such as media based alerts with the aim of reducing uncontrolled fires that can seriously damage peat accumulating systems”

Scottish Natural Heritage (2008) stated in its [response](#) that (Scottish Government 2009cc):

“It would be useful if the Bill allowed changes to permitted dates for specified land management operations as a result of the impacts of climate change – and we would be happy to discuss the details of these with you. One example is the dates specified for muirburn, where the provision could usefully be allowed to burn in September and remove the provision to burn in May. But consideration of changes to the dates of the muirburn season should not be in isolation, on the basis of one possible impact. Other factors to consider include the extent to which restricting the muirburn season would reduce the amount of muirburn undertaken. This might have detrimental impacts on some habitats, including Natura and Biodiversity Action Plan habitats, which are maintained by rotational muirburn”

The Scottish Government has included provisions relating to changing the dates on which muirburn is allowed, but not licensing out of season burning. There is no proposal to require Ministers to consult or seek advice from appropriate bodies. At time of introduction it had not finished its analysis of its [consultation](#) which did not close until 17 November 2008 (Scottish Government 2008e). The analysis was [published](#) on 22 December 2008 (Scottish Government 2008f) and reported that the consultation received a total of 56 responses, most of which are available [online](#). The consultation asked three questions, and these and some views from the analysis of responses are given below.

Table Three – Responses to Scottish Government consultation on Muirburn

Muirburn Consultation Question	Analysis of responses
<p>Do you agree that in order to adapt to the possible effects of climate change on moorland, it is necessary for the Scottish Ministers to be given powers to vary the permitted dates for making muirburn in the future?</p>	<p>28 respondents supported these new powers (6 respondents qualified their answer). 24 respondents did not agree and many of these suggested there was a lack of evidence to suggest that such a power is needed, and were concerned that the overall length of the burning season could change.</p> <p>Broadly speaking landowners and managers were generally against, and other interests were for the powers. According to the analysis of responses “Practical compromises were offered by the Game & Wildlife Conservation Trust and the Mountaineering Council of Scotland. The GWCT offered to provide mitigation advice on risks to nesting birds if sufficient evidence became available that climate change was resulting in birds breeding earlier. The Mountaineering Council of Scotland suggested an amendment to the Muirburn Code to “state that spring burn areas should be searched for nests immediately before burning and the burn should not be carried out if nests are present”.</p> <p>The Macaulay Institute and others suggested dates could be varied for local situations using local expertise with dialogue with local stakeholders, although they suggested further consideration was required on how to implement this</p>
<p>Do you consider that there are any other amendments required to the muirburn provisions within the Hill Farming Act 1946 to adapt to climate change?</p>	<p>The vast majority of responses to this question (24 out of 25) did not address the climate change question posed, and instead offered opinion on changes to the Act which were outwith the scope of the consultation (though these are still listed in the consultation analysis). The Macaulay Institute suggested that there may be a future need to review the 450m altitude limit for muirburn if there is evidence of birds nesting at higher altitudes. However, they acknowledged there is currently insufficient evidence to support a review at this time</p>
<p>Do you consider that there are other climate change related impacts that affect how you carry out muirburn?</p>	<p>27 respondents answered this question</p> <ul style="list-style-type: none"> • Weather pattern changes – some respondents are experiencing direct difficulty burning on their land in spring due to wet weather. Fifteen respondents highlighted that future climate change effects would lead to warmer, wetter winters; which could increase wildfire risks and reduce muirburn opportunities, with associated soil erosion and watercourse impacts • Pest control – Heather beetles attack heather. Some respondents linked increased heather

	<p>beetle outbreaks directly to climate change as outbreaks increase in warm summers and warmer winters improve the survival of heather beetle larvae.</p> <ul style="list-style-type: none"> • Changes in vegetation – SNH highlighted that future climate change has the potential to alter vegetation response when burnt. This could encourage conversion from heather to grassland or other vegetation types. A milder climate could promote greater growth of moorland vegetation, which could lead to increased fuel loads of dwarf shrub vegetation. • Wildfire risk – some concern was raised that increased fuel costs may impact on land managers ability to use equipment that supports safe burning and that warmer, dryer summers could cause natural water supplies to dry out and this would impact on the ability to use fire control equipment
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It is understood that draft secondary legislation under this part of the Bill is not likely soon, and that more research would be required before this happens (Personal Communication Scottish Government 2008). As the Bill stands, any secondary legislation would be under a negative resolution - the order would be made under the 1946 Hill Farming Act rather than the Scottish Bill.

FORESTRY

A separate SPICe Briefing on the Forestry provisions in the Bill will be published in advance of consideration of the issue by the Rural Affairs and Environment Committee on 11 February 2008.

The Bill contains, in section 47, powers to allow Scottish Ministers (by Order) to modify the functions of the Forestry Commissioners in or as regards Scotland, and to allow the Forestry Commissioners to delegate their functions to other bodies.

A Scottish Government [consultation](#) (2008g) opened on 4 November, and closes on 27 January 2009. It is understood (at the time of writing) that a preliminary report may be made available by early February, but that a full report to Ministers won't be published before the end of February and responses are unlikely to be online before 1 March.

The Convenor to the Committee [wrote](#) to the Scottish Government in December outlining "dismay and frustration that the Scottish Government's consultation on its proposals for the Forestry Commission is ongoing and will not close until 27 January. It is extremely unfortunate that we are being asked to commence scrutiny on the proposals without any awareness of how consultees have responded to them, particularly in view of the interest they appear to have aroused from stakeholders" (Scottish Parliament Rural Affairs and Environment Committee 2008).

A [reply](#) was received on 22 December stating that the Scottish Government was "sorry that we were unable to complete our consultation on the forestry provisions before the Bill was introduced" (Scottish Government 2008h).

PROMOTION OF ENERGY EFFICIENCY

The encouragement of energy efficiency other than by prohibition or regulation is a devolved matter under Schedule 5 of the Scotland Act 1998. A Scottish energy efficiency strategy has been under development for a number of years as reflected in the written answer below:

S2W-30473 - Sarah Boyack (Edinburgh Central) (Lab) (Date Lodged Friday, December 08, 2006): To ask the Scottish Executive when it will publish its energy efficiency and micro-generation strategy.

Answered by Nicol Stephen (Friday, December 15, 2006): It is anticipated that the Energy Efficiency and Microgeneration Strategy will be published early in 2007.

The most recent developments have seen the (then) Scottish Executive (2007) launch a [consultation](#) with an [analysis published](#) in summer 2008 (Scottish Government 2008i), together with a [response](#) to the issues raised in the consultation (Scottish Government 2008j). A [Review of Energy Efficiency and Microgeneration Support in Scotland](#) (Scottish Government 2008dd) was also published in June 2008.

In December 2008 Audit Scotland (2008) published a report into [Improving Energy Efficiency](#). Key messages included:

- Funding has been made available by the Scottish Government and public bodies to improve energy efficiency. While energy consumption in buildings has fallen, spending on energy has increased in the three years to 2006/07
- There is a need for stronger leadership by the Scottish Government and within public bodies to improve energy efficiency and ensure that the necessary cultural and behavioural changes are made
- A robust strategy is central to the coordination of activities to improve energy efficiency, however, there are inconsistencies in the quality of strategies being implemented
- There is a lack of formal monitoring and reporting

Section 179 of the Housing (Scotland) Act 2006 already requires that a strategy for improving the energy efficiency of *living accommodation* is required. The 2006 Act says that: the strategy may:

- “(a) set out measures which the Scottish Ministers consider would improve the energy efficiency of living accommodation,
- (b) include an assessment of the extent to which the Scottish Ministers consider that carbon dioxide emissions into the atmosphere would be decreased as a result of taking those measures”

Section 48 of the Bill requires Scottish Ministers, within 12 months of the section coming into force, to “prepare and publish a plan for the promotion of energy efficiency in Scotland” and that “the plan must include provision about the promotion of the energy efficiency of living accommodation”. The Bill therefore proposes to repeal section 179 of the Housing (Scotland) Act 2006. Section 48 of the Bill is not as prescriptive as Section 179 of the 2006 Act with regard to what “may” be in such a strategy, but does give a definition of “energy efficiency”. The Policy Memorandum further states “the proposals in the Bill will strengthen the existing statutory duty in the 2006 Act in terms of reporting and publishing”.

Another important distinction is that the Bill provides for an energy efficiency “action plan” rather than “strategy” and that it is understood that this terminology is seen as relating to more practical action. The Explanatory Notes state:

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“The Scottish Government considered developing an Energy Efficiency Strategy for Scotland; however it was decided that an Action Plan would be a more appropriate way of articulating all the actions being taken to improve energy efficiency in Scotland. It would provide a consistent way of recording targets and monitoring performance against these, including: energy savings; financial savings; and where possible the carbon savings which were a result of these measures. This would then allow the Scottish Government to report on how this is contributing to the overall target of this Bill”

The Scottish Government acknowledges that the requirement to produce an energy efficiency action plan does not require legislation, but believes that this approach gives more weight to the issue. Whilst an action plan would be required within 12 months, and one is expected in late 2009 or early 2010, the Scottish Government hopes to publish an outline of what will be in the plan sooner than that. It is understood that much of the initial work has focused on living accommodation, but that the plan will have scope to be much wider than this sector alone, and will include elements which are reserved, in order to give a full picture (e.g. off gas network homes).

The proposals on the face of the Bill refer to “energy efficiency” rather than “energy efficiency and microgeneration”. It is understood that legal advice to the Scottish Government suggested that the inclusion of microgeneration would not be legally compliant as it would relate to the generation of electricity, which is reserved under Schedule 5 of the Scotland Act. However, the definition of “energy efficiency” in the Bill does include at Section 48 (8)(a) that ““energy efficiency” includes the use of technologies reliant on renewable sources of energy”.

In addition, the Scottish Government has recognised that whilst measures relating to renewable energy are reserved, a renewables framework is still being developed, focussing on larger scale renewables developments. The Scottish Government’s [Draft framework for the development and deployment of renewables in Scotland](#) states (Scottish Government 2008I):

“Scottish Ministers have a range of powers which they may use to promote the development of renewable energy (while taking into account other considerations such as protecting the environment). But aspects of energy development – and in particular market issues relating to electricity generation and transmission - are regulated under policies set by the UK Government”

And

“Promoting the development and deployment of renewable energy is a key aspect of meeting the Scottish Government’s purpose of promoting sustainable economic growth in Scotland”

Sarah Boyack MSP has been developing an Energy Efficiency and Micro-generation Bill since 2005. The Bill has a Steering Group and [website](#). In a [debate](#) in the Scottish Parliament on 13 November 2008 Ms Boyack stated (Scottish Parliament 2008):

My member's bill is drafted, but with the imminent introduction of the climate change bill and John Swinney's announcement that he is prepared to include measures on energy efficiency and microgeneration in that bill, I am keen to work constructively with him to ensure that the measures in my bill are included in the climate change bill. Those measures would greatly strengthen the climate change bill. If we are to have any hope of delivering the 3 per cent annual CO₂ reductions that we need, we must maximise the

potential contribution of energy efficiency, microgeneration and local community energy as we move towards becoming a low-carbon society.

I have met John Swinney, and although I recognise that he is keen on targets and monitoring, I do not think that there will be any progress to monitor without the other measures in my bill. I am happy to work with him constructively, but I put it on record that I believe that the cabinet secretary has not gone far enough to date. I hope that today's debate will encourage him to go further in the climate change bill.

A further resource of interest is the recent report of the Fuel Poverty Forum - [Towards 2016 - The Future of Fuel Poverty Policy in Scotland](#) (Scottish Government 2008ee).

ENERGY PERFORMANCE OF EXISTING NON-DOMESTIC BUILDINGS

Existing non-domestic buildings are heavy users of energy, and with a turnover of only around 1% per annum, can be expected to be part of the building stock for a considerable period of time. For that reason, amongst others, tackling energy efficiency and conservation in existing non-domestic buildings is crucial.

The [EU Directive 2002/91/EC on the energy performance of buildings](#) (EPBD) introduced a requirement for existing non-domestic buildings to have Energy Performance Certificates in certain circumstances. Article 15 (1) of the EU Directive required that "Member States shall bring into force the laws, regulations and administrative provisions necessary to comply with this Directive at the latest on 4 January 2006" but the Directive allowed a three year derogation for certain aspects, including Energy Performance Certificates, if certain justifications were provided.

On 6 January 2009 the Scotsman [reported](#) (2009) views that the United Kingdom, as Member State, may now in breach of the Directive as many public buildings have failed to display Energy Performance Certificates.

The Policy Memorandum to the Bill explains that the Scottish Government sees a number of deficiencies in aspects of the EU Directive and EPCs that it wishes to legislate to improve. These deficiencies include that:

- At the moment EPCs are produced using only what is called an "asset rating", which is a calculated rating based on standard weather data and building use
- EPCs provide important information on the energy performance of buildings; however, the EPBD does not require any action to be taken following the EPC to improve energy performance
- EPCs are only required at the points of sale or rental, and for large public buildings of over 1000m²
- The 10 year lifespan of EPCs is too long

The Scottish Government considers that legislation is necessary as the "potential scope to go beyond the regime already required by the EPBD [...] cannot be done using the powers contained within the European Communities Act 1972".

Development of the policy behind the proposals in the Bill has included the "[Sullivan Report](#)" to Scottish Government - A Low Carbon Building Standards Strategy for Scotland (Scottish Building Standards Agency 2007). This included 56 recommendations including that primary

legislation was sought to allow Scottish Ministers the opportunity to extend the provision and type of Energy Performance Certificates.

A Scottish Government consultation [Action on Climate Change: Proposals for Improving the Energy Performance of Existing Non-domestic Buildings](#) (Scottish Government 2008k) ran from 2 September 2008 to 24 November 2008. The 71 responses are still being analysed with this expected to be complete by the end of January, with the possibility of a draft report written by mid January. Responses to the consultation should be published online in mid January.

The Climate Change (Scotland) Bill contains a number of enabling provisions, which could be used for a number of policy intentions, briefly outlined below, and based on the Policy Memorandum, as the Bill itself gives little appropriate detail. The Scottish Government's concerns regarding the existing situation outlined in the four bullet points above are as follows:

- Extending the scope of EPCs to take account of operational rating as well as the current asset rating – this means factors such as how the building is used and managed are considered alongside the fabric and intended use of the building
- Owners of non-domestic buildings could be required to formulate action plans for building work arising from advice on the enhanced EPCs. Local authorities or other public bodies could be empowered to check enhanced EPCs and appropriate standards for works to be carried out could be developed
- Owners could be required to obtain an enhanced EPC (as described below) even though they are not selling or renting out a building
- Allowing for the lifespan of EPCs to be varied away from the ten year timescale mentioned above

It is understood that the Scottish Government may bring forward amendments at Stage Two which may give more detail on whether action for improving energy efficiency should be mandatory or not. A possible model may be the Disability Discrimination legislation which requires for reasonable adjustments to buildings to be made over a period of time.

A further issue to consider with regard to the EU Directive is that it focuses on carbon dioxide, and does not explicitly mention the other important greenhouse gases which the Bill targets would include.

RENEWABLE HEAT

Heat is not mentioned in the Scotland Act therefore is deemed to be devolved (Scottish Government 2009a). Section 51 of the Bill is very short but very significant as it requires Scottish Ministers to “take such steps as they consider appropriate to promote the use of heat produced from renewable sources”. The Bill provisions specifically require Scottish ministers to promote the installation of adaptation of plant to allow it to be fuelled by renewable sources.

This is important because heat is one of the main uses of energy in Scotland, and is, [according to](#) the Minister for Enterprise, Energy and Tourism, responsible for half of Scotland's emissions (Scottish Parliament Economy, Energy and Tourism Committee 2008). The Scottish Government's [Draft framework for the development and deployment of renewables in Scotland](#) (Scottish Government 2008l) further states that “the current breakdown of total energy use by sector in Scotland is 45% heat; 29% transport; and 26% electricity.

The consultation on the draft renewable energy framework, including a section on renewable heat, closed on 1 December 2008. Analysis has just commenced and the Scottish Government target is to publish it, along with responses, by end of January 2009.

Heat from renewable sources has not always been a policy priority and this is reflected in the fact that in 2002, renewables accounted for 12% of gross electricity consumption, rising to 16% in 2006 (and over 20% in 2007). In 2002 heat from renewable sources amounted to 1%, and was the same figure in 2006. The suggested target in the Government's renewables consultation for heat from renewable sources is 11% as a contribution reaching the Scottish Government target of 20% of all energy (not just electricity) coming from renewable sources (the 20% target would be reached if the 11% heat target was combined with 50% of electricity, and 10% of transport, being run on renewable energy sources).

The issue has been given much more policy prominence in the last few years, with some key steps on the way to the proposals in the Bill identified below:

- In 2005 the Sustainable Development Commission Scotland published report on wood fuel heating entitled "[Wood fuel for Warmth](#)"
- A Scottish Renewables Heating Pilot ran from April 2006 to June 2008 and involved 87 households who received a new renewables-based central heating system, mostly air-source or ground-source heat pumps, and a smaller amount of biomass boilers/stoves and solar thermal systems. In November 2008 an [Evaluation of the Scottish Renewables Heating Pilot](#) (focussing on heat pumps) was published (Scottish Government 2008ff), together with a [report](#) on the operational aspects of the pilot (Energy Saving Trust 2008)
- In February 2008 the Renewable Heat Group of the Forum for Renewable Energy Development in Scotland (FREDS) submitted a report on [Scotland's Renewable Heat Strategy: Recommendations to Scottish Ministers](#) (Scottish Government 2008gg)
- The Scottish Government (2008l) [Draft framework for the development and deployment of renewables in Scotland](#) contained a section on renewable heat which included a proposal for an Action Plan for Renewable Heat – this proposal, together with the 11% proposed target, appear to be well supported by consultation respondents (Scottish Government 2009c)
- On 13 November 2008 the Parliament [agreed](#) to a Legislative Consent Memorandum (LCM) resulting from the UK Energy Bill which put in place an agreement to ensure any new renewable Heat Incentive was workable across the jurisdictions of UK and Scottish Ministers
- At Longannet, Scottish Power is taking forward plans to build a biomass plant though the project does not envisage building in provision of heat to the plant.

Building on the LCM agreed by the Scottish Parliament, the Policy Memorandum states that "the Scottish Government considers that there is a clear role for an incentive mechanism to promote the use of renewable heat". Such a mechanism would need to be developed jointly by the UK and Scottish Governments to be workable, and the UK Government recently asked for views on proposals in its [Renewable Energy Strategy consultation](#) (Department for Business, Enterprise and Regulatory Reform 2008).

It is understood that amendments may be brought forward to require Scottish Ministers to write a Renewable Heat Action Plan, which would focus on devolved matters.

It may also be of interest to be aware that there is a hope shortly to have a joint DECC/Scottish Government consultation examining heat use more generally, including the potential for Combined Heat and Power and district heating.

WASTE

The waste provisions of the Bill are considered fully in a separate [SPICe Briefing](#). (Wright 2009).

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PART 6 AND SUSTAINABLE DEVELOPMENT

Part 6 of the Bill covers equal opportunities, application of the Bill to the Crown, and subordinate legislation, as well as definitions used in the Bill.

One area the Scottish Government has been developing is on the use, as legislation is developed, of tools to ensure the principles of sustainable development are ingrained in every piece of legislation. Generally this has led to the “sustainable development” sections of Policy Memoranda becoming more useful. In the case of this Bill, the substantive parts of the Bill which set targets, and set up advisory and reporting functions, and give powers for duties to be placed on public bodies, are considered as representing a “major step in making Scotland more sustainable”.

The Policy Memorandum does not explain what the differences in this assertion may be depending on which emissions track is taken by the country, though it does conclude that “it is intended that the framework introduced by the Bill will drive government policies over the coming decades which will in turn mainstream activities to reduce emissions”.

As referred to earlier, some Scottish Parliament legislation has placed duties on public bodies and Scottish Ministers to take account of sustainable development, though this Bill contains no such provisions.

ANNEX I – COMPARISON OF THE UK CLIMATE CHANGE ACT AND THE SCOTTISH CLIMATE CHANGE BILL

The following table compares provisions to be found in the UK Climate Change Act 2008 and the proposals contained in the Climate Change (Scotland) Bill. The table concentrates on the policy areas considered in parts 1-4 of the Bill. The Scottish Government maintains a webpage on its [relationship with the UK Climate Change Act](#).

POLICY AREA	UK CLIMATE CHANGE ACT 2008	CLIMATE CHANGE (SCOTLAND) ACT
2050 target	80% reduction on baseline (CO ₂ e) by 2050	80% reduction on baseline (CO ₂ e) by 2050
Interim target	26% emissions reduction on baseline (CO ₂ e) by 2020.	50% reduction on baseline (CO ₂ e) by 2030
Annual targets	No provisions, however the Secretary of State is required to set out “indicative annual ranges” for each year of a carbon budget period (see below)	Required to be set from 2010 – levels of annual targets are on the face of the Bill, and can be modified by order within certain constraints (e.g. can’t increase emissions)
Carbon budgets	Carbon budgets to be set for UK emissions in 5 year batches, beginning with 2008-2012. Advice is given on these by the UK Committee on Climate Change. Budgets can be altered, but only after extensive consultation with the UK Committee on Climate Change and the devolved administrations	Proposes that annual targets are set in batches which will have start and end dates which will mirror the UK carbon budgets
Use of international credits limits to meet targets	Duty placed on Secretary of State to set a limit on units which can be purchased in lieu of domestic action to meet carbon budgets – this is developed taking into account advice of the UK Climate Change Committee	No prescribed limit
Sectoral targets	No provisions, though there is a requirement to report on how carbon budgets will affect different sectors	No provisions
Banking and borrowing	Secretary of State has the power to “borrow” emissions from one budgetary period to the next, up to a limit of 1% of the next budget. Emissions surpluses can be “banked” for use in the next budgetary period. Advice must be sought on this practice from the UK Committee on Climate Change	No provisions, though if an annual target is missed, Scottish Ministers must publish information on how they intend making up those emissions reductions
Emissions from aviation and shipping	Not to be included in the UK target, but the Act includes provision for them to be so by secondary legislation. Secretary of State must still report to Parliament on these	Provides for secondary legislation to include international aviation and shipping in the Scottish targets – the Scottish

	emissions	Government is committed to this
Advice	To be provided by the UK Committee on Climate Change, which is established under the Act – duties include advising on a review of the 2050 target; on levels of carbon budgets; and on the use of international credits as against domestic effort to reach targets. Must also advise on emissions from international aviation and shipping. The Committee must also report to the UK parliament and the devolved administrations on progress towards targets	Initially to be provided by the UK Climate Change Committee, but the Bill has provision for the duties to be transferred to another body or for a Scottish Committee on Climate Change to be established. The UK Act allows for the Scottish Government to make use of the Committee, and to give it direction
Reporting	Duty on Secretary of State to annually report UK emissions, UK removals and net UK emissions to Parliament and to report on measures the Government will take to meet carbon budgets. It is presumed this would include an assessment against the indicative annual ranges. Final statement for budgetary periods, and for 2050. Statements under the UK Act must be sent to the devolved administrations	Annual reporting duty – if the annual emissions target is not met, the report should explain why; Report and statement on proposals and policies designed to meet future annual emissions targets; Report and statement on proposals and policies designed to compensate for exceeding annual emissions targets – this applies where the net Scottish emissions account exceeds an emissions target. Final statements for 2030 and 2050
Trading Schemes	Gives the Secretary of State and devolved administrations powers to set up trading schemes relating to greenhouse gas emissions – before such schemes are established the UK Committee on Climate Change must be consulted	No related provisions though Scottish Ministers have powers under the UK Act
Adaptation	Requires that an assessment of the risks to the UK from climate change must be made within three years, and at least every five years thereafter; and that a programme of adaptation measures must be published – the UK Committee on Climate Change must advise on the risks, and report to Parliament on progress being made on adaptation. The first UK report must be produced by around the start of 2012, with a further report in 2017.	Requires that when the UK assessment is laid before the UK Parliament, Scottish Ministers must “as soon as reasonably practicable” lay a programme addressing the risks in the report for Scotland, and more generally setting out the Scottish Ministers thinking in relation to adaptation to climate change.

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