

FOR A LOW CARBON ECONOMY



The United Kingdom (UK) Climate Policy:

Lessons for Canada¹

Key messages

- Although Canada and the United Kingdom (UK) each constitute only approximately 2% of global greenhouse gas (GHG) emissions,² there is a vast gap between the level of action and commitment in the UK when compared to Canada in terms of climate policy at the national level. The UK has an aggressive and comprehensive action plan to decarbonise its economy, whereas Canada's Federal government is pursuing a sector-by-sector regulatory approach, with fragmented action between the Federal government and the provinces.
- The UK is a global leader on climate change with very ambitious and legally-binding emissions reduction targets, supported by highly developed policies, legislation and institutions. Canada on the other hand, withdrew from the *Kyoto Protocol* (*Kyoto*) and its overall GHG emissions are 17% higher than in 1990, although they have fallen since 2005. Nevertheless, Canada's emissions do not appear to be on a fundamental downward trajectory and with existing policies, Canada is unlikely to meet its 2020 *Copenhagen Accord* target.³ On the other hand, the UK's GHG emissions have fallen by 23% since 1990, which means that it has already met its *Kyoto* target of 12.5% below the base year.^{4,5}

Sustainable Prosperity is a national research and policy network, based at the University of Ottawa. SP focuses on market-based approaches to build a stronger, greener, more competitive economy. It brings together business, policy and academic leaders to help innovative ideas inform policy development.

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2 Government of Canada, 2011. *Canada's Greenhouse Gas Target and Emissions Projections*, <http://climatechange.gc.ca/default.asp?lang=En&n=DC025A76-1>.

3 Environment Canada, 2012. *National Inventory Report 1990–2010: Executive Summary*, <http://www.ec.gc.ca/ges-ghg/default.asp?lang=En&n=8BAF9C6D-1>; Environment Canada, 2011. *Canada's Emissions Trends*, p. 8

4 Department of Energy and Climate Change, March 29, 2012. *2011 UK greenhouse gas emissions, provisional figures and 2010 UK greenhouse gas emissions, final figures by Fuel type and end-user*, <http://www.decc.gov.uk/assets/decc/11/stats/4856-2011-uk-greenhouse-gas-emissions-provisional-figur.pdf>.

5 The UK uses 1990 as the base year for carbon dioxide, methane and nitrous oxide, and 1995 as the base year for hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride.

- Canada and the UK have historical and constitutional ties, a common parliamentary system of government, political, ideological and intellectual heritage, and some shared cultural values, which provide an interesting basis for examining the two countries' divergent national approaches to addressing climate change.
- There are a number of lessons that Canada can draw from the UK, including the roles for a comprehensive long-term decarbonisation plan, an overarching legislative framework, legislated targets, a coordinating government department, and an independent advisory body that can provide independent advice on mitigation targets and pathways to achieving them.

The Issue

The UK's approach to climate change is not just about reducing emissions. It endeavours to redesign the UK's entire economy to be far less carbon-intensive than at present.⁶ In contrast, Canada has a comparatively weak level of commitment to international and national climate change action. In 2007, the Federal government committed to a market-based approach to climate change, which was not ultimately implemented. Its current approach is a command-and-control regulatory approach for a limited number of high-emitting sectors, which the government intends to rely on to meet its emissions target under the *Copenhagen Accord* (17% below 2005 levels by 2020). Though there is some significant action at the provincial and municipal levels, emissions trends in Canada vary by province (for example, between 1990–2010, British Columbia and Quebec's emissions were relatively stable, while Saskatchewan and Alberta's emissions grew by 69% and 41%, respectively) and subnational efforts at present are not sufficient to set overall Canadian greenhouse gas (GHG) emissions onto a downward trajectory.⁷ This *Brief* explores the reasons for these two countries' divergent climate change policy approaches, with a focus on national level action in Canada, and examines the lessons Canadian policy-makers can draw from their UK counterparts.

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The Knowledge Base

This section briefly outlines the context for Canada and the UK in terms of geography and climate, political structure, economic structure, GHG emissions profile, their respective energy and resource sectors, and the political economy of climate change policy in each country. It then examines UK political action on climate change over the past 25 years.

6 Fankhauser, Samuel, January 2012. *A practitioner's guide to a low-carbon economy: lessons from the UK*, http://www2.lse.ac.uk/GranthamInstitute/publications/Policy/docs/PP_low-carbon-economy-UK.pdf. Centre for Climate Change Economics and Policy Grantham Research Institute on Climate Change and the Environment.

7 Government of Canada, 2012. *National Inventory Report 1990-2010: Executive Summary Provincial and Territorial GHG Emissions*, <http://www.ec.gc.ca/ges-ghg/default.asp?lang=En&n=44FB5B23#es5>.

Geography and Climate

The UK is a small, densely-populated island with a temperate climate, which is a stark contrast to Canada's sprawling land mass, climate extremes, and low population density. The differences in climate, as well as other factors, result in vastly different energy needs and usage patterns, and consequently, carbon emissions, in each country.⁸ The UK faces increasing risks from floods, heat waves, coastal erosion and water scarcity arising from climate change.⁹ London could face significant (21–190cm, depending on the scenario) sea level rise.¹⁰ Although the UK has experienced some extensive flooding (e.g. 2007) and increased temperature variability, the population has not experienced a seminal climate event that would raise public consciousness about climate change. Climate change impacts are expected to be significant and costly for Canada, especially for its natural resource sectors, including forestry, tourism and agriculture.¹¹ Nevertheless, short and medium-term climate change impacts are likely more significant for UK than Canadian population zones.¹²

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Political Structure

Although both states are parliamentary democracies under a constitutional monarchy, the United Kingdom is a unitary state, with a strong central government, whereas Canada is one of the world's most decentralized federations. There is some increasing devolution to the constituent nations/countries of the UK (Scotland, Wales and Northern Ireland), except for England, which has no devolved executive or legislature and retains its historic unitary structure. Unlike provinces in Canada, the three devolved national administrations have no constitutional basis for their existence and the Westminster (London) Parliament remains sovereign. The UK is also a member state of the European Union (EU), which has significant powers over environmental matters (including climate change), formalized in the *Treaty of Lisbon*.¹³

In the UK, climate change is being managed at the state (UK) level through one lead agency: the Department of Energy and Climate Change (DECC), which was created in 2008, although other departments, such as the Department for Environment, Food and Rural Affairs (Defra) continue to play major roles. In Canada, responsibility for climate change at the Federal level has been split between Natural Resources Canada and Environment Canada

⁸ Neumayer, Eric, 2004. *National carbon dioxide emissions: geography matters*, http://eprints.lse.ac.uk/602/1/Article_for_Area_REVISED.pdf.

⁹ Department for Environment, Food and Rural Affairs (Defra), 2012. *The UK Climate Change Risk Assessment 2012 Evidence Report*, <http://www.defra.gov.uk/environment/climate/government/risk-assessment/#evidence>.

¹⁰ Ibid.

¹¹ National Round Table on the Environment and the Economy, 2010. *Degrees of Change: Climate Warming and the Stakes for Canada*, <http://nrtee-trnee.ca/wp-content/uploads/2011/08/degrees-of-change-report-eng.pdf>.

¹² Eric A. Posner and David Weisbach, 2010. *Climate Change Justice*, Princeton, Princeton University Press, p. 24, 28.

¹³ Treaty of Lisbon amending the Treaty on European Union and the Treaty establishing the European Community, signed at Lisbon, December 13, 2007. Official Journal of the European Union, C83, 30.03.10.

since 2005. Energy and climate change is a shared responsibility with provinces in Canada and strong external pressures for regulatory harmonization come from the high level of economic integration with the United States.

Economy

The UK economy has undergone a structural shift away from manufacturing towards services.¹⁴ The UK is home to the world's largest and most globalized financial center, with almost 20% of the global foreign equity traded in the City of London. London is also the carbon finance hub of the world with 95% of the European Union (EU) Emissions Trading System allowances also trading there.¹⁵

In contrast to Canada's export-oriented economy with strongly ties to the United States, the UK runs a trade deficit, with diversified export partners, including (in order of importance) the United States, Germany, France, Netherlands and Ireland.¹⁶ As a result of the structural shift in the economy, significant amounts of GHG emissions have been outsourced to developing countries which now produce the goods that the UK consumes.¹⁷

Although Canada has also made a significant shift towards a service-based economy, the driving force of the economy has shifted to natural resource extraction with very strong growth in the oil and gas sector, most of which is exported.

Greenhouse Gas (GHG) Emissions

In the UK, as in Canada, the energy and transportation sectors are responsible for a significant portion (35% and 21%, respectively) of the country's greenhouse gas (GHG) emissions, as shown in Figure 1. Canadian lifestyles are far more GHG-intensive than those in the UK. In 2008, Canadians emitted about 22 tonnes of greenhouse gases (GHGs) per capita, almost four times higher than per capita emissions in the UK (6.4 in 2009).^{18, 19}

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14 Department for Business Enterprise and Regulatory Reform, 2008. Globalisation and the changing UK economy, <http://www.bis.gov.uk/files/file44332.pdf>.

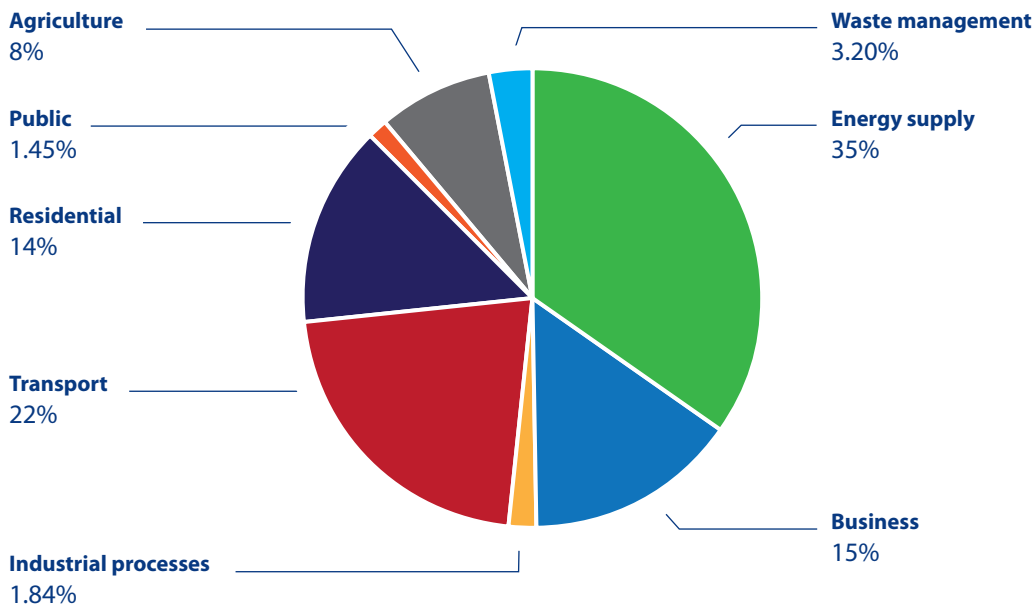
15 City of London, June 2011. Key Facts, http://www.cityoflondon.gov.uk/NR/rdonlyres/77C91659-E1A3-421A-85C5-0607C1E093CC/0/MC_keyfactsJune2011.pdf; World Bank, 2008. *State and Trends of the Carbon Markets 2008*. World Bank, p. 23.

16 HM Revenues and Customs, 2011. *Summary of Import & Export Trade with EU & Non-EU Countries – Annual 2003–2011*, https://www.uktradeinfo.com/pagecontent/datapages/tables/Webtables_2011.XLS.

17 DEFRA, 2012. *UK's Carbon Footprint 1990–2009*, <http://www.defra.gov.uk/statistics/2012/03/08/uks-carbon-footprint-carbon-dioxide-emissions-relating-to-uk-consumption-published/>.

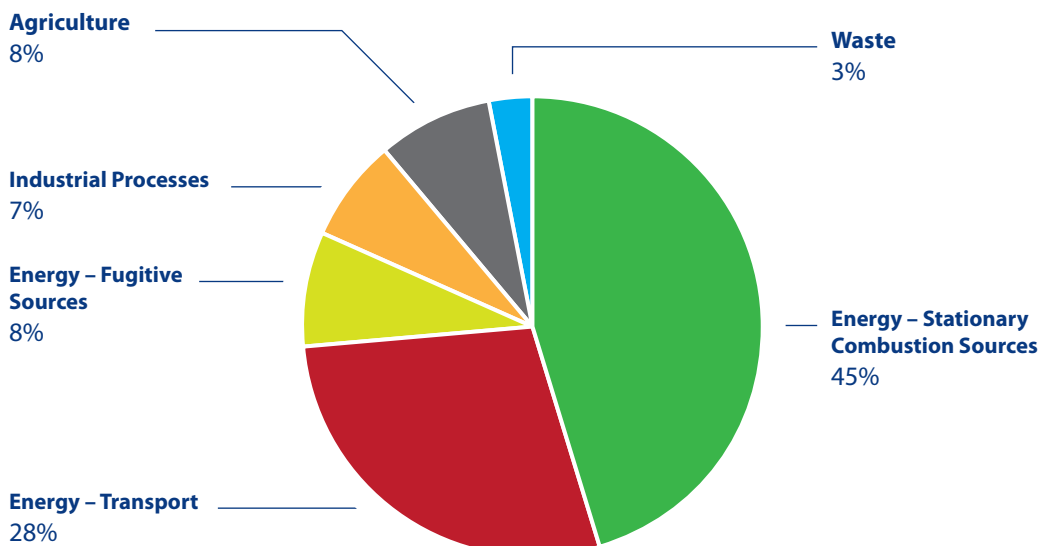
18 Conference Board of Canada, 2011. *Environment: GHG Emissions Per Capita*, <http://www.conferenceboard.ca/hcp/Details/Environment/greenhouse-gas-emissions.aspx>.

19 Department of Energy and Climate Change, 2011. *Carbon dioxide emissions within the scope of influence of local authorities*, http://www.decc.gov.uk/en/content/cms/statistics/local_auth/co2_las/co2_las.aspx.

Figure 1: UK's GHG Emission by Source (UNFCCC Coverage), Mt CO₂-e (2007)

Source: Department of Energy & Climate Change, 2011. *Overview: GHG Inventory summary Factsheet*, http://www.decc.gov.uk/assets/decc/Statistics/climate_change/1217-ghg-inventory-summary-factsheet-overview.pdf.

Figure 2: Canada's Emissions Breakdown, by Economic Sector (2010)



Source: Environment Canada, 2012. *National Inventory Report 1990–2010: Executive Summary: Overview of Source and Sink Category Emissions and Trends*, <http://www.ec.gc.ca/ges-ghg/default.asp?lang=En&n=AC8F85A5#es3>.

The majority of the UK's GHG emission reductions to date occurred between 1990 and 1999, largely as a result of the privatization of the electricity industry (in the early 1990s) and the 'dash for gas' phenomenon where 9.5GW of new gas-fired capacity replaced coal-fired generation as a result of North-Sea oil and gas exploitation.^{20, 21}

Resource/Energy Sector

The UK has significant, but declining, oil and gas reserves, though 60% of the country's energy needs are still met with domestic supply.²² The UK's electricity grid remains quite carbon-intensive, with coal still accounting for a large share of generation (23%).²³ Natural gas makes up the largest share (46.5%), followed by (after coal) nuclear (19%) and renewables (9%).²⁴ In addition to the challenge of decarbonising the energy sector, the UK is also facing a looming investment gap of up to £110 billion by 2020, as a quarter of its generation capacity nearing its end of life, which presents the opportunity to upgrade or replace this infrastructure.²⁵ There are also concerns about the security of energy supply, as the country's declining domestic supply of oil and gas requires higher imports.

Canada, on the other hand, generates 75% of its electricity from low-carbon sources, and is a leading producer of natural gas and unconventional oil.²⁶ Production in the growing oil sands industry is expected to double by 2020 to more than 1.8 million barrels a day.²⁷ The Canadian electricity sector will require almost \$300 billion in investment by 2030.²⁸

Political Economy

In the UK, there is a cross-party political consensus that climate change is a very pressing issue that requires action. In addition, many in the private sector are also supportive of GHG mitigation and adaptation measures. The leading business lobby in the UK, the Confederation of British Industry (CBI), currently supports an economy-wide price on

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20 Committee on Climate Change, *Emissions Trends*, <http://www.theccc.org.uk/sectors/power/emissions-trends>.

21 Bowen, Alex and Rydge, James, 2011. *Climate-Change Policy in the United Kingdom*. http://www.ccepa.ac.uk/Publications/Policy/docs/PP_climate-change-policy-uk.pdf. Grantham Research Institute on Climate Change and the Environment.

22 Department of Energy and Climate Change, 2012. *Oil and gas*, http://www.decc.gov.uk/en/content/cms/meeting_energy/oil_gas/oil_gas.aspx.

23 Department of Energy and Climate Change, December 22, 2011. *Energy trends: section 5 – electricity*, <http://www.decc.gov.uk/assets/decc/11/stats/publications/energy-trends/3945-energy-trends-section-4-electricity.pdf>.

24 Ibid.

25 Department of Energy and Climate Change, July 2011. *Planning our electric future: a White Paper for secure, affordable and low-carbon electricity*, <http://www.decc.gov.uk/assets/decc/11/policy-legislation/EMR/2210-emr-white-paper-full-version.pdf>.

26 Canadian Council of Chief Executives, 2011. *Clean Growth 2.0: How Canada can be a leader in Energy and Environmental Innovation: Policy Paper, Task Force on Energy, the Environment and Climate Change*, http://www.ceocouncil.ca/wp-content/uploads/archives/Clean_Growth_2_0_November_8_2010_with_cover_page.pdf. p. 19.

27 Environment Canada, 2011. *Canada's Emissions Trends*, p. 22.

28 Conference Board of Canada, 2011. *Canada's Electricity Infrastructure: Building a Case for Investment*, http://www.electricity.ca/media/Know%20Your%20Power%20Stuff/11-257_ElectricityInfrastructure%5B1%5D.pdf.

carbon and is framing climate change as an opportunity for UK companies.²⁹ As a member of the EU, the UK also faces pressure from supra-national EU institutions to meet the EU's ambitious climate change targets.

In Canada, there is a political consensus that climate change is an important issue, but no political party in government has yet taken the steps to make significant progress in reducing emissions, at least as measured by the metric of meeting the country's international commitments. A recent survey of corporate Canada suggests that there is broad support for a carbon price.³⁰

Civil Society

The UK private and environmental non-governmental organization (ENGO) sectors have demonstrated leadership on climate change, and in some cases have collaborated to drive policy. For example, the Carbon Disclosure Project, established in London, is a non-profit organization that aims to put corporate climate change and water information at the heart of business, investment and policy decisions. The Climate Group, headquartered in London, brings together a coalition of the world's most powerful governments, brands and public figures across Asia, Europe and North America to address climate change through initiatives such as the Voluntary Carbon Standard, and the Clean Revolution campaign. At the municipal level, the C40 Cities Climate Leadership Group (C40), a network of large and engaged cities from around the world committed to local climate action, was created by the Mayor of London. Over 75 financial services firms representing approximately €7.5 trillion in assets collaborate on climate change issues through the Institutional Investors Group on Climate Change (IIGCC), based in London. This civil society dynamism has created unusual coalitions of ENGOs and financiers that have helped drive public policy, as has been well documented in the institutionalization of European carbon markets.³¹

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Timeline: Government Action on Climate Change in the UK: 1979 to Present

The UK government has a sophisticated plan with supporting legislation and institutions for addressing climate change. The focus of this section will be on trends and key UK transition periods in becoming a global leader in GHG mitigation and adaptation.

29 Confederation of British Industry (CBI), 2012. *Business Issues: Energy and climate change*, <http://www.cbi.org.uk/business-issues/energy-and-climate-change/>.

30 Munroe, Kaija Belfry, 2010. *Business, Risk, and Carbon Pricing: Business Preference for Climate Change Instruments in Canada*. Sustainable Prosperity.

31 Patterson, Matthew, 2011 "Who and what are carbon markets for: politics and development of climate policy." *Climate Policy* Vol 11. p. 1–16.

Margaret Thatcher, the British Prime Minister from 1979–1990, made some large strides towards legitimizing climate change as a political issue, beginning in the late 1980's.³² In 1989, she made a major speech before the United Nations General Assembly in New York, outlining the climate change threat.³³ In the UK, she also made a major speech on climate change to the Royal Society in 1988, and is credited with raising the issue's prominence with the public and the media. She also founded the Hadley Centre at the UK Met office, which is the UK's centre for expertise in climate modelling, and considered to be a global leader in climate science.³⁴

Under John Major (1990–1997), the UK privatized its electricity industry, which incentivized the “dash for gas”, which allowed the UK to set a more ambitious emissions reduction target. During this period, the UK also played a central role in the *United Nations Framework Convention on Climate Change* negotiations. Tony Blair (1997–2007) played a decisive role in the world first legally binding emissions reduction treaty, *Kyoto*, in his first year of office. In 2005, he used the UK's presidency of the EU and the G8 to boost multilateral efforts on climate change, and was consequently perceived as a global leader. In order to reduce domestic GHG emissions, he introduced a series of policies, including a national emissions trading scheme and the Climate Change Levy (CCL).³⁵ Under Blair, the UK was also a critical player in the development and adoption of the EU ETS.³⁶ However, the aggregate effect of these policies is less than from that from gas substitution for coal in electricity generation, which was pursued for non-environmental reasons.³⁷ The Blair government also published an *Energy White Paper* report in 2003 which outlined how the UK planned to redefine itself as a low-carbon economy, and commissioned the *Stern Review on the Economics of Climate Change (Stern Review)*.³⁸

On June 27, 2007 Gordon Brown (2007–2010) replaced Tony Blair and implemented various climate change policies, including indexing the CCL to inflation.³⁹ In 2008, the *Climate Change Act* (first introduced in 2005) came into effect, instituting the world's first legally binding reduction targets of 80% of 1990 levels by 2050.⁴⁰ In April 2010, the Feed-in-Tariff (FiT) scheme was introduced, as a way to incent the deployment of small-scale renewables with a maximum capacity of 5 MW.⁴¹

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32 Rollinson, Simon, 2010. “Changing Dynamics of Environmental Politics in Britain: a case study of the UK Climate Change Act.” *POLIS Journal* Vol. 3, Winter 2010, <http://www.polis.leeds.ac.uk/assets/files/students/student-journal/ug-summer-10/simon-rollinson-summer-10.pdf>.

33 Margaret Thatcher Foundation. *Speech to United Nations General Assembly (Global Environment - Nov 8, 1989)*, <http://www.margaretthatcher.org/document/107817>.

34 Hulme, Mike and Turnpenny, John, 2004. “Understanding and managing climate change: the UK experience.” *The Geographical Journal*, Vol. 170, No. 2, June 2004, pp. 105–115.

35 Parliamentary Office of Science and Technology, January 2004. *Environmental Policy and Innovation*, <http://www.parliament.uk/documents/post/postpn212.pdf>.

36 Skaereth, Jon Biger and Wettstad, Jorgen, 2009. “The Origin, Evolution and Consequences of the EU Emissions Trading Scheme” *Global Environmental Politics* Vol. 9, No. 2, pp.101–122.

37 The Royal Commission on Environmental Pollution, June 16, 2000. *Energy – The Changing Climate*, (22nd report), <http://webarchive.nationalarchives.gov.uk/20090506011545/http://www.rcep.org.uk/newenergy.htm>.

38 Department for Transport and Department for Environment, Food and Rural Affairs, 2003. *Energy White Paper: Our energy future creating a low carbon economy*, <http://webarchive.nationalarchives.gov.uk/+/http://www.berr.gov.uk/files/file10719.pdf>.

39 National Audit Office, 2007. *The Climate Change Levy and Climate Change Agreements: A Review by the National Audit Office*, http://www.nao.org.uk/publications/0607/the_climate_change_levy.aspx.

40 The United Kingdom National Archives, 2008. *Climate Change Act 2008*, <http://www.legislation.gov.uk/ukpga/2008/27/contents>.

41 The Office of Gas and Electricity Markets (Ofgem), 2010. *Introducing the Feed-in Tariff Scheme*, http://www.ofgem.gov.uk/Media/FactSheets/Documents/1/fitfs_energy%20prices%20update%20FS.pdf.

The role of the opposition and of a key non-governmental organization in moving the UK forward on climate change policy should also be noted. The current Prime Minister, David Cameron, embraced the environment as his “signature” issue while in opposition, especially in his first years as party leader (2005–2007) to position the Conservatives as a “green” party.^{42, 43} Cameron was also a supporter of the Friends of the Earth’s “Big Ask” campaign, which mobilized thousands of citizens to pressure the UK government to pass the *Climate Change Act* (2008).⁴⁴

In the 2010 election, climate change was not a major issue, because all three party platforms had similar positions.⁴⁵ As shown in table 1, by 2010, voters were split on which party is the strongest on the environment.

Table 1: Which Party is Best on the Environment/Climate Change? (%) (2010)

	CONSERVATIVES	LABOR	LIBERAL DEMOCRATS	QUESTION TOPIC	POLLSTER
Sept 2004	7	7	16	Environment	Ipsos-Mori
Sept 2006	12	12	16	Environment	Ipsos-Mori
Nov 2006	14	10	6	Global warming	YouGov
Aug 2007	15	19	17	Environment	YouGov
Sept 2007	11	8	22	Environment	Ipsos-Mori
July 2008	21	22	26	Climate change	Populus
Aug 2008	19	16	19	Environment	Ipsos-Mori
Mar 2010	21	22	23	Environment	ICM

Source: Neil Carter, 2010. *Vote Blue, Go Blue: Have the Conservatives Forgotten about the Environment?*, http://www.psa.ac.uk/journals/pdf/5/2010/130_1187.pdf. Political Studies Association Conference.

David Cameron became Prime Minister in 2010 after he formed a coalition government with the Liberal Democrats. The recession and austerity has created tension within the government about climate change policy design and implementation, and Cameron has been accused of not meeting his pledge to be the “greenest government ever”.

Current Status of Climate Change Policy and Legislation

Table 2 summarizes the climate change policies the UK has adopted since 2000. After the table, the success of the policies is briefly examined.

42 Carter Neil, 2011. *Vote Blue, Go Blue: Have the Conservatives Forgotten about the Environment?*, http://www.psa.ac.uk/journals/pdf/5/2010/130_1187.pdf. The Political Studies Association.

43 Rollinson, Simon, 2010. “Changing Dynamics of Environmental Politics in Britain: a case study of the UK Climate Change Act.” *POLIS Journal* Vol.3, Winter 2010, <http://www.polis.leeds.ac.uk/assets/files/students/student-journal/ug-summer-10/simon-rollinson-summer-10.pdf>.

44 Friends of the Earth, n.d. *Friends of the Earth secures Climate Change Bill*, http://www.foe.co.uk/news/gov_climate_bill.html.

45 Jordan, Andrew and Rayner, Tim, September 2010. “Can the Climate Change Consensus Hold Up?” *Political Insight*, Vol.1, Issue 2.

Table 2: A Timeline of UK Climate Change Policies and Legislation (2000–2012)

	YEAR	POLICY	DETAILS
Early Action	2000	Climate Change Programme	This report set out policies and priorities for action both in the United Kingdom and internationally. Updated in 2006, the policies are supposed to reduce CO ₂ emissions by 15–18 % below 1990 levels by 2010 and overall GHG emissions by 23–25%.
	2001	The Climate Change Levy (CCL)	Introduced on April 1st, effectively replacing the Fossil Fuel Levy. It is a downstream tax on non-domestic energy use by industry and the public sector, designed to incentivise energy efficiency and emission reductions, with part of the revenue being used to reduce National Insurance contributions. Energy-intensive firms can receive up to an 80% discount if they join a Climate Change Agreement (CCA), which requires meeting energy efficiency or carbon-savings targets.
	2002	The Renewables Obligation (RO)	The RO requires electricity end-suppliers to purchase a certain fraction of their annual electricity supply from producers using specific renewable technologies, and they receive tradable Renewable Obligation Certificates (ROCs) for doing so. The supplier can also 'buy out' the obligation by paying a set price per MWh. The buy-out revenue is recycled to participating suppliers in proportion to their ROCs. The RO replaced and modified the Non-Fossil Fuel Obligation.
	2002	UK ETS (now part of the EU ETS)	Participation in the UK ETS scheme was voluntary and incentivised with three separate methods of participation – cap and trade, conversion of energy efficiency gains (for those with Negotiated Agreements), and specific emission reduction projects.
	2002	The Energy Efficiency Commitment (EEC)	Requires energy suppliers to achieve 62TWh of savings over the period to 2005 through assisting the implementation of home energy efficiency improvements, equivalent to a reduction in domestic emissions of approximately 1%. The second phase of EEC (2005–2008) raised the total savings required to 130TWh.
Core Architecture	2005	European Union Emissions Trading Scheme (EU ETS)	The UK Emissions Trading Scheme closed in 2006 and was replaced by the EU ETS that aims at ensuring compliance with the Kyoto obligations. Under the EU system, member states proposed National Allocation Plans (NAPs) to the European Commission, allocating a set proportion of a country's total 2008–2012 emission budget to sectors covered by the scheme; tradable quotas were then divided among firms.
	2008	Climate Change Act	This Act set a legally binding target of 80% reductions in emissions from 1990 to 2050. A medium-term target of a 34% reduction by 2020 was also adopted, with the promise of a further tightening in the event of a global deal on climate change. To achieve these targets, the Act established the principle of five-year carbon budgets. The first three budgets were set in 2009 and cover 2008–12, 2013–17 and 2018–22. The fourth budget, 2023–2027, was legislated in June 2011. Contributions from the use of carbon trading and offsets will be allowed. The Government must submit its policies to meet these budgets to Parliament, as it did in the Low-Carbon Transition Plan of July 2009, which set out policies to cut emissions across the power and heavy industry sector; the transport sector; in homes and communities, workplaces and jobs; in agriculture; and in land use and waste management. The Act also requires the government to include aviation and shipping emissions, or provide an explanation why not, by the end of 2012.
	2008	Planning Act	<p>This Act applies broadly in England and has some significant effects in Wales though is of limited or no application in Scotland or Northern Ireland. It was designed to establish a decision-making framework for nationally significant infrastructure projects by allowing Ministers to set national policy statements for infrastructure. In drawing up national policy statements, Ministers are duty bound to contribute to sustainable development and to carry out an appraisal of their policy's sustainability.</p> <p>An independent Infrastructure Planning Commission was established under this Act to conduct planning inquiries into infrastructure projects, to deal with some of the challenges of NIMBYism faced by low-carbon energy infrastructure developers in dealing with local council planning approval. The coalition government abolished the Infrastructure Planning Commission with the promulgation of the <i>Localism Act 2011</i> which transfers its functions to the Planning Inspectorate. A national infrastructure directorate will be formed within the Planning Inspectorate to examine applications for nationally significant infrastructure projects and make recommendations to the Secretary of State, who will be the decision-maker.</p>
Complementary/Sectoral policies	2007	The Code for Sustainable Homes	Establishes minimum performance standards for the design and construction of homes and covers energy, water, materials and waste. From 2008 all new homes must be rated against the Code and government-funded social housing (from 2010) must comply with its Level 3, which requires a 25% improvement in energy efficiency compared with 2006 regulations. Also relevant for new buildings are the Building Regulations Part L that set energy efficiency standards for all new homes in England and Wales. Although building regulations have existed in the UK since the 17th century, energy efficiency standards first appeared in building regulations in 1995.
	2008	Carbon Emissions Reduction Target (CERT)	This scheme replaced the Energy Efficiency Commitment, with a greater focus on more substantial and robust household energy saving measures such as insulation, and a component targeted at those most vulnerable to fuel poverty. The total lifetime savings required from energy suppliers over the duration of the scheme until 2012 is 293 million tonnes CO ₂ .
	2008	Renewable Transport Fuel Obligation (RFTO)	Administered by the Renewable Fuels Agency and requires suppliers of fossil fuels to ensure that a specified percentage of UK road fuel supply is from renewable fuels. The target for 2010–2011 is 5% of fuels by volume. Suppliers may buy out their obligation for 30 pence/litre. The obligation also requires companies to submit reports on the carbon content and sustainability of the biofuels used.

Complementary/Sectoral policies	YEAR	POLICY	DETAILS
	2008	Energy Performance Certificates (EPS)	Required whenever a building is built, sold or rented out. The certificate provides 'A' to 'G' ratings for the building, with 'A' being the most energy efficient and 'G' being the least. The current average score for the UK is around a D. From 2012 the EU Energy Performance of Buildings Directive will also require all home sale advertisements to have an Energy Efficiency Rating.
	2009	Community Energy Saving Programme (CESP)	Established to complement CERT, this scheme achieves aims of both carbon reduction and addressing fuel poverty by requiring energy suppliers to achieve 19.25 million tonnes CO ₂ lifetime savings in the most deprived areas of England, Scotland and Wales, promoting area-based and whole-house approaches to energy efficiency improvements.
	2010	Carbon Reduction Commitment Energy Efficiency Scheme (CRC EES)	Established under the <i>Climate Change Act</i> , the scheme covers emissions by firms and public bodies not already subject to the EU ETS or substantially covered by other agreements. It comprises reporting requirements and a carbon levy. The CRC EES is complemented by several other policies to promote energy efficiency in residential buildings. In the 2012 Budget the Chancellor signalled his intention to replace this policy with a simpler green tax system if the current scheme cannot be simplified within six months.
	2010	Feed-In Tariffs (FITs)	From April 2010, the government has offered FITs for small-scale low-carbon electricity generated by households, businesses and communities. Additional payment is provided for electricity fed into the grid. FIT rates vary according to technology, will last from 10 to 25 years, and are adjusted for inflation. A pilot scheme for micro combined heat and power plants has also been launched.
	2010	Carbon Capture and Storage (CCS) Demonstration Project	The government announced £1 billion of capital funding for the first full-scale CCS demonstration project in the UK. The government has also committed to a further three demonstration projects on gas- and coal-fired power stations.
	2011	Carbon Plan	The <i>Carbon Plan</i> is a government-wide carbon reduction plan, including domestic and international emissions. It sets out a vision, plan and timetable for achieving the United Kingdom's first four carbon budgets (to 2027), on a pathway consistent with meeting the 2050 target department by department. The <i>Carbon Plan</i> replaced the Labour government's <i>Low Carbon Transition Plan</i> (2009) which included a pilot-project of Departmental Carbon Budgets to help meet the carbon budgets required to be set by the <i>Climate Change Act</i> . These Departmental Carbon Budgets required reductions in departmental carbon footprints and reducing emissions for the sectors which these Departments oversee. This approach promotes a whole-of-government approach to climate change.
	2011	Renewables Roadmap	The Renewables Roadmap sets out a comprehensive action plan to accelerate the UK's deployment and use of renewable energy to put the country on the path to achieve its 2020 target set by the EU.
	2011	Energy Market Reform	A White Paper was published which sets out key measures to attract investment, reduce the impact on consumer bills, and create a secure mix of electricity sources including gas, new nuclear, renewables, and carbon capture and storage. These include: (1) a carbon floor price for the EU Emissions Trading Scheme; (2) long-term contracts for low carbon generation through a "contract for difference" feed-in tariff; (3) additional payments to encourage the construction of reserve plants or demand reduction measures; and (4) an emissions performance standard that will reinforce the existing requirement that no new coal-fired station is built without carbon capture and storage.
	2012	Green Investment Bank (GIB)	A GIB to unlock finance for the transition to low-carbon growth will commence operations during the latter half of 2012. The Spring 2011 Budget committed £3 billion in funding, with borrowing powers available from 2015–16 (conditional on government deficit reduction targets being met).
	2012	Renewable Heat Incentive (RHI)	Will provide long-term financial support across a wide range of renewable heat installations installed after 15 July 2009. It will initially provide long-term tariff support in non-domestic sectors. Limited support for households, capped at £15 million, will be available through Renewable Heat Premium Payments. In the second phase, which will commence in late 2012 to coincide with the introduction of the 'Green Deal', households will become eligible for long-term tariff support.
	2012	The Energy Act	The Act creates a new financing framework to enable the provision of fixed improvements to the energy efficiency of households and non-domestic properties, funded by a charge on energy bills that avoids the need for consumers to pay upfront costs. It lays the legal framework for the Green Deal (to be launched in Fall 2012), which aims to retrofit 14 million homes in the UK to make them more energy efficient.
	2012	National Planning Framework	The National Planning Policy Framework sets out the Government's planning policies for England and how these are expected to be applied. It promotes sustainable development and contains major elements requiring consideration of climate change mitigation and adaptation in local planning.

Source: Adapted from Bowen, Alex and Rydge, James, 2011. *Climate-Change Policy in the United Kingdom*, http://www.cccep.ac.uk/Publications/Policy/docs/PP_climate-change-policy-uk.pdf. Organisation for Economic Co-operation and Development Economic Working Paper No. 886.

The academic literature suggests that well-directed combined policies addressing multiple market failures can, if coupled with legislation and good institutions that reduce the political risks of major financial investments, deliver change.⁴⁶ The UK is addressing climate change with a suite of policies that address the multiple market-failures which make the transition to a low-carbon economy so challenging. For example, suboptimal levels of research and development are targeted by government support for Carbon Capture and Storage (CCS), imperfections in capital market allocations are being addressed through the creation of the Green Investment Bank, while network externalities are being supported through electricity market reforms and major investments in public transportation such as Crossrail and High Speed 2.⁴⁷

Supporting this suite of policies is a world class enabling legislative and institutional framework. The UK has one of the world's most aggressive legislated climate change targets, which is enshrined in law in the *Climate Change Act* (2008).⁴⁸ Its long-term target is to be achieved through the use of 5 year carbon budgets, which are set well in advance with the advice of the Climate Change Committee, a team of experts at arm's-length from the government.⁴⁹ These highly visible emissions targets, like inflation targets, serve to create a sense of accountability, credibility and commitment.⁵⁰ The legislative basis of UK carbon budgets provides consistency and allows the government to implement a plan with a timeline longer than typical political cycles.⁵¹ At the same time, a new government department, DECC, was created to ensure better policy integration and a stronger voice at the cabinet table.⁵²

The UK has also developed systems for reducing the carbon footprint of government and disciplining departments into considering the carbon implications of their policies to ensure the UK meets its legislated carbon budgets. The UK *Low Carbon Transition Plan* required departmental carbon budgets for every central government department. For departments that influence emissions beyond their public sector operations, their Carbon Reduction Delivery Plans were required to include a suite of indicators to monitor progress in relevant sectors of the economy.⁵³ The coalition government replaced this system with a new framework focused on ensuring that, collectively, the sum of the policies and enabling

The UK is addressing climate change with a suite of policies that address the multiple market-failures which make the transition to a low-carbon economy so challenging.

46 Stern, Nicholas, 2012. "Climate Change and the New Industrial Revolution: How we can respond and prosper" *Lionel Robbins Memorial Lectures*, London, London School of Economics; Aghion, Philippe, et al, 2009. No Green Growth Without Innovation, Bruegel Policy Brief No. 7; Fisher, Carolyn, 2008. "Emissions pricing, spillovers, and public investment in environmentally friendly technologies: Energy Economics 30, pp. 487–502; Fisher, Carolyn and Newell Richard, 2008. "Environmental and technology policies for climate mitigation" *Journal of Environmental Economics and Management* Vol 55, pp. 142–162.

47 Stern, Nicholas, 2012. "Climate Change and the New Industrial Revolution: How we can respond and prosper." *Lionel Robbins Memorial Lectures*, London, London School of Economics.

48 HM Government, December 2011. *The Carbon Plan: Delivering our low carbon future*, <http://www.decc.gov.uk/assets/decc/11/tackling-climate-change/carbon-plan/3702-the-carbon-plan-delivering-our-low-carbon-future.pdf>.

49 Ibid.

50 Bowen, Alex and Rydge, James, 2011. *Climate-Change Policy in the United Kingdom*, http://www.ccepc.ac.uk/Publications/Policy/docs/PP_climate-change-policy-uk.pdf. Grantham Research Institute on Climate Change and the Environment.

51 Fankhauser, Samuel, January 2012. *A practitioner's guide to a low-carbon economy: lessons from the UK*, http://www2.lse.ac.uk/GranthamInstitute/publications/Policy/docs/PP_low-carbon-economy-UK.pdf. Centre for Climate Change Economics and Policy, Grantham Research Institute on Climate Change and the Environment.

52 Institute for Government and London School of Economics, 2009. *Making or Breaking Whitehall Departments: A Guide to Machinery of Government Changes*, <http://eprints.lse.ac.uk/27949/>.

53 HM Government, 2009. *UK Low Carbon Transition Plan: National strategy for climate and energy*, p. 46.

actions to reduce emissions are sufficient to meet the legislated carbon budgets and that they are successfully implemented by holding departments to account for their actions and policy delivery.⁵⁴

The policies, institutions, governance mechanisms and infrastructure are aimed at creating an investment climate that promotes change. Nevertheless, the UK has faced challenges in deploying these multiple suite of policies to achieve the desired change.

Despite the existence and efforts of the DECC, where the government has perhaps been less successful is in implementation and in coordination of the suite of climate policies. An independent assessment of the UK government's progress towards its goals suggests that the implementation of some of the government's policies is not going smoothly. In particular, the assessment states that the Green Deal, which is the umbrella program for improving energy efficiency in buildings, has not been able to develop the necessary financial incentives due to poor policy design and lack of cross-departmental coordination.⁵⁵ It singles out the UK Treasury for making poor progress on some of the initiatives under its responsibility, including the limits placed on the borrowing ability of the Green Investment Bank.⁵⁶ A recent analysis found that while the policies will deliver lasting carbon reductions, there is indeed a mismatch where the targets set for the third and the fourth five-year carbon budgets are likely to be missed.⁵⁷ Questions have also been raised about whether the policies should be simplified and streamlined, because the business community is faced with compliance challenges inherent to multiple overlapping policies.⁵⁸

Nevertheless, early evidence shows that the UK's climate change policies have not made its industries less competitive. A recent study showed that the CCL did not result in job losses or facility relocation abroad in the manufacturing sector, but did result in significant decreases in energy use.⁵⁹ It also showed that the CCL was more effective than the Climate Change Agreements in achieving its stated outcomes (e.g. decreases in energy use).⁶⁰

Early evidence shows that the UK's climate change policies have not made its industries less competitive.

54 UK Parliament, 2011. *Carbon Budgets: Written Evidence submitted by the Department for Energy and Climate Change (Session 2010–12)*, <http://www.publications.parliament.uk/pa/cm201012/cmselect/cmenवाद/writev/carbon/cb13.htm>.

55 Christian Aid, Greenpeace, Green Alliance, RSPB and WWF, 2011. *Climate Check: An analysis of the government's delivery of its low carbon commitments*, <http://www.christianaid.org.uk/images/climate-check-sep11.pdf>.

56 Ibid.

57 Cambridge Econometrics, May 10, 2011. *The decline in UK's carbon emissions is set to accelerate after 2020 as power generation makes good progress towards de-carbonisation*, <http://www.camecon.com/UK/UKEnergy/PressRelease-UKEnergy.aspx>.

58 Bowen, Alex and Rydge, James, 2011. *Climate-Change Policy in the United Kingdom*. http://www.ccepc.ac.uk/Publications/Policy/docs/PP_climate-change-policy-uk.pdf. Grantham Research Institute on Climate Change and the Environment.

59 Martin, Ralf, de Preux, Laure B. and Wagner, Ulrich J., September 2011. *The Impacts of the Climate Change Levy on Manufacturing: Evidence from Microdata*. National Bureau of Economic Research (NBER) Working Paper No. 17446.

60 Ibid.

Drivers Enabling the Transition to a Low-Carbon Economy

This section examines the political, social and economic drivers that have facilitated the UK's transition to a low-carbon economy. Where relevant, these drivers are compared to the Canadian experience.

Political Drivers

While the UK and Canada have similar political and party systems, there are significant political drivers in the UK that help explain the differences in climate policy. The political drivers in the UK can be categorized as follows: bi-partisan leadership, the state, external pressures and recent reforms.

Bi-Partisan Leadership

The UK has demonstrated leadership on climate change for many decades. As mentioned in the timeline section above, Margaret Thatcher helped bring the issue to the world's attention as Prime Minister and established the Met Office Hadley Centre. Subsequent Prime Ministers also played important roles. Under Tony Blair, the *Stern Review* was published and a national emissions trading scheme was established which served as a model for the EU Emissions Trading Scheme (ETS). Gordon Brown legislated the *Climate Change Act* and developed long term plans for meeting mitigation targets. David Cameron modernized the Conservative Party and its ideological basis to embrace major aspects of the green agenda.⁶¹ His coalition government has built on the progress of predecessors with robust policies for electricity market reform, and has strengthened the incentive structures for decarbonising the economy. A political consensus can now be said to exist among the three major parties recognizing that climate change is real and the UK must be a global leader in setting and meeting ambitious mitigation targets.

The State

The UK's centralized political structure facilitates climate change and energy policy coordination. This contrasts with the policy fragmentation resulting from Canada's decentralized federal system. In the UK, Westminster is responsible for the *Kyoto* targets and the associated programs; however, many of the climate change policies are devolved, albeit asymmetrically, to the Welsh, Scottish and Northern Irish assemblies.⁶² For example,

The UK's centralized political structure facilitates climate change and energy policy coordination. This contrasts with the policy fragmentation resulting from Canada's decentralized federal system.

61 Bale, Tim, 2011. *The Conservative Party: From Thatcher to Cameron*, Toronto: John Wiley and Sons; Institute for Government, 2010. *Climate Change Bill policy reunion*, http://www.instituteforgovernment.org.uk/pdfs/IfG_policymaking_casestudy_climate_change.pdf, p. 2.

62 House of Commons Environmental Audit Committee, 2008. *Climate Change and local, regional and devolved government*, <http://www.publications.parliament.uk/pa/cm200708/cmselect/cmenvaud/225/225.pdf>, p. 6.

Scotland has adopted more ambitious targets than the UK as a whole.⁶³ Owing to the population asymmetry between UK jurisdictions, even with more significant devolution, climate change and energy policy will likely remain the purview of the central government in London. This unitary structure for climate change policy has enabled the development of a strong central government and department (DECC and predecessors), with the responsibility and capacity to implement climate change and energy policies across the UK. The equivalent would not be possible in Canada without the agreement and institutional support of provincial governments. Canada's decentralized federalism, where energy and natural resources are primarily provincial jurisdiction, has impeded the development of an integrated national energy and climate strategy.⁶⁴ The strong institutional legacy of a unitary UK and long history of energy policy experimentation ranging from nationalization to privatization facilitates centralized integration of climate change and energy policy in the UK.⁶⁵

External Pressures

External supranational pressure from the EU has driven significant UK climate change policy reform ambition. Although the UK and other large member States (France, Germany) catalyzed a robust EU role on climate change, the recent ambition of the EU Climate Change and Energy Package, which set a highly constrained legal policy framework, has focused the minds of policy-makers in the UK.⁶⁶ The EU's 20-20-20 program, launched in January 2008, seeks to achieve the following goals by 2020: (1) 20% GHG reductions according to 1990 levels (this is the EU's *Copenhagen* target); (2) source 20% of its energy from renewables; and (3) achieve a 20% improvement in energy efficiency.⁶⁷ The EU, which is on track to meet its 2020 GHG target, may also commit to a 30% GHG reduction by 2020 and has proposed an 80% GHG reduction target by 2050 compared to 1990 levels.⁶⁸ The UK's renewable energy target for this program is very ambitious: at 15%, it will require significant investment to meet this target given that its current level of renewable electricity use is 9%.⁶⁹ To meet the UK's 2050 GHG targets, the Committee on Climate Change has recommended that the power sector be close to zero-carbon by 2030.⁷⁰

In addition to specific EU climate policy, the convergence of the following three factors has accelerated UK climate policy: (1) the life-cycle of many existing nuclear facilities (only

The strong institutional legacy of a unitary UK and long history of energy policy experimentation ranging from nationalization to privatization facilitates centralized integration of climate change and energy policy in the UK.

63 *Climate Change (Scotland) Act 2009*, <http://www.klimabeveagelsen.dk/doc/demo3dec2011/ccascottish.pdf>.

64 Laskin, John B., 2010, "Climate Change and the Canadian Constitution" in Dennis Mahony (ed), *The Law of Climate Change in Canada*, Aurora, Ontario.

65 Helm, Dieter, 2008, *Credible energy policy: Meeting the challenges of security of supply and climate change*, London: Policy Exchange, p. 7; The Economist, August 6 2009, *Dark days ahead*, <http://www.economist.com/node/14177328>; Helm, Dieter, 2009, "EU Climate-change Policy—A Critique" in Dieter Helm and Cameron Hepburn (eds), *The Economics and Politics of Climate Change*, Oxford, OUP p. 241; see generally: Helm, Dieter, 2004, *Energy, the State, and the Market: British Energy Policy since 1979*, Oxford, OUP; Institute for Government and London School of Economics, 2009, *Making or Breaking Whitehall Departments: A Guide to Machinery of Government Changes*, <http://eprints.lse.ac.uk/27949/>, p.70.

66 Schreurs, Miranda A. and Tiberghien, Yves, 2007, "Multi-Level Reinforcement: Explaining European Union Leadership in Climate Change Mitigation" Vol. 7, Issue 4 *Global Environmental Politics* p. 21.

67 European Commission, 2010, The EU climate and energy package, http://ec.europa.eu/clima/policies/package/index_en.htm.

68 Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, *A Roadmap for moving to a competitive low carbon economy in 2050*, Brussels, COM(2011) 112/4 Provisional Text.

69 Department of Energy and Climate Change, December 22, 2011, *Energy trends: section 5 – electricity*, <http://www.decc.gov.uk/assets/decc/11/stats/publications/energy-trends/3945-energy-trends-section-4-electricity.pdf>.

70 Department of Energy and Climate Change, December 2009, *UK Electricity Market Reform: Consultation Document*, London: HM Government p. 4.

one will be operational in 2023); (2) the EU *Large Combustion Plant Directive*,⁷¹ which will force the coal and oil power stations to close because of strict limits on oxides of sulphur and nitrogen; and (3) depleting North Sea oil and gas reserves.⁷² These external pressures operate in a national context where energy supply is the largest source of GHG emissions (see Figure 1 above).⁷³

The imperative of UK energy security of supply has coincided with ambition on climate change and driven the integration of both policies. The *Energy White Paper* predicts a 30–35GW supply gap in the next 15–20 years; other commentators suggest the supply gap may be closer to 110GW to balance the system in the presence of intermittent wind generation.⁷⁴ Ofgem, the UK energy regulator, predicts that a £200 billion investment will be required over the next 10 years for the UK to meet its commitments, and DECC has indicated that a doubling of current investment is required.⁷⁵ The government announced a significant reform of its electricity market and plans on introducing supporting legislation to meet the ambitious EU renewable and GHG mitigation targets.⁷⁶

In Canada, external pressure is largely a function of various commitments in international fora (mostly UNFCCC, but also G8/G20), and the desire to harmonize Canadian climate policy with the US to avoid perceived competitiveness concerns.

Recent Reforms

Three major recent legislative and institutional reforms have further driven climate change policy in the UK: (1) promulgation of the *Climate Change Act*; (2) establishing the Committee on Climate Change; and (3) establishing the Department of Energy and Climate Change. These reforms have made it significantly harder to reverse ambitious climate change policy targets and further driven roadmaps that outline a long term trajectory for emissions mitigation in the UK such as the *Low Carbon Transition Plan* and the *Carbon Plan*.⁷⁷

Under the *Climate Change Act*, the Secretary of State is obligated to ensure that the UK meets its carbon budgets, and must report to parliament how any shortfalls will be managed.⁷⁸ Although the duty-based approach is, according to one commentator, more

The imperative of UK energy security of supply has coincided with ambition on climate change and driven the integration of both policies.

71 Directive 2001/80/EC of the European Parliament and of the Council of 23 October 2001, on the limitation of emissions of certain pollutants into the air from large combustion plants. [2001] OJ L309/1.

72 Helm, Dieter, 2008. *Credible energy policy: Meeting the challenges of security of supply and climate change*, London: Policy Exchange, p. 7; Helm, Dieter, 2009. "EU Climate-change Policy—A Critique" in Dieter Helm and Cameron Hepburn (eds), *The Economics and Politics of Climate Change*, Oxford, OUP, p. 241.

73 Department of Energy and Climate Change, 2010. *Overview: GHG Inventory Factsheet*, London, HM Government, p. 1.

74 Helm, Dieter, 2008. *Credible energy policy: Meeting the challenges of security of supply and climate change*, London: Policy Exchange, p. 7; HM Government, 2007. *Meeting the Energy Challenge: A White Paper on Energy*, London, HM Government, p. 7.

75 OFGEM, 2009. *Project Discovery: Energy Market Scenarios Ref 122/09*, London, OFGEM. See also: Department of Energy and Climate Change, 2011. *Planning our electric future: a White Paper for a secure, affordable, low-carbon electricity*, London, HM Government.

76 Department of Energy and Climate Change, December 2009. *UK Electricity Market Reform: Consultation Document*, London, HM Government p. 4–8.

77 HM Government, 2009. *UK Low Carbon Transition Plan: National strategy for climate and energy*, London, HM Government; HM Government, 2011. *The Carbon Plan: Delivering our Low Carbon Future*, London, HM Government.

78 *Climate Change Act* s 4(1) and s 19; Townsend, Harriet, 2009. "The Climate Change Act 2008—Will it do the Trick?" *Environmental Law Review* Vol. 11 p. 116–122.

suggestive of ‘best endeavours’ than a legally enforceable regime, this legislation does promote policy credibility and commitment.⁷⁹

Advisory, consultative and review bodies play an important role in depoliticizing the debate over climate change in the UK. They also provide an informational role for building consensus among the population. The UK Committee on Climate Change is a good example. It is an influential advisory body that provides independent objective advice on how to meet the UK’s GHG targets and recommends carbon budgets which the government then legislates. The *Climate Change Act* empowers the Committee on Climate Change with a crucial role in recommending national carbon targets, departmental and sectoral carbon budgets and in monitoring compliance. However, the Committee on Climate Change does not have executive powers or duties to ensure implementation and delivery. Instead, its power is limited to introducing a formal level of independent expertise in decision-making and wide-ranging powers of statutory scrutiny and reporting that have made it very influential. Indeed, its recommendation for an ambitious 2027 target was legislated despite opposition from powerful interest groups and government departments.⁸⁰

DECC, created in October 2008, merged the energy divisions from the Department of Business, Enterprise and Regulatory Reform with the Office of Climate Change, which was located in the Department of Environment, Food and Rural Affairs. DECC is responsible for all aspects of UK energy policy, and for tackling global climate change on behalf of the UK.⁸¹ The department was created to address the UK’s increasing energy security of supply concerns and the escalating significance of climate change in light of the critical phase of international agreements. It was also intended that by merging the two functions, the economic analysis expertise held with the energy divisions could strengthen the work on the climate change side and ensure that the new department ‘cut[s] ice’ with the Treasury.⁸² Since its creation, powerful Ministers have been assigned to DECC.

In Canada, beyond the constitutional division of power challenges outlined above, departmental divisions between Environment Canada and Natural Resources Canada (NRCan) further frustrate policy coherence on climate change. This dynamic may partly explain why a coherent integrated federal energy and climate change strategy has not emerged. NRCan views its role as promoting oil sands development – a resource expected to generate \$123 billion (CAD) in total revenues for various levels of governments in Canada during the next 20 years; 41% of this will

Under the *Climate Change Act*, the Secretary of State is obligated to ensure that the net UK meets its carbon budgets, and must report to parliament how any shortfalls will be managed.

79 Stallworthy, Mark, 2009. “Legislating Against Climate Change: A UK Perspective on a Sisyphean Challenge” *The Modern Law Review*, Vol. 72 Issue 3 p. 424.; Fankhauser, Samuel, January 2012. *A practitioner’s guide to a low-carbon economy: lessons from the UK*, http://www2.lse.ac.uk/GranthamInstitute/publications/Policy/docs/PP_low-carbon-economy-UK.pdf. Centre for Climate Change Economics and Policy Grantham Research Institute on Climate Change and the Environment.

80 Harvey, Fiona and Stratton, Allegra, May 17, 2011. *Chris Huhne pledges to halve UK carbon emissions by 2025: the UK announced the most ambitious targets on greenhouse gases of any developed country, after a week of cabinet rifts*, <http://www.guardian.co.uk/environment/2011/may/17/uk-halve-carbon-emissions>.

81 Department of Energy and Climate Change, 2010. *Business Plan: 2011–2015*, <http://www.decc.gov.uk/assets/decc/about%20us/decc-business-plan-2011-2015.pdf>.

82 Institute for Government and London School of Economics, 2009. *Making or Breaking Whitehall Departments: A Guide to Machinery of Government Changes*, <http://eprints.lse.ac.uk/27949/> p. 71.

go to the federal government – while EC views itself as promoting climate change mitigation.⁸³ The DECC was created precisely to ensure the UK government undertakes coordinated action on climate change that is integrated, rather than competing, with energy policy.

Social Drivers

While the UK and Canada share a common historical, cultural and social heritage there are significant differences that may provide insight into the divergent strength of their national climate change policies. These differences can be explained in part by the small island geography and high population density of the UK as well as the depth of research, networks and awareness driven by the *Stern Review*. A retrospective examination of the factors that were important in getting the *Climate Change Act* (2008) passed identified the Friends of the Earth campaign and the *Stern Review*, among others, as the most important factors.⁸⁴ The desire of the UK to be a leader on climate policy, both within the EU and internationally, was also significant.⁸⁵

Geography

Britons live on a ‘crowded island’ in densely populated cities and rely heavily on public inter-city and intra-city transportation. The UK population is also projected to grow from 62.3 million to 73.2 million by 2035, which presents significant transportation and housing pressures, particularly in London.⁸⁶ Britons tend to live in older, poorly insulated housing that is expensive to retrofit and which is a significant source of emissions, compared to Canadian housing stock which is newer and has a shorter life-cycle.⁸⁷

The emissions profiles of Canada and the UK demonstrate national geographical differences. For example, residential emissions are relatively larger in the UK than in Canada. Canada faces significant decarbonisation challenges because its electricity generation system is already 75% low-carbon, as a result of its hydro-electric endowments. This contrasts with the UK, where decarbonising the electricity system is less costly and disruptive than reducing transportation emissions in Canada. This is because reducing these emissions requires redesigning metropolitan areas, transportation systems and increasing fuel costs to change densification and transportation patterns. The scale of behavioural, societal change required to transition towards a low-carbon society and is therefore likely to be lower in the UK than in Canada.⁸⁸

Britons tend to live in older, poorly insulated housing that is expensive to retrofit and which is a significant source of emissions, compared to Canadian housing stock which is newer and has a shorter life-cycle.

83 Canadian Council of Chief Executives, 2011. *Clean Growth 2.0: How Canada can be a leader in Energy and Environmental Innovation: Policy Paper, Task Force on Energy, the Environment and Climate Change*, http://www.cceocouncil.ca/wp-content/uploads/archives/Clean_Growth_2_0_November_8_2010_with_cover_page.pdf, p. 19; Rowlands, Ian H., 2008. "Integrating Climate Policy and Energy Policy" in Steven Bernstein, Jutta Brunée, David G. Duff and Andrew J. Green (eds), *A Globally Integrated Climate Policy for Canada*, Toronto, University of Toronto Press, p. 303.

84 Institute for Government, 2010. *Climate Change Bill policy reunion*, http://www.instituteforgovernment.org.uk/pdfs/IFG_policymaking_casestudy_climate_change.pdf.

85 Ibid.

86 Office of National Statistics, 2011. *2010-based national population projections - principal projection and key variants*, London, ONS.

87 Parliamentary Office of Science and Technology, 2006. *Household Energy Efficiency*, London, UK Parliament.

88 Macaluso, Nick, 2009. "A Canadian Perspective on the Use of CGE Analysis for Assessing Comparable Effort: Workshop on Mitigation Potential/Comparable Efforts" Environment Canada presentation in Bonn Germany March 23–24, 2009.

Other significant social differences between Canada and the UK may also be explained by geography. In the UK, a strong green movement has evolved largely in response to local environmental challenges that span decades, from the movement to reduce pollution from large scale and domestic coal-fired generation in post-war London to the successful pressure to stop a third run-way and expansion of Heathrow airport.⁸⁹ The critical step to reduce GHGs in the UK will be decarbonising the electricity system which (especially coal) has significant local environmental impacts and is conveniently in the national self-interest due to depleting hydrocarbon reserves. For Canada, the critical step (in addition to decarbonising transportation) will be reducing or offsetting oil sands emissions growth, which is an increasingly significant source of Canada's GHG emissions, as well as government revenue.⁹⁰ The significant local environmental impacts of resource development (such as the oil sands) in Canada often occur thousands of kilometres from major population centres, unlike in the UK.

The Stern Review

The *Stern Review* provided a national expert statement that crystallized the national elites' opinion around the ability and desirability of UK continuing to provide global leadership on climate change.⁹¹ Although, the *Stern Review's* primary focus was an economic analysis of climate change on the global economy (unlike the *Garnaut Review* in Australia, which focused on Australia only), it was commissioned by the UK Treasury and certain sections of the review did address challenges and opportunities for the UK economy. The *Stern Review* was critical to making the UK Treasury agree to long term action, and it precipitated many of the political drivers and policy initiatives discussed above.⁹² It was a turning point, not only in the UK, but especially internationally in terms of capturing the attention of political and corporate leaders.⁹³

The UK has a highly globalized economy and its economic success is dependent on future global stability. This is particularly the case for the financial sector which is the world's largest and most globalized.⁹⁴ London is also considered the world's insurance and re-insurance centre, an industry particularly exposed to climate change.⁹⁵ The *Stern Review* provided a catalyst for understanding indirect global risks to the UK economy. It also

The scale of behavioural, societal change required to transition towards a low-carbon society, is therefore likely to be lower in the UK than in Canada.

89 Dryzek, John, Downs, Daid, Hernes, Hans-Cristian and Schlosberg, David, 2003. *Green States and Social Movements: Environmentalism in the United States, United Kingdom, Germany and Norway*, New York, Oxford University Press; Garman, Joss, May 17, 2010. The crucial role of activism in scrapping Heathrow's third runway, <http://www.guardian.co.uk/environment/cif-green/2010/may/17/heathrow-third-runway-activism?INTCMP=SRCH>.

90 Mahony, Dennis, 2010. "Federal Climate Change Law and Policy" in Dennis Mahony (ed), *The Law of Climate Change in Canada* Aurora, Ontario: Canada Law Book p. 3-4; Environment Canada, 2011. "Canada's Emissions Trends" Ottawa, Environment Canada p. 22.

91 Evans, Alex and Steven, David, 2007. *Climate Change: the state of the debate*, New York, Center on International Cooperation p. 12; Mills, Evan, 2009. "A Global Review of the Insurance Sector's Responses to Climate Change" *The Geneva Papers* Vol. 34. P. 323-359.

92 Institute for Government, 2010. *Climate Change Bill policy reunion*, http://www.instituteforgovernment.org.uk/pdfs/IfG_policymaking_casestudy_climate_change.pdf, p. 2.

93 See speech by Zedillo, Ernesto, February 2007. "Yale Symposium on the Stern Review" New Haven, Yale University; Evans, Alex and Steven, David, 2007. *Climate Change: the state of the debate*, New York, Center on International Cooperation p. 12.

94 The Economist, January 7 2012. Save the City: Britain is the home of the world's capital or capital but no longer prizes it: That is a mistake, <http://www.economist.com/node/21542417>.

95 Lloyds Market Association, 2006. *360 Risk Project: Climate Change Adapt or Bust*, London, Lloyds Market Association.

considered direct impacts and the need for a country-wide risk assessment for adaptation which was enshrined in the *Climate Change Act*.⁹⁶ A number of tools have been deployed for businesses and communities to understand the impacts of climate change. These are delivered by the Environment Agency and the UK Climate Impacts Program.⁹⁷ The catalytic effect of the *Stern Review* in deploying tools and policies that enhance informational awareness and create clusters of climate change expertise (on impacts and opportunities) in governments, firms and universities may in part explain why a 2011 report found that Europeans fear climate change more than financial turmoil.⁹⁸

In Canada, there has been no equivalent economic analysis of climate change mandated by government on the scale of either the *Garnaut Review* or the *Stern Review*. Recently, the Canadian National Round Table on the Environment and Economy has produced strong reports on the economic impacts and opportunities of climate change as well as a recent report on the costs of adapting to climate change; however the funding for this institution was removed in the 2012 Federal Budget.⁹⁹ Despite the fact that climate change impacts will be significant for Canada, these reports have not captured the imagination of the Canadian public on a scale needed to prompt social and political change.

Economic Drivers

Economic drivers may be the most powerful forces explaining the divergence in UK and Canadian climate policy. These drivers can be categorized as follows: oil and gas industry; financial interest-group power; and green growth/rebalancing the economy.

Oil and Gas Industry

The UK has a declining oil and gas industry while Canada is currently experiencing an oil and gas boom. A profound shift in the UK economy occurred in the 1980s with economic and political reforms that catalyzed an existing trend away from manufacturing and heavy industry to a service-based economy driven primarily by financial services in the South-East of England. During this period, the UK also developed its North-Sea oil and gas industry, which provided a new source of energy and income to power its electricity system, and resulted in the closing of many coal-fired power plants. This shift to gas is the primary reason the UK has met its *Kyoto* targets.¹⁰⁰ However, the UK has recently become a net oil and gas importer, and there are major concerns about its

In Canada, there has been no equivalent economic analysis of climate change mandated by government on the scale of either the *Garnaut Review* or the *Stern Review*.

96 Department of Environment Food and Rural Affairs, 2009. *List of Reporting Authorities and Deadlines for Reports*, London, HM Government.

97 See generally: UK Climate Change Impacts Program: available on the internet at <http://www.ukcip.org.uk/>

98 European Commission, October 2011. *Eurobarometer 372*, Brussels, EU Commission.

99 See: National Round Table on the Economy and the Environment. *Climate Prosperity*, <http://nrtee-trnee.ca/climate/climate-prosperity>.

100 Department of Energy and Climate Change, 2010. *Greenhouse Gas Emissions: Performance Against Emissions Reduction Targets-2009 Provisional Figures*. London, HM Government p. 1–2; Helm, Dieter, 2004. *Energy, the State, and the Market: British Energy Policy since 1979*, Oxford, OUP p. 345, 400.

energy security. During this same period, technological innovations and high oil prices have made Canada's oil sands economically viable. Environment Canada predicts that oil sands operations could account for 44% of the increase in Canada's GHG emissions from 2006 to 2020, making it the largest single contributor to Canada's medium-term emissions growth.¹⁰¹

Financial Interest-Group Power

The economic interests at stake for employees, companies and governments in the development of Canada's oil sands is in stark contrast with the UK financial sector's interest in maintaining its first-mover advantage and lead as the center for the global carbon market and low-carbon financial services.¹⁰² There is now a powerful political constituency in favour of maintaining and strengthening carbon market instruments such as the EU ETS. This divergence with Canada may result from the fact that Canada is increasing oil and gas extraction; whereas the UK's oil and gas sector is declining in importance, despite London being a headquarter for major oil companies. Moreover, large oil companies headquartered in the UK such as BP and Shell have generally been supporters of climate change policy.¹⁰³ The EU ETS has been effective in turning opponents into allies by allocating free permits, which resulted in windfall profits for many participants, and more recently by ring fencing auctioning proceeds for renewable energy projects.¹⁰⁴

Green Growth and Rebalancing the Economy

In 2007–08, the global market value of low-carbon goods and services (LCEGS) was £3,046 billion; the UK had the sixth largest low-carbon and environmental economy, with 3.5% of the global share, worth £107 billion.¹⁰⁵ Because of the recent financial crisis' economic impact and the desire to rebalance the economy away from financial services and revitalize the UK's manufacturing sector, there is a strong argument being made that the "green economy" and "green growth" can be part of the remedy for the UK's current economic challenges.¹⁰⁶ In fact, the momentum supporting the UK's "nuclear renaissance" and high-speed rail development is as much about jobs and economic growth as it is about meeting climate change targets.¹⁰⁷ The former Secretary for DECC, Chris Huhne,

The UK has a declining oil and gas industry while Canada is currently experiencing an oil and gas boom.

¹⁰¹ Environment Canada, 2008. *Turning the Corner: Detailed Emissions and Economic Modelling*. Gatineau, Environment Canada p. 42 and Annex 4; see also Environment Canada, 2011. *Canada's Emissions Trends*, p. 22.

¹⁰² Innovas Solutions Ltd, 2011. *The London Low Carbon Market Snapshot: Executive Summary*. London, Innovas Ltd.

¹⁰³ Sæverud, Ingvild A. and Skjærseth, Jon B. 2007. "Oil Companies and Climate Change: Inconsistencies between Strategy Formulation and Implementation?" *Global Environmental Politics*, 7(3): 42–62.

¹⁰⁴ Drew, Andrés, 2011. "The Good, The Bad and the Ugly of the EU ETS" *Stockholm Network Expert Series*, London, Stockholm Network and Drew, Andrés, July 29 2010. "Wanted: More Flawed Climate Legislation" *The European Voice* p. 9.

¹⁰⁵ DEFRA, 2012. *Market value of low carbon and environmental goods and services*, <http://www.defra.gov.uk/statistics/environment/green-economy/scptb16-lcegs/>.

¹⁰⁶ Communication from the Commission to the European Parliament, The Council, the European Economic and Social Committee and the Committee of the Regions, *A Roadmap for moving to a competitive low carbon economy in 2050*: COM(2011) 112 final (Brussels); see also generally: Romani, Mattia, Stern, Nicholas and Zenghelis, Dimitri, 2011. *The basic economics of low-carbon growth in the UK*, http://www2.lse.ac.uk/GranthamInstitute/publications/Policy/docs/PB_economics-low-carbon-growth_Jun11.pdf. Grantham Research Institute for Climate Change and the Environment.

¹⁰⁷ Murray, James, 2011. *UK's nuclear renaissance edges towards reality as policy statements gain approval*, <http://www.businessgreen.com/bg/news/2095092/uks-nuclear-renaissance-edges-reality-policy-statements-gain-approval>; EDF Energy, 2011. *EDF Announces 200 million of supply chain contracts*, http://www.edfenergy.com/media-centre/press-news/EDF_Energy_announces_around_200m_of_supply_chain_contracts_for_UK_new_nuclear_with_billions_more_to_follow.shtml; University of Manchester, December 13 2011. *The Northern Way – how the North Can become the world's nuclear base*, <http://www.manchester.ac.uk/aboutus/news/display/?id=7775>; Volera, ARUP, July 2011. *Report to the Core Cities Group: Understanding the Transport Infrastructure Requirements to Deliver Growth to in England's Core Cities*, London, ARUP/Volera.

outlined the coalition government's vision and policy toolkit for encouraging the low carbon goods and services sector in a major speech to the Corporate Leaders Group in July 2011. He stated that:

"We need a vibrant, new economy. One that is resource-efficient. That saves money. That boosts productivity. Where British innovation and research can deliver new success in engineering and manufacturing. With dynamic low-carbon markets driving the products and processes that will build the future [...] Delinking carbon and growth is the biggest structural shift in the global economy for decades. The most important since the information revolution. And we are doing it. In Britain, we have grown by 48% since 1990. But our carbon emissions have fallen by 28%. We are already showing the way. The future will be about green growth."¹⁰⁸

The Canadian narrative is remarkably different. In recent years, the driving force of the Canadian economy, particularly exports, has shifted from manufacturing to natural resource extraction, and oil and gas in particular. The demand for natural resources has contributed to an increase in GHG emissions and the value of the Canadian dollar, which poses increasing challenges to the competitiveness of Canada's manufacturing sector in the absence of productivity and innovation gains.¹⁰⁹

Because of the recent financial crisis' economic impact and the desire to rebalance the economy away from financial services and revitalize the UK's manufacturing sector, there is a strong argument being made that the "green economy" and "green growth" can be part of the remedy for the UK's current economic challenges.

108 Huhne, Chris, 2011. *The Economics of Climate Change: Speech to the Corporate Leaders' Group*, http://www.decc.gov.uk/en/content/cms/news/ec_cc_ch/ec_cc_ch.aspx.

109 Canada 2020, 2011. *The Canada We Want in 2020: Towards a Strategic Policy Roadmap for the Federal Government*, Ottawa, Canada 2020, and Institute for Competitiveness and Prosperity, 2011. *Tenth Annual Report, Prospects for Ontario's prosperity: A look back and a look ahead*, Toronto, Institute for Competitiveness and Prosperity.

Implications for Policy-Makers: Lessons for Canada

The UK did many things right with regards to the implementation of its climate change mitigation and adaptation policies, which can provide lessons for Canada's climate policy. At the same time, Canada can also learn from the UK's mistakes, including the lack of a common carbon price across the whole economy and its lack of attention to low-carbon research and development. It is important to note that many of the suggestions below can be a catalyst for the necessary social and economic actors to deploy their efforts to decarbonise the Canadian economy, not just for government action. The following elements should be closely examined by Canadian decision-makers:

1. **Long-term low-carbon transition plan:** The UK has created a long-term comprehensive plan for decarbonising its economy.
2. **Suite of policies:** A price on carbon is efficient and effective, but needs to be supported by other policies to overcome the multiple market failures that are barriers to decarbonising the economy, as has been done in the UK.¹¹⁰
3. **Short-term targets:** The five year carbon budgets provide a focal point for short-term efforts towards the longer-term target, and make the achievement of the long-term target more likely. Departmental Carbon Budgets can also provide significant discipline and incentives for departments to manage their departmental and sectoral carbon, which enables a whole-of-government approach to climate change.
4. **Legal framework:** The *Climate Change Act* legislates targets and provides accountability, credibility and commitment to act over the long-term and reduce policy risk for private actors.¹¹¹
5. **Coordinating body/department:** The DECC is the leading agency on climate change and is the central coordinating body for all policies and initiatives, which helps move the agenda forward with consistency and creates a strong voice at cabinet.
6. **Independent advisory body:** The Committee on Climate Change plays a crucial role in setting national carbon targets and sectoral carbon budgets, and in recommending decarbonisation pathways and assessing progress. This body is also an influential source of information of the impacts of climate change and national adaptation strategies.

110 Fankhauser, Samuel, January 2012. *A practitioner's guide to a low-carbon economy: lessons from the UK*, http://www2.lse.ac.uk/GranthamInstitute/publications/Policy/docs/PP_low-carbon-economy-UK.pdf. Centre for Climate Change Economics and Policy Grantham Research Institute on Climate Change and the Environment.

111 Ibid.

7. **Green Investment Bank:** The GIB addresses the imperfections in risk and capital markets because it reduces policy risk as a public long-term investment bank. It leads to the development of banking and sectoral skills sets in new areas, has special convening powers and strong networks, and has a capital structure that allows it to take a long-term view.
8. **Economic review of climate change:** The *Stern Review* served to legitimize climate change as an economic risk within the corporate and financial communities, because it highlighted the economic costs and benefits.