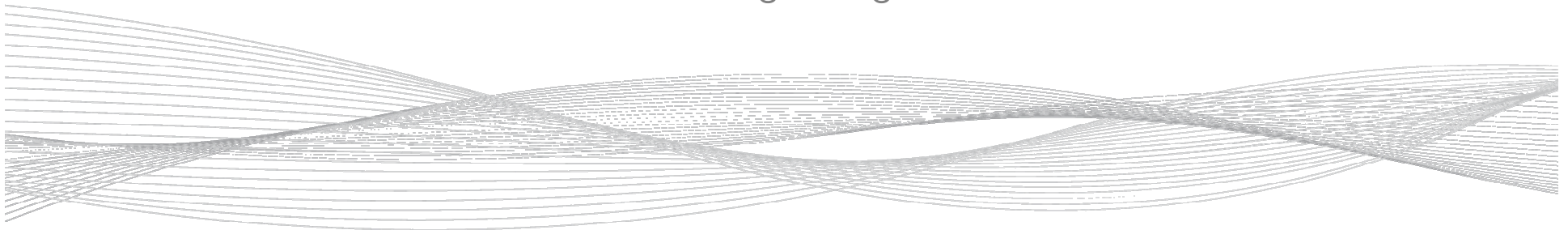


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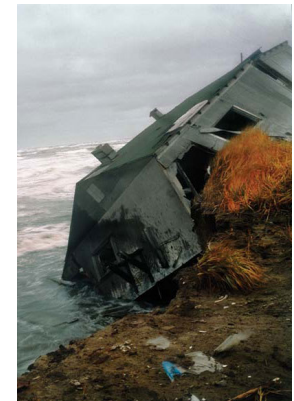
Policy and Legislation Review

Energy & Climate Change

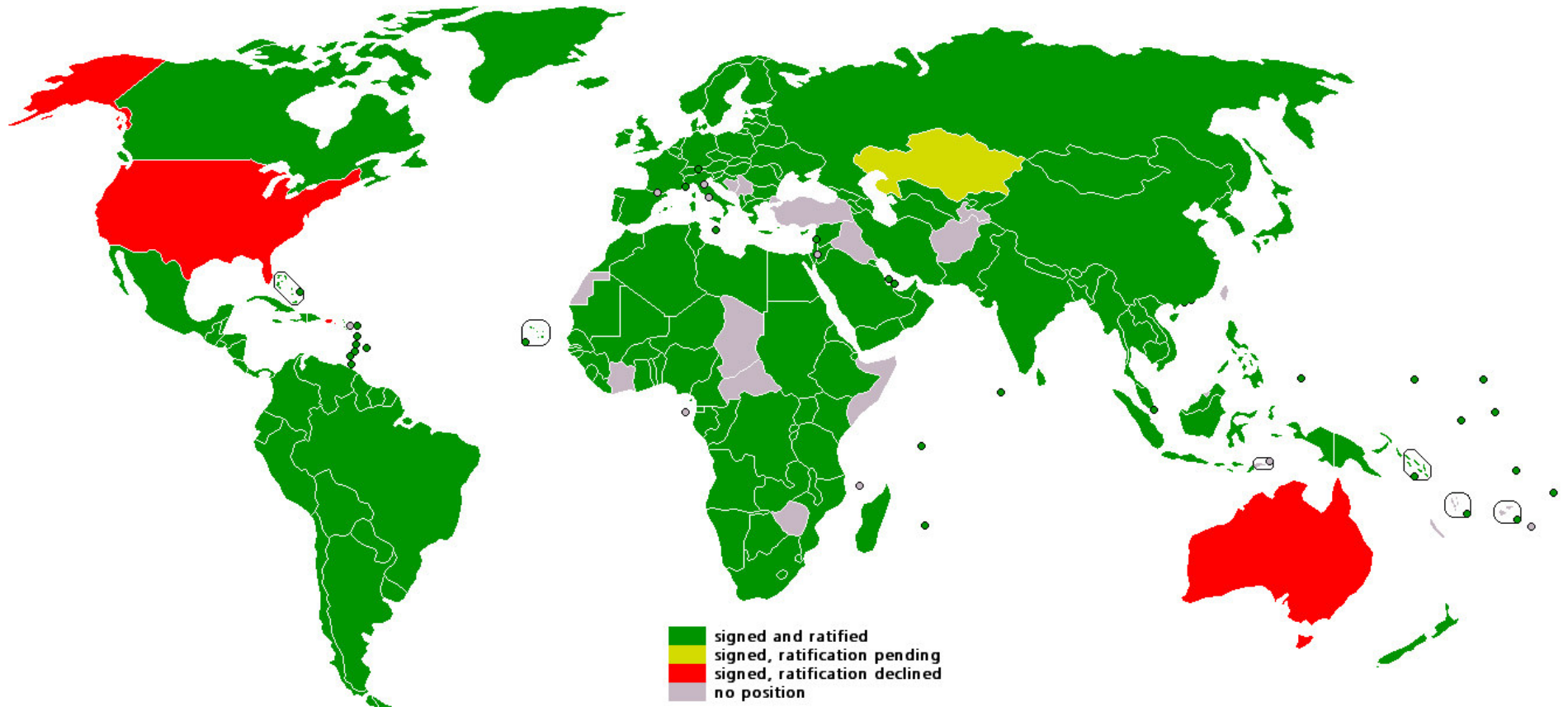
9 April 2009

Background

- Releases of greenhouse gases (GHGs) pose problems through global warming that affects meteorological patterns, climate, flooding and agriculture.
- Concern over global warming resulted in the Kyoto Protocol of 1992 which has been signed by 183 nations. The Protocol commits industrialised countries to reduce their collective GHG emissions by 5.2% compared to the year 1990 over the period 2008-2012 and the EU to cut emissions by an average of 8%.



Kyoto protocol signatories:



Royal Commission on Environmental Pollution,

22nd Report, June 2000

“Energy – The Changing Climate”

- Highlighted the need for global agreement,
- Reviewed use of:
 - carbon sequestration,
 - reducing energy use,
 - carbon taxes,
 - non-carbon energy sources:
 - nuclear power,
 - renewable energy sources and
 - non-fossil fuels,
 - CHP and
 - changing the grid,
- Recommended a 60% reduction in emissions of CO₂ from fossil fuels by 2050 to prevent climate change running out of control



ROYAL COMMISSION ON ENVIRONMENTAL POLLUTION

CHAIRMAN: SIR TOM BLUNDELL FRS

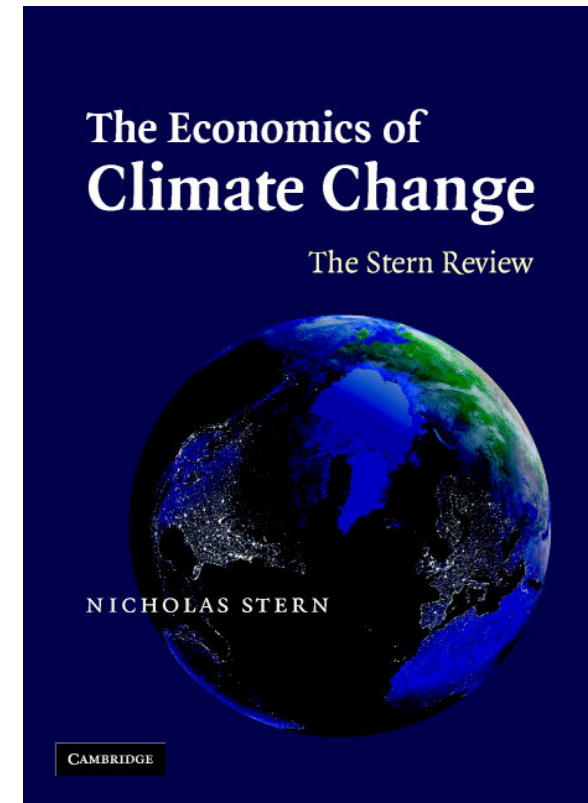
Twenty-second Report

ENERGY – THE CHANGING CLIMATE

*Presented to Parliament by Command of Her Majesty
June 2000*

Stern Review, 2006

- Reviewed evidence of global warming and climate change
- Recommended developed countries taking responsibility for emissions reductions of 60-80% from 1990 levels by 2050 to achieve stability of atmospheric CO₂ at between 450-550ppm, approximately twice that of pre industrialised concentrations
- Summary conclusions:
 - There is still time to avoid the worst impacts of climate change, if we take strong action now;
 - Climate change could have very serious impacts on growth and development;
 - The costs of stabilising the climate are significant but manageable; delay would be dangerous and much more costly;
 - Action on climate change is required across all countries, and it need not cap the aspirations for growth of rich or poor countries;
 - A range of options exists to cut emissions; strong, deliberate policy action is required to motivate their take-up; and
 - Climate change demands an international response, based on a shared understanding of long-term goals and agreement on frameworks for action.



EU Energy Policy

- 1951 ECSC Treaty (establishing the European Coal and Steel Community)
- 1957 Euratom Treaty (establishing the European Atomic Energy Community)
- EU Action Programmes for the Environment 1973-2010 include climate change
- 2006 Green Paper on a European Strategy for Sustainable, Competitive and Secure Energy
- Energy Policy for Europe COM(2007)1



COMMISSION OF THE EUROPEAN COMMUNITIES

Brussels, 10.1.2007
COM(2007) 1 final

**COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN COUNCIL
AND THE EUROPEAN PARLIAMENT**

AN ENERGY POLICY FOR EUROPE

{SEC(2007) 12}

EU Energy Policy COM(2007)1

- Establish the Internal Energy Market to ensure consumers have the opportunity to choose a supplier at a fair and competitive price
- Ensure a Secure Energy Supply to minimise vulnerability concerning imports, shortfalls in supply, possible energy crises and uncertainty with respect to future supply
- 20 20 by 2020:
 - energy accounts for 80% of all greenhouse gas emissions in the EU
 - reduce GHG emissions by 20% by 2020 compared with 1990 levels and by 30% if international consensus is agreed
 - Reducing energy consumption by 20% by 2020
 - increasing the proportion of renewable energies the energy mix by 20% by 2020
- Develop existing and new energy-efficient and renewable energy technologies including carbon capture & storage
- Consider the Future of Nuclear Energy with a common and coherent approach with respect to security, safety and non-proliferation as well as concerning the dismantling of installations and the management of waste
- Implement a Common International Energy Policy to strengthen the European Energy Charter and participate actively in the post-Kyoto climate change scheme

European Strategy for Sustainable, Competitive and Secure Energy COM(2006) 105

Green Paper identified six priority areas:

1. To complete the internal gas and electricity markets
2. To ensure security of supply and solidarity between Member States in the internal energy market
3. A Community-wide debate on the different energy sources
4. To deal with the challenges of climate change in a manner compatible with the Lisbon objectives:
 - Prioritisation of energy efficiency, with a goal of saving 20% by 2020
 - Efficiency campaigns, including buildings.
 - A Europe-wide emission trading system.
 - Better information on the energy performance of some appliances, vehicles, and industrial equipment with minimum performance standards.
 - A long-term road-map for renewable energy sources
 - A new Community Directive on heating and cooling.
 - A detailed plan to stabilise and reduce the EU's dependence on imported oil.
 - Initiatives to bring clean and renewable energy sources closer to markets.
5. A strategic energy technology plan
6. A common external energy policy

Renewable Energy Road Map COM(2006) 848

Sets out the long-term strategy for renewable energy to:

- Increase security of energy supply and
- Reducing greenhouse gas emissions.

Policies:

- Better integration of renewable energy sources into the power grid
- Measures to support, encourage and promote renewable energy sources, including an incentive/support system for biofuels and the use of public procurement

Targets:

- Renewable energy target of 12% of gross domestic energy consumption by 2010 and 20% by 2020
- Biofuel target of 5.75% of total fuel consumption by 2010 and 10% by 2020

Heating and cooling sector:

- Accounts for 50% of final energy consumption; 40% in commercial & residential buildings
- Renewable energy was <10% of the energy used for heating or cooling in 2005
- More exploitation of renewable energy sources is required



COMMISSION OF THE EUROPEAN COMMUNITIES

Brussels, 10.1.2007
COM(2006) 848 final

**COMMUNICATION FROM THE COMMISSION TO THE COUNCIL AND THE
EUROPEAN PARLIAMENT**

**Renewable Energy Road Map
Renewable energies in the 21st century: building a more sustainable future**

{SEC(2006) 1719}
{SEC(2006) 1720}
{SEC(2007) 12}

Directive 2002/91/EC on the Energy Performance of Buildings

Objective:

- to promote the improvement of the energy performance of buildings within the Community, taking into account outdoor climatic and local conditions, as well as indoor climate requirements and cost-effectiveness.

Requirements:

- a common methodology for calculating the integrated energy performance of buildings;
- minimum standards on the energy performance of new buildings and existing buildings that are subject to major renovation;
- systems for the energy certification of new and existing buildings and, for public buildings, prominent display of this certification and other relevant information. Certificates must be less than five years old;
- regular inspection of boilers and central air-conditioning systems in buildings and in addition an assessment of heating installations in which the boilers are more than 15 years old.

Recast of the Energy Performance of Buildings Directive COM(2008) 780



COMMISSION OF THE EUROPEAN COMMUNITIES

- Clarifies certain provisions
- Requires Member States to set up minimum energy performance requirements when a major renovation is to be carried out
- Reinforces provisions on energy performance certificates, inspections of heating and air-conditioning systems, energy performance requirements, information, and independent experts;
- Provides a benchmarking calculation instrument, which allows comparison of the nationally determined minimum energy performance requirements ambition with cost-optimal levels
Stimulates frameworks for higher market uptake of low or zero energy and carbon buildings
- Encourages a more active involvement of the public sector to provide a leading example

Brussels, 13.11.2008
COM(2008) 780 final

2008/0223 (COD)

Proposal for a

DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL

on the energy performance of buildings

(recast)

(presented by the Commission)

{SEC(2008) 2864}
{SEC(2008) 2865}

UK Initiatives

- A range of initiatives have been pursued in the UK to reduce GHG emissions:
 - building regulations,
 - the climate change levy,
 - enhanced capital allowances of for companies investing in agreed energy efficient technologies and
 - the UK and EU Emissions Trading Schemes (which applies to energy intensive industries).



UK Energy White Paper, May 2007 Meeting the energy challenge



- UK Government response to Stern Review outlining the Government's international and domestic energy strategy.
- Principle aims:
 - to tackle climate change by reducing carbon dioxide levels; and
 - to ensure the supply of secure, clean and affordable energy.



UK Energy White Paper, May 2007

- Recommendations:
 - Carbon Reduction Commitment scheme
 - Energy Performance Certificates for business premises
 - zero carbon homes from 2016
 - phase out energy inefficient light bulbs by 2011
 - average new car CO2 emissions below 100 g/km from 2012
 - inclusion of aviation in the EU ETS
 - all new social housing to comply with level 3 of the Code for Sustainable Homes
 - Public buildings greater than 1,000m2 to display energy rating certificates
 - Promotion of micro-generation, CHP and nuclear power
 - renewable electricity supply target of 10% by 2010 and 20% by 2020
 - Development of carbon capture and storage (CCS)
 - Introduction of the Renewable Transport Fuel Obligation (RTFO) with 5% target 2010-11
 - Establishment of Energy Technologies Institute to support innovation and the deployment of low carbon technologies



Climate Change and Sustainable Energy Act 2006.

Aims of the Act:

- To enhance the UK's contribution to combating climate change.
- To alleviate fuel poverty and
- Secure diverse and long-term energy supplies for the UK

Provisions:

- Local authorities to improve energy efficiency, increase microgeneration, reduce greenhouse gas emissions and alleviate fuel poverty when exercising their functions.
- Microgeneration targets to be established by Government
- Electricity suppliers to be required to acquire electricity that their customers generate from microgeneration.
- Secretary of State to include microgeneration in building regulations.
- Promotion of community energy projects and the use of heat from renewable sources such as biomass



Climate Change and Sustainable Energy Act 2006

CHAPTER 19

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Purposes

1 Purposes

Reports on greenhouse gas emissions

2 Annual report on greenhouse gas emissions

Local authorities

3 Local authorities to have regard to information on energy measures in exercising functions

Microgeneration

4 National targets for microgeneration

5 National microgeneration targets: modification of section 1 of the Sustainable Energy Act 2003

6 Reports under section 1 of the Sustainable Energy Act 2003: microgeneration

7 Sale of electricity generated by microgeneration: power to modify distribution and supply licences etc

8 Exercise of powers under section 7

9 Functions of the Gas and Electricity Markets Authority in relation to microgeneration

10 Review of permitted development orders

11 Building regulations: microgeneration

Energy efficiency

12 Reports under section 1 of the Sustainable Energy Act 2003: energy efficiency of residential accommodation

Planning and Energy Act 2008.

Enables local planning authorities to include policies in development plans imposing reasonable requirements for:

- a proportion of energy used in development in their area to be from renewable sources in the locality of the development;
- a proportion of energy used in development in their area to be low carbon energy from sources in the locality of the development; and
- development in their area to comply with energy efficiency standards that exceed the energy requirements of building regulations.

ELIZABETH II

c. 21



Planning and Energy Act 2008

2008 CHAPTER 21

An Act to enable local planning authorities to set requirements for energy use and energy efficiency in local plans. [13th November 2008]

BE IT ENACTED by the Queen's most Excellent Majesty, by and with the advice and consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the authority of the same, as follows:—

1 Energy policies

- (1) A local planning authority in England may in their development plan documents, and a local planning authority in Wales may in their local development plan, include policies imposing reasonable requirements for—
 - (a) a proportion of energy used in development in their area to be energy from renewable sources in the locality of the development;
 - (b) a proportion of energy used in development in their area to be low carbon energy from sources in the locality of the development;
 - (c) development in their area to comply with energy efficiency standards that exceed the energy requirements of building regulations.
- (2) In subsection (1)(c)—

“energy efficiency standards” means standards for the purpose of furthering energy efficiency that are—

 - (a) set out or referred to in regulations made by the appropriate national authority under or by virtue of any other enactment (including an enactment passed after the day on which this Act is passed), or
 - (b) set out or endorsed in national policies or guidance issued by the appropriate national authority;

“energy requirements”, in relation to building regulations, means requirements of building regulations in respect of energy performance or conservation of fuel and power.
- (3) In subsection (2) “appropriate national authority” means—

Climate Change Act 2008.

Aims of the Act:

- to improve carbon management and help the transition towards a low carbon economy in the UK; and
- to demonstrate strong UK leadership internationally in our commitment for reducing GHG emissions post Kyoto 2012



Climate Change Act 2008

CHAPTER 27

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PART 1

CARBON TARGET AND BUDGETING

The target for 2050

- 1 The target for 2050
- 2 Amendment of 2050 target or baseline year
- 3 Consultation on order amending 2050 target or baseline year

Carbon budgeting

- 4 Carbon budgets
- 5 Level of carbon budgets
- 6 Amendment of target percentages
- 7 Consultation on order setting or amending target percentages
- 8 Setting of carbon budgets for budgetary periods
- 9 Consultation on carbon budgets
- 10 Matters to be taken into account in connection with carbon budgets

Limit on use of carbon units

- 11 Limit on use of carbon units

Indicative annual ranges

- 12 Duty to provide indicative annual ranges for net UK carbon account

Proposals and policies for meeting carbon budgets

- 13 Duty to prepare proposals and policies for meeting carbon budgets
- 14 Duty to report on proposals and policies for meeting carbon budgets
- 15 Duty to have regard to need for UK domestic action on climate change

Climate Change Act 2008.

Principal Provisions:

- Commits the UK to achieve, through domestic and international action, at least a 80% reduction in GHG emissions by 2050, and a 26% reduction by 2020, against a 1990 baseline.
- Establishes legally binding five-year “carbon budgets” which cap emissions and set out the trajectory to 2050.
- Establishes the Committee on Climate Change (CCC) to provide independent expert advice to government on the level of carbon budgets, achieving targets and where cost effective savings could be made.
- CCC to submit annual reports to Parliament on the UK’s progress towards targets and budgets to which the Government must respond.
- Inclusion of international aviation and shipping GHG emissions by 31 December 2012
- 5 yearly government reporting on current and predicted risks to the UK of climate change and a programme setting out how these will be addressed.
- Establishment of additional emission trading schemes for reducing GHG emissions, e.g. Carbon Reduction Commitment; and
- Mandatory reporting of GHG emissions by companies by 6th December 2012
- Annual report on the efficiency and sustainability of the Government estate

Energy Act 2008.

Principal Aims of the Act:

- to update the legislative framework to make it more appropriate for today's energy market



Energy Act 2008

CHAPTER 32

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PART 1

GAS IMPORTATION AND STORAGE

CHAPTER 1

GAS IMPORTATION AND STORAGE ZONES

- 1 Exploitation of areas outside the territorial sea for gas importation and storage

CHAPTER 2

IMPORTATION AND STORAGE OF COMBUSTIBLE GAS

Activities requiring a licence

- 2 Prohibition on unlicensed activities
- 3 Exception for activities carried on partly on land etc

Licensing

- 4 Licences
- 5 Applications
- 6 Terms and conditions
- 7 Model clauses

Enforcement

- 8 Offence to carry on unlicensed activities
- 9 Offences relating to licences
- 10 Secretary of State's power of direction
- 11 Failure to comply with a direction under section 10

Energy Act 2008.

Relevant Provisions:

- Enhancement of the offshore gas supply infrastructure to enable imported gas to meet up to 80% demand by 2020;
- A framework for the licensing of Carbon Capture and Storage (CCS) to reduce the carbon emissions from fossil fuel power stations by up to 90%;
- Enable feed-in tariffs for smaller renewable generators up to 50 kW to encourage households, businesses, and community groups to generate low-carbon energy e.g. biomass, fuel cells, photovoltaics, wind, solar, geothermal and non-renewable micro combined heat and power systems;
- Require licence holders to install, or facilitate the installation of, smart meters for electricity and gas to different customer segments.
- Establishment of Renewable Heat Incentive (RHI) to pay owners of renewable heat generation systems for the amount of heat output delivered from a levy on designated suppliers of fossil fuels

First Report of the Committee on Climate Change, December 2008

Recommends:

- UK carbon budgets for the three periods:
 - 2008-12: 3018 MtCO₂e
 - 2013-17: 2679 MtCO₂e
 - 2018-22: 2245 MtCO₂e
- 80% reduction in GHGs by 2050 to apply to all sectors of the UK economy, including international aviation & shipping
- Budgets to cover all GHGs, not just CO₂
- Power sector emissions reductions of 40% below 1990 levels are realistically achievable by 2020 if renewable generation can be increased to 30%
- Significant emissions cuts through relatively low cost energy efficiency measures in homes are realistically achievable
- Significant emissions cuts through more expensive renewable heat measures in the residential sector are realistically achievable and should be pursued.
- The cost of meeting budgets is less than 1% of GDP in 2020

**Building a low-carbon economy –
the UK's contribution to tackling climate change**



Committee on Climate Change
December 2008

UK Renewable Energy Strategy

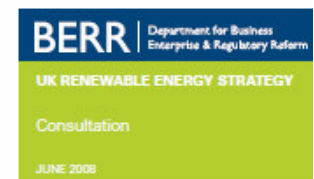
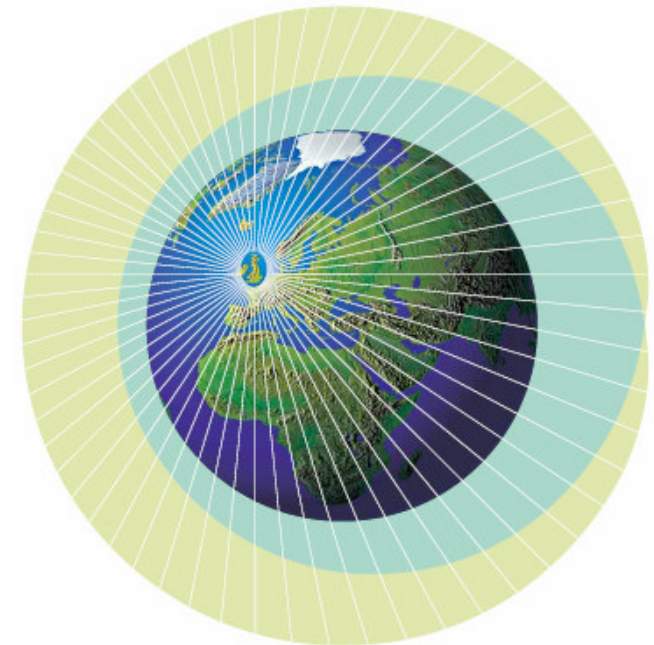
BERR Consultation, 2008

- EU target of 20% renewable energy by 2020.
- UK to increase renewables to 15% of domestic energy mix from 1.5% in 2006.

Discussion issues

- up to 30-35% of electricity to come from renewable sources by 2020
- new financial incentives to encourage a very large increase in renewable heat
- more effective financial support for small-scale heat and electricity technologies in homes and buildings
- ensuring appropriate grid access for renewables
- exploiting the full potential of energy from waste
- requiring all biofuels to meet strict sustainability criteria
- promoting the development of new renewable technologies
- maximising the benefits for UK business and jobs in renewable technology

 HM Government



BISRA Illustrated Guide to Renewable Technologies

Describes the majority of systems that derive all or some power from renewable sources of energy, such as:

- Absorption cooling
- Biomass
- Combined heat & power
- Fuel cells
- Greywater recovery
- Ground source systems: air source, water source, heat pumps
- Photovoltaics
- Rainwater recovery
- Solar: air heating, water heating, water cooling
- Surface water cooling
- Water conservation
- Wind power

