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Report of the centralized in-depth review of the fourth national communication of the United Kingdom of Great Britain and Northern Ireland

According to decision 4/CP.8, Parties included in Annex I to the Convention are requested to submit to the secretariat, in accordance with Article 12, paragraphs 1 and 2, of the Convention, a fourth national communication by 1 January 2006. This report reflects the results of the in-depth review of the fourth national communication of the United Kingdom of Great Britain and Northern Ireland conducted by an expert review team in accordance with the relevant provisions of the Convention and Article 8 of the Kyoto Protocol.

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I. Introduction and summary

A. Introduction

1. The United Kingdom of Great Britain and Northern Ireland (the United Kingdom) has been a Party to the UNFCCC since 1993 and to its Kyoto Protocol since 2002. Within the "burden-sharing" agreement of the European Union (EU) for the Kyoto Protocol, the United Kingdom committed itself to reducing its greenhouse gas (GHG) emissions by 12.5 per cent compared to the base year (1990) level during the first commitment period, from 2008 to 2012.

2. This report covers the centralized in-depth review (IDR) of the fourth national communication (NC4) of the United Kingdom, coordinated by the UNFCCC secretariat, in accordance with decision 7/CP.11. The review took place from 16 to 21 October 2006 in Bonn, Germany, and was conducted by the following team of nominated experts from the UNFCCC roster of experts: Mr. Gonçalo Cavalheiro (Portugal), Mr. Arthur Wellington Rolle (the Bahamas), Mr. Seppo Oikarinen (Finland), Ms. Helena Princova (Slovakia), Mr. Jigme (Bhutan) and Mr. Philip C. Acquah (Ghana). Mr. Cavalheiro and Mr. Rolle were the lead reviewers. The review was coordinated by Mr. Sergey Kononov (UNFCCC secretariat).

3. During the IDR, the expert review team (ERT) examined each part of the NC4. The ERT also evaluated the information contained in the United Kingdom's report demonstrating progress (RDP) in achieving its commitments under the Kyoto Protocol, and the supplementary information provided by the United Kingdom under Article 7, paragraph 2, of the Kyoto Protocol.

4. In accordance with the guidelines for review under Article 8 of the Kyoto Protocol (decision 22/CMP.1), a draft version of this report was communicated to the Government of the United Kingdom, which did not propose any changes to the draft.

B. Summary

5. The ERT noted that the United Kingdom's NC4 complies in general with the UNFCCC reporting guidelines.[1] As required by decision 25/CP.8, the RDP provides clear and detailed information on the progress made by the United Kingdom in achieving its commitments under the Kyoto Protocol. Supplementary information under Article 7, paragraph 2, of the Kyoto Protocol[2] is provided as required by the reporting guidelines. The ERT commended the United Kingdom for its coherent and consistent reporting.

1. Completeness

6. The ERT noted that the NC4 covers all the sections required by the UNFCCC reporting guidelines. The ERT also noted that the United Kingdom's RDP contains all the parts stipulated by decisions 22/CP.7 and 25/CP.8. Furthermore, the ERT noted that the United Kingdom has provided the supplementary information required under Article 7, paragraph 2.

2. Timeliness

7. The NC4 was submitted on 15 May 2006, and the RDP was submitted on 8 March 2006. Decision 4/CP.8 requested the submission of the NC4 by 1 January 2006, and decision 22/CP.7 set the same date for Parties to submit their RDPs.

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[1] "Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part II: UNFCCC reporting guidelines on national communications." Document FCCC/CP/1999/7, pages 80–100.

[2] Decision 15/CMP.1, annex, chapter II (FCCC/KP/CMP/2005/8/Add.2).

3. Transparency

8. The ERT acknowledged that United Kingdom's NC4 is comprehensive, transparent and structured according to the outline contained in the annex to the UNFCCC reporting guidelines. The NC4 provides clear information on all aspects of implementation of the Convention and its Kyoto Protocol. In the course of the review, the ERT formulated a number of recommendations that could help the United Kingdom to further increase the transparency and comparability of its reporting, such as a recommendation that it report its emissions (both historical and projected) and emission reductions (in the policies and measures chapter) in terms of carbon dioxide (CO_2) and not of carbon (C) equivalent. The review team noted that the information contained in the NC4 and the RDP is generally consistent.

II. Technical assessment of the reviewed elements

A. National circumstances relevant to greenhouse gas emissions and removals

9. In its NC4, the United Kingdom has provided a comprehensive description of its national circumstances affecting GHG emissions and removals. This description covers government profile, geographic profile, climate profile, population profile, economic profile and industry, energy, transport, waste, building stock and urban structure, agriculture and forestry. Table 1 illustrates the national circumstances of the country by providing some indicators relevant to GHG emissions and removals.

Table 1. Indicators relevant to greenhouse gas emissions and removals for the United Kingdom

	1990	1995	2000	2004	Change 1990–2000 (%)	Change 2000–2004 (%)	Change 1990–2004 (%)
Population (million)	57.24	58.03	58.89	59.84	2.9	1.6	4.5
GDP (billion USD 2000 PPP)	1 181	1 285	1 506	1 661	27.6	10.3	40.7
TPES (Mtoe)	212.2	223.4	232.9	233.7	9.8	0.3	10.1
GDP per capita (thousand USD 2000 PPP)	20.6	22.1	25.6	27.8	24.0	8.5	34.6
TPES per capita (toe)	3.7	3.9	4.0	3.9	6.7	–1.3	5.4
GHG emissions without LULUCF (Tg CO_2 eq)	776.1	714.3	672.2	665.3	–13.4	–1.0	–14.3
GHG emissions with LULUCF (Tg CO_2 eq)	779.1	715.4	671.8	663.4	–13.8	–1.2	–14.8
CO_2 emissions per capita (Mg)	10.3	9.5	9.3	9.4	–9.8	1.0	–8.9
CO_2 emissions per GDP unit (kg per USD 2000 PPP)	0.50	0.43	0.36	0.34	–27.2	–7.0	–32.3
GHG emissions per capita (Mg CO_2 eq)	13.6	12.3	11.4	11.1	–15.8	–2.6	–18.0
GHG emissions per GDP unit (kg CO_2 eq per USD 2000 PPP)	0.66	0.56	0.45	0.40	–32.1	–10.2	–39.1

Sources: GHG emissions data are from the United Kingdom's 2006 inventory submission; population, GDP and TPES data are from the IEA.
Note 1: The ratios per capita and per GDP unit are calculated relative to GHG emissions without LULUCF; the ratios are calculated using the exact (not rounded) values and may therefore differ from a ratio calculated with the rounded numbers provided in the table.
Note 2: For the abbreviations used, see annex II.

10. The NC4 contains summary information on GHG emission trends for the period 1990–2004. This information is not fully consistent with the latest available version of the 2006 submission of the national GHG inventory. But the differences are small (between 1 and 2 per cent of total GHG emissions) and could be a result of minor inventory recalculations after the submission of the NC4 and RDP. The inventory-related information in the NC4 and the RDP is consistent. Summary tables, including trend tables for emissions (given in the common reporting format (CRF)), are provided in an annex to the NC4.

11. However, the review team noted that GHG data in the text of the NC4 are given in C equivalent rather than in CO_2 equivalent, which is different from the approach used by most other Parties and also different from the approach used in the CRF. The ERT encourages the United Kingdom in its next

national communication to use CO_2 equivalent as the main unit of measurement for GHG emissions in order to improve the comparability of information and facilitate the work of the ERT.[3]

12. Total GHG emissions excluding emissions and removals from land use, land-use change and forestry (LULUCF) decreased by 14.3 per cent between 1990 and 2004, whereas total GHG emissions including net emissions/removals from LULUCF decreased by 14.8 per cent (see table 2). CO_2 emissions decreased by 4.7 per cent, CH_4 emissions by 50.0 per cent and N_2O emissions by 40.3 per cent over this period. A major part of the decreases in CO_2 and N_2O was experienced before 1999–2002, whereas emissions of CH_4 continued to decrease after 2002. Emissions of fluorinated gases (HFCs, PFCs and SF_6 taken together) decreased by 25.0 per cent between 1990 and 2004, and they accounted for 1.6 per cent of total GHG emissions in 2004 (1.8 per cent in 1990). The LULUCF sector, which was a minor source of emissions in 1990, became a GHG sink in 1999 and has remained a sink since then. Table 2 provides an overview of GHG emissions by sector from 1990 to 2004 (see also discussion of sectoral trends in section II.B).

Table 2. Greenhouse gas emissions by sector for the United Kingdom, 1990–2004

	GHG emissions (Tg CO_2 equivalent)					Change (%)		Share[a] by sector (%)	
	1990	1995	2000	2003	2004	1990–2004	2003–2004	1990	2004
1. Energy	611.4	565.7	558.1	566.8	569.6	–6.8	0.5	78.8	85.6
A1. Energy industries	238.5	201.0	193.2	209.8	209.4	–12.2	–0.2	30.7	31.5
A2. Manufacturing industries and construction	101.0	94.5	93.8	87.8	89.6	–11.3	2.0	13.0	13.5
A3. Transport	119.5	121.6	129.0	132.8	134.4	12.5	1.2	15.4	20.2
A4–5. Other	117.1	117.6	121.3	119.7	120.0	2.5	0.2	15.1	18.0
B. Fugitive emissions	35.3	31.0	20.7	16.6	16.2	–53.9	–2.3	4.5	2.4
2. Industrial processes	58.2	50.2	31.7	28.0	27.9	–52.1	–0.4	7.5	4.2
4. Agriculture	53.7	51.5	49.0	45.8	45.5	–15.3	–0.7	6.9	6.8
5. LULUCF	2.93	1.05	–0.42	–1.16	–1.92	–165.6	65.9	0.4	–0.3
6. Waste	52.9	46.9	33.4	23.9	22.3	–57.8	–6.5	6.8	3.4
GHG total with LULUCF	779.1	715.4	671.8	663.3	663.4	–14.8	0.0	–	–
GHG total without LULUCF	776.1	714.3	672.2	664.5	665.3	–14.3	0.1	–	–

[a] The shares of sectors are calculated relative to GHG emissions without LULUCF; for the LULUCF sector, the negative values indicate the share of GHG emissions which was offset by GHG removals through LULUCF.
Note 1: The changes in emissions and the shares by sector are calculated using the exact (not rounded) values and may therefore differ from values calculated with the rounded numbers provided in the table.
Note 2: For the abbreviations used, see annex II.

13. As table 2 shows, between 1990 and 2004 GHG emissions decreased in all sectors. The decrease in the energy sector was by far the largest in terms of the absolute amount of emissions. The main reasons for this decrease are the improved performance of nuclear power plants, more efficient use of energy, the switch from coal to gas in electricity generation, and the increasing use of renewable energy sources and combined heat-and-power generation. Within the energy sector, GHG emissions decreased in all but two subsectors (transport and other). Of these two subsectors, the ERT noted the continued growth of emissions in transport since 1990.

B. Policies and measures

14. As required by the UNFCCC reporting guidelines, the United Kingdom has provided in its NC4 comprehensive and well-organized information on its package of policies and measures implemented, adopted and planned in order to fulfil its commitments under the Convention and its Kyoto Protocol. The ERT noted, however, that the United Kingdom has not quite followed the recommendation of the guidelines that policies and measures should, to the extent possible, be reported for the following sectors: energy, transport, industry, agriculture, forestry and waste management. This deviation has to a certain

[3] According to paragraph 11 of the UNFCCC reporting guidelines (FCCC/CP/1999/7, page 82), "Parties shall report the summary, including carbon dioxide (CO_2) equivalent and emissions trend tables in the common reporting format". The NC4 of the United Kingdom contains an annex with emission trend tables in the CRF but the emissions data in the text of the NC4 and the RDP are given in carbon equivalent.

extent decreased the comparability of the NC4. Each sector has its own textual description of the principal policies and measures, supplemented by summary tables on policies and measures by sector, included in an annex. The ERT noted some inconsistencies between the textual description of the measures and the summary tables in annex B (not all policies and measures included in the summary tables seem to be described in the main body of the NC4), which the United Kingdom should address in its next national communication. Table 3 provides a summary of the information reported on policies and measures.

Table 3. Summary information on policies and measures

Major policies and measures	Examples / comments
Framework policies and cross-sectoral measures	
Integrated climate programme	UK Climate Change Programme (a 2006 revision of the 2000 programme)
Energy/electricity/emissions taxation	Climate Change Levy and Agreements adopted in 2001 (voluntary agreements provide installations with an 80 per cent discount of the levy). Rate of levy to be increased in 2006. (13.6 Tg for the levy and 10.6 Tg for the agreements)
Emissions trading	Domestic scheme since 2002 (1.1 Tg); EU ETS since 2005 (11–29.3 Tg)
Support of research and development	New instruments to support the development of innovative technologies, such as the Marine Renewables Deployment Fund, the Strategy for Carbon Abatement Technologies and the demonstration programme for hydrogen and fuel cell technologies
Other	Establishment and operation of the Carbon Trust (2001) (4 Tg)
Energy sector	
Energy sector liberalization	British Electricity Trading and Transmission Arrangements (BETTA) (2005)
Combined heat and power generation	Good Quality CHP target to 2010 of 10 GWe (2000)
Renewable energy sources	Renewables Obligation (2002) (9.2 Tg), target of 10 per cent for electricity supplied from renewable energy sources by 2010
Energy efficiency improvements	Energy Efficiency Loan Scheme for SMEs (0.4 Tg), building regulations (2002–2006) (4.8 Tg); Energy Efficiency Commitment (2002–2005; 2005–2008; 2008–2011) (5.9 Tg); measures to encourage consumer choices and to establish product standards (0.7 Tg)
Transport	
Vehicle and fuel taxes	Incentives to use bioethanol and biodiesel; Renewable Transport Fuel Obligation (5.9 Tg)
Agreements/partnerships	EC agreements: ACEA (1999), KAMA (2000), JAMA (2000)
Integrated transport planning	Future of Transport White Paper (2004); pricing policy to manage congestion
Industry	
Pollution prevention and control	IPPC Directive of the EC; National UK Emissions Trading Scheme: EU Emissions Trading Scheme; Climate Change Levy; grants for specific industrial branches (e.g. to decrease CH_4 emissions from coal mines)
Agreements/partnerships	Climate Change Agreements
Agriculture	Common Agricultural Policy of the EC; EU Water Framework Directive; Strategy for Sustainable Farming and Food; Regional Rural Development Programmes; Catchment Sensitive Farming; research programmes on methane production from different sources (fertilizer use, cattle)
Waste management	EU Landfill Directive; Waste Strategy 2000; landfill tax (includes a constant rise in the tax rate)
Forestry	The UK Forestry Standard; regional forestry strategies; Woodland Grant Scheme for England; woodland planting in Scotland

Note 1: The GHG reduction estimates, given for some measures (in parentheses), are reductions in CO_2 or CO_2 eq for the year 2010.
Note 2: For the abbreviations used, see annex II.

15. The United Kingdom has also provided information on how its policies and measures are modifying longer-term trends in anthropogenic GHG emissions and removals consistent with the objective of the Convention; domestic reduction targets play an important role in this process.

1. Policy framework and cross-sectoral measures

16. The national climate change policy is coordinated by the Department for Environment, Food and Rural Affairs (DEFRA). Interdepartmental committees, chaired by DEFRA, have been created. Political decision making takes place at a cabinet committee chaired by the prime minister. Responsibilities are shared among different ministries, namely DEFRA, Her Majesty's Treasury, the Department of Trade and Industry, the Department of Transport, the Office of the Deputy Prime Minster, the Foreign and Commonwealth Office and the Department for International Development (DFID). The devolved

administrations of Wales, Scotland and Northern Ireland as well as local authorities are playing an increasingly important role.

17. A new Climate Change Programme was published in March 2006, following a revision initiated with a public consultation in 2004. The revision of the programme has been guided by the principles of balanced participation of all sectors and parts of the United Kingdom as well as of enhancement of the country's competitiveness and the encouragement of technological innovation. The goal of the Climate Change Programme is to enable the United Kingdom to meet, and go beyond, its commitment under the Kyoto Protocol. Under the EU burden-sharing agreement, the United Kingdom committed itself to a reduction target of 12.5 per cent. In addition, the United Kingdom has decided to commit itself to a more challenging domestic target of reducing CO_2 emissions by 20 per cent by 2010 compared to the 1990 level. Moreover, the United Kingdom announced, in 2003, a long-term goal to reduce its CO_2 emissions by 60 per cent by about 2050, with real progress by 2020.

18. The United Kingdom has demonstrated that it is on track to meet its commitments. Nonetheless, the country continues to revise and enhance the policies and measures which will curb its GHG emissions beyond the commitments under the Convention and its Kyoto Protocol, towards the achievement of its longer-term, more challenging domestic targets.

19. The NC4 contains references to the costs relating to the implementation of policies and measures, such as an investment of 80 million British pounds (GBP) to support the development of micro-generation technologies or an investment of GBP 15 million in interest-free loans to small and medium-sized enterprises. Given the importance of such information, the ERT suggests that the United Kingdom include in its next national communication a table showing the costs of implementation of its policies and measures, complemented if possible with estimates of the cost of abatement per tonne of CO_2 equivalent.

20. The NC4 often refers to the importance of EU legislation in the design of the United Kingdom's climate policy, and it contains examples of the United Kingdom's contributions to the design of EU legislation. The ERT believes, however, that the next national communication could benefit from a more structured presentation of the EU's common and coordinated policies and measures, and of their impact on the climate-related policies in the United Kingdom.

21. In its NC4, the United Kingdom has identified the EU emissions trading scheme (ETS) as the only cross-cutting measure. The ETS covers, in the United Kingdom, 1,000 installations which are responsible for about 50 per cent of country's carbon emissions. The cap for the second phase of the EU ETS (2008–2012) will allow for annual emission reductions of between 11 and 29.3 Tg CO_2. These reductions will take place solely in the electricity sector, given that it is not subject to international competition and that it has greater capacity to pass costs on to consumers. The United Kingdom states in the NC4 that the EU ETS will continue after 2012, demonstrating its long-term reliance on this particular policy instrument.

22. Even though the United Kingdom is on track to meet its commitments using only domestic action, its designated national authority for the clean development mechanism (CDM) has issued 60 letters of approval for participation in 46 CDM projects. The use of the Kyoto Protocol mechanisms is closely linked with the implementation of the EU ETS through the transposition of the EU Linking Directive into national law. The acquisition and subsequent unilateral cancellation of CDM credits will be used to offset the emissions attributable to a variety of central government activities.

23. The ERT noted that some other policies and measures have a cross-sectoral effect, even though they are included under different headings, in particular the Business heading. Such policies include the Climate Change Levy and Climate Change Agreements (industry, commerce and the public sector) (24.2 Tg CO_2 equivalent for both measures taken together in 2010); the Carbon Trust (business and the public sector) (4 Tg); and the United Kingdom's national ETS (1.1 Tg).

2. Policies and measures in the energy sector

24. The energy sector is increasingly responsible for a large share of the United Kingdom's GHG emissions. In 2004, the sector accounted for 85.6 per cent of total emissions (excluding LULUCF), compared to 78.8 per cent in 1990. Between 1990 and 2004 energy-related emissions decreased by 6.8 per cent. This overall decrease is composed of a 12.2 per cent decrease in energy industries (mainly driven by the switch from coal to gas in electricity generation), an 11.3 per cent decrease in manufacturing industries and construction (mainly driven by a decline in energy intensity resulting from structural changes and policy actions), a 12.5 per cent increase in transport (driven by increasing demand, partially offset by the increased vehicle fuel-use efficiency), a 2.5 per cent increase in the other subsectors of energy and a 53.9 per cent decrease in fugitive emissions.

25. The United Kingdom has presented a comprehensive set of policies and measures for the energy sector aimed at further reducing emissions (e.g. in energy supply) or limiting their growth (e.g. in transport). Each policy and measure is briefly but clearly explained. References to websites where further information can be found are common, which facilitates further analysis.

26. Besides the EU ETS, which may deliver a reduction of CO_2 emissions of up to 29.3 Tg in 2010, the Climate Change Levy (CCL) and the Climate Change Agreements (CCAs) are projected to deliver the highest emission reductions in the energy sector. The CCL is applied to energy used in industry, commerce and the public sector. The rate of the levy has not increased since 2001, but it is foreseen that, starting in April 2007, it will increase in line with inflation. Renewable energy (except for large hydro plants) and "good quality" combined heat and power (CHP) are exempt from the levy. An 80 per cent discount is granted to those business sectors that agree to meet challenging targets for improving energy efficiency or to reduce their GHG emissions. The CCL will provide for a reduction of 13.6 Tg CO_2 and the CCAs will result in a reduction of 10.6 Tg CO_2 (both reductions are estimated for the year 2010). The United Kingdom informed the ERT that, since 2001, the levy has raised GBP 3.724 million.

27. Another important measure is the Renewables Obligation, which is projected to deliver a 9.2 Tg reduction in CO_2 emissions by the year 2010. The measure requires energy suppliers to provide a specific and annually increasing percentage of their electricity from renewable sources (the level of the Obligation for 2006/2007 is 6.7 per cent and is scheduled to increase up to 15.4 per cent in 2015/2016).

28. A similar measure has been announced for transport, to be introduced in 2008–2009 with the obligation set at 2.5 per cent during those two years and at 5 per cent for 2010–2011. This measure is to provide a reduction of 5.6 Tg CO_2 emissions by the year 2010. Another important measure is the introduction of a 20 pence per litre duty incentive for bioethanol and biodiesel to promote the reduction in the fossil carbon content of transport fuels.

3. Policies and measures in other sectors

29. In 1990, GHG emissions from all non-energy sectors taken together amounted to about 164.8 Tg CO_2 equivalent, or 21.2 per cent of the national total. Between the base year (1990) and 2004, GHG emissions from non-energy sectors decreased by 41.9 per cent, mainly driven by the decreases in GHG emissions from industrial processes (by 52.1 per cent), agriculture (by 15.3 per cent) and waste management (by 57.8 per cent).

30. ***Industrial processes***. In 1990, industrial processes were responsible for emissions of 58.2 Tg CO_2 equivalent, which was 7.5 per cent of total national GHG emissions (see table 2). N_2O emissions had the biggest share in emissions from the industrial sector. From 1990 to 2004, industrial N_2O emissions decreased by 25.2 Tg CO_2 equivalent (86.2 per cent). The decrease was largely due to the closure of one nitric acid plant and the introduction of abatement technologies at the other plants. Emissions of HFCs fell from 11.4 Tg CO_2 equivalent in 1995 to 8.9 Tg CO_2 equivalent in 2004, mainly due to the introduction of thermal oxidizer pollution abatement equipment at the two plants where

HFC-23 and HCFC-22 are produced. The (much smaller) emissions of PFCs fell as well, by 74.9 per cent between 1990 and 2004, mainly due to improved technology in aluminium production. It is estimated in the NC4 that emissions from industrial processes will not fall below their 2004 level in the future.

31. ***Agriculture.*** In 1990, GHG emissions from the agriculture sector were at about the same level as emissions from the industrial sector (53.7 Tg CO_2 equivalent). The biggest contributions are from CH_4 and N_2O emissions. CH_4 emissions were mainly due to cattle, sheep, pig and poultry farming, and the use of organic nitrogen as a fertilizer was a major source of N_2O emissions. By 2004, however, the number of livestock had decreased and the use of organic nitrogen as a fertilizer had dropped, resulting in a 15.3 per cent drop in emissions. The government is working on a variety of policies to decrease GHG emissions from agriculture. For example, it is encouraging farmers to switch to land management patterns that will maximize the absorption of CO_2 in soil. DEFRA is examining options for a decrease of CH_4 emissions from dairy cows in a special research programme. The local governments are planning their own strategies to adapt to and manage the risk of climate change, but the planning is not yet finished. The change in the European Community's Common Agricultural Policy agreed in 2003 is likely to lead to a further reduction in livestock numbers, resulting in a reduction in CH_4 emissions.

32. ***Forestry.*** The United Kingdom's forests and grasslands have been a sink since the base year (1990), but in the 1990s the emissions from croplands outweighed that sink, so that LULUCF was a net source of GHG emissions. In the late 1990s the situation changed and LULUCF changed from a net source of emissions (e.g., 2.9 Tg CO_2 equivalent in 1990) to a net sink (–1.9 Tg CO_2 equivalent in 2004). The central and local governments have taken measures to increase the area of woodland and maintain sustainable forestry. The practical framework for the delivery of sustainable forestry in the United Kingdom is the United Kingdom Forestry Standard, which has been endorsed by the local governments. Tree planting under the Woodland Grant Scheme is another measure. It is expected to increase CO_2 removals by 12.8 Tg CO_2 equivalent between 2006 and 2020.

33. ***Waste.*** In 1990, GHG emissions from the waste sector (which are mostly CH_4 emissions) amounted to 52.9 Tg CO_2, or 6.8 per cent of the national total (see table 2). The waste sector is the largest source of CH_4 emissions. By 2004, CH_4 emissions from waste had dropped greatly (by 59.3 per cent), mostly due to the installation of methane recovery technology at landfill sites and to the diversion of the biodegradable portion of waste going to landfilling. The political incentive for these measures came from the EU Landfill Directive and the United Kingdom's landfill tax. The decrease in CH_4 emissions from landfill sites is assumed to continue since not all the landfills fulfil the related EU requirements as yet.

34. The ERT noted that the NC4 contains estimates of the effects of policies and measures in the non-energy sectors, but at the same time felt that the underlying analyses behind these estimates could be enhanced and better described. The ERT encourages the United Kingdom to consider opportunities for doing so in its next national communication.

C. Projections and the total effect of policies and measures

1. Projections

35. The GHG emission projections provided by the United Kingdom in the NC4 include a "with measures" scenario and two "with additional measures" scenarios until 2020, and are presented for 2010, 2015 and 2020 relative to actual inventory data for the period 1990–2004. The "with additional measures" scenarios were developed to reflect a low and a high range estimate for the impact of the second phase of the EU ETS on GHG emissions (the impact ranging from 11 to 29.3 Tg CO_2 in 2010). Projections are presented on a sectoral basis (energy supply, business, transport, residential, public, agriculture and waste management), using the same sectoral categories as in the policies and measures section. Both historical and projected emissions from energy supply are also distributed according to the

end-users of energy carriers (electricity, petroleum products and other fuels). The ERT considered this presentation of projections to be useful as it makes it possible to correlate GHG emissions with the production of goods and services. The information on projections and the effects of policies and measures presented in the United Kingdom's NC4 and RDP is fully consistent. Table 4 and figure 1 provide a summary of the GHG emission projections reported in the NC4.

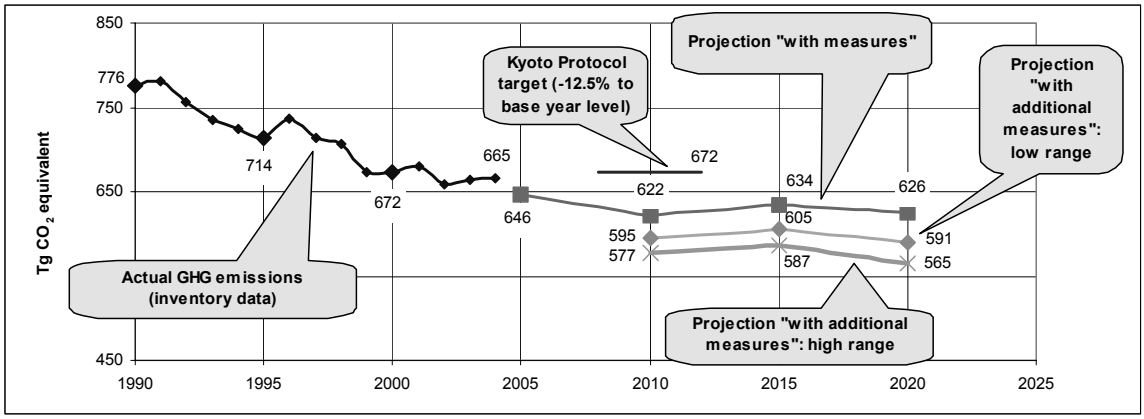
36. The NC4 projections are presented gas by gas for CO_2, CH_4, N_2O, PFCs, HFCs and SF_6. In addition, projections are provided in an aggregate format for each sector as well as for a national total, using the relevant global warming potential (GWP) values. Emissions projections related to fuel sold for use by ships and aircraft engaged in international transport are reported separately (in annex A) and not included in the totals. Projections are mostly given in a tabular format.[4]

Table 4. Summary of greenhouse gas emission projections for the United Kingdom

	GHG emissions (Tg CO_2 equivalent per year)	Changes compared to base year level (%)
Inventory data 1990[a]	**776.1**	**not applicable**
Inventory data 2004[a]	**665.3**	**–13.6**
Kyoto Protocol base year[b]	**768.2**	**not applicable**
Kyoto Protocol target	**672.1**	**–12.5**
"With measures" projections for 2010[b]	**622.2**	**–19.0**
"With measures" projections for 2010[c] including removals by sinks under Article 3, paragraphs 3 and 4, of the Kyoto Protocol	**619.3**	**–19.4**
"With additional measures" low range[d] projections for 2010[b]	**595.5**	**–22.6**
"With additional measures" high range[d] projections for 2010[b]	**577.1**	**–25.0**

[a] *Source*: United Kingdom's 2006 GHG inventory submission; the emissions are without LULUCF.
[b] *Source*: United Kingdom's NC4; the projections are for GHG emissions without LULUCF.
[c] *Source*: United Kingdom's RDP (table 1 on page 28).
[d] Relate to the low and high reduction impact of the EU ETS in the second phase (2008–2012) (see annex B, page 124, to the NC4).
Note: For the abbreviations used, see annex II.

Figure 1. Greenhouse gas emission projections for the United Kingdom



Source: The United Kingdom's NC4; the projections are for GHG emissions without LULUCF.

37. Key assumptions such as the gross domestic product (GDP) growth rate and fossil fuel price forecasts up to 2020 are presented together with links to external sources with further details. The methodology is clearly and briefly presented, structured by the modelling tools and approaches used for

[4] The ERT noted that the titles for tables 4.6–4.10 and 4.12 are apparently incorrect, because these tables contain GHG projections by gas for individual sectors and not by end-user.

the different sectors and gases. There is a distinct continuity between the United Kingdom's third national communication (NC3) and its NC4 in the use of modelling tools and the involvement of organizations in the preparation of projections, which seems to help in improving the projection models. CO_2 emission projections for LULUCF were prepared by the Centre for Ecology and Hydrology (CEH) using an approach consistent with that for the inventory calculations. The projections of non-CO_2 emissions were calculated with spreadsheet models using as input activity growth rates, emission factors and specific assumptions on the main emission sources. A combination of top–down and bottom–up approaches was used to verify the projection methodology for HFC emissions.

38. Table 4 and figure 1 show that even for the "with measures" scenario the projected emissions are expected to fall to about 19.0 per cent below the base year level by 2010, and thus the United Kingdom is likely to meet its Kyoto Protocol target (–12.5 per cent). This decline in emissions reflects the impact of changes in the shares of fossil fuels for electricity generation, complemented by the impact of a comprehensive policy package (in terms of covering different sectors) for the energy supply, business and residential sectors, and also for agriculture and waste management. The greatest decreases in emissions are projected for industrial processes and waste management. Except for transport, projected emissions by sector show fluctuations between 2005 and 2020 which mostly reflect changes in the fuel structure for electricity generation. Emissions are projected to increase between 2010 and 2015 because the impact of existing measures is expected to be outweighed by growing energy use (with economic growth) and the planned closure of nuclear power units. After 2015, the projected emissions decrease because it is assumed that a considerable number of coal-fired power stations will be retired after 2015. A slight decrease in emissions from transport after 2015 reflects the impact of such measures as a Renewable Transport Fuel Obligation and Voluntary Agreements on Fuel Efficiency in cars, but this is not projected to happen until 2015.

39. The projections by gases show considerable decreases in CH_4 and N_2O emissions by 2010, while the decrease in CO_2 emissions is more modest – about 10.6 per cent below the base year level. This means that additional measures will be necessary for the United Kingdom to achieve its domestic target of a reduction of CO_2 emissions by 20 per cent below the 1990 level by 2010.

40. The two "with additional measures" scenarios – the low and high range – reflect two estimates for the effect of the implementation of the EU ETS in the second phase, as presented in the revised UK Climate Change Programme (March 2006). The reduction of GHG emissions in 2010 is by about 23 per cent below the base year level for the low range scenario and by about 25 per cent for the high range scenario. The sensitivity analysis, which is focused on the impact of changes in fossil fuel prices on emissions, shows only small changes in emissions in response to changes in coal and gas prices.

2. Total effect of policies and measures

41. In its NC4, the United Kingdom has presented the expected individual effects of implemented, adopted and planned policies and measures by sector, mainly for CO_2 emissions (in the table in annex B to the NC4) as a result of the "with measures" scenario modelling. Table 5 provides an overview of the total effects of policies and measures as reported in the NC4.

42. Table 5 shows that the highest reductions in the "with measures" scenario are expected to be achieved in the business, transport and domestic sectors. In the business sector the high reduction relates to the measures such as the Climate Change Levy, the Climate Change Agreements and the Building Regulation, whereas in transport the reductions are linked to the voluntary agreement package, and in the domestic sector they are linked to the energy efficiency commitment and building regulations. The dominant share of estimated potential reduction of CO_2 emissions in 2010 for the "with additional measures" scenarios relates to the impact of the EU ETS in the second phase (2008–2012).

43. Table 5 illustrates individual impacts of policies and measures included in the "with measures" and "with additional measures" scenarios. The United Kingdom has not estimated the overall impact of

policies and measures as the difference between total GHG emissions in projected scenarios, which may mean that the possible synergy between the effects of the various policies and measures has not been taken into account. The ERT therefore suggests that the United Kingdom evaluate, in addition to the individual effects of the policies and measures implemented, adopted and planned, the total effect of such measures, which could differ from the sum of the effects of individual measures. The development of a "without measures" scenario could help in this evaluation.

Table 5. Projected effects of planned, implemented and adopted policies and measures in 2010

	Effect of implemented and adopted measures (Tg CO_2 equivalent)	Relative value (% of base year emissions)	Effect of planned measures (Tg CO_2 equivalent)	Relative value (% of base year emissions)
Energy supply (without transport)	9.2	1.2	11.4–29.7	1.5–3.9
Business	31.9	4.1	0.4	0.05
Transport	24.6	3.2	0.4	0.05
Domestic	13.6	1.8	4.4	0.6
Agriculture and LULUCF	2.6	0.3	0.4	0.05
Public sectors and others	0.7	0.1	2.6	0.3
Total	**82.5**	**10.7**	**19.4–37.8**	**2.5–4.9**

Source: The United Kingdom's NC4.
Note: The figures in table 5 represent individual effects of particular policies and measures as given in the summary table in annex B to the NC4; "total" means the sum of these individual effects.

44. For better consistency with the UNFCCC reporting guidelines and in the interests of greater transparency and comparability with the reporting of other Annex I Parties, the ERT encourages the United Kingdom in its next national communication to use CO_2 equivalent as the main unit in the presentation of GHG projections and the impacts of policies and measures.[5]

D. Vulnerability assessment, climate change impacts and adaptation measures

45. In the NC4, the United Kingdom has provided the required information on expected impacts of climate change in the country and on adaptation options by developing a bottom–up and a top–down approach to impact assessments. However, the ERT noted that the United Kingdom has not provided information on adaptation options with respect to impacts for forestry and human health. Table 6 summarizes the information on vulnerability and adaptation to climate change presented in the NC4.

46. The impact of climate change is already being felt in the natural environment and in the long term may have a significant impact on the economy and the people's lives, as can be seen with the indicators reported by the United Kingdom in the NC4. For example, the date at which leaves appear on oak trees has advanced by about two weeks in some areas compared to the values of the 1950s, and insurance claims for storm and flood damage totalled more than GBP 6 billion over the six years 1998–2003, a figure that is twice the amount for the previous six-year period.

47. The United Kingdom Government is currently developing an Adaptation Policy Framework (APF) to provide a consistent approach to building adaptation into policies that will identify cross-cutting risks and assist in prioritization. Many government departments have carried out initial assessments of the implications of climate change across policy agendas. However, the ERT noted that, apart from flood management and water resources, few policy areas had reached the point of practical decision making. The NC4 mentions that the United Kingdom intends to further develop its work on flooding and coastal defence and to generate an updated set of climate change scenarios in 2008.

[5] According to paragraph 40 of the UNFCCC reporting guidelines (FCCC/CP/1999/7, page 89), the projected effect of policies and measures "… shall be presented in terms of GHG emissions avoided or sequestered by gas (on a CO_2 equivalent basis…)".

48. The ERT noted that some of the potential benefits and opportunities of climate change for the United Kingdom include a longer growing season, less winter transport disruption, reduced demand for winter heating, fewer cold-related illnesses, agricultural diversification, an increase in tourism and leisure pursuits and a shift to more outdoor-oriented lifestyles.

Table 6. Summary information on vulnerability and adaptation to climate change

Vulnerable area	Examples / comments / adaptation measures reported
Agriculture and food security	***Vulnerability***: Agriculture can be affected by climate change, but there are opportunities to minimize negative impacts through changes in agricultural practices ***Adaptation***: Changes in crop yields and types
Biodiversity and natural ecosystems	***Vulnerability***: Habitats and species are expected to move northwards and to higher altitudes; adaptation to climate-induced changes in land use may be also required; some species in the high mountains in the north and west may be affected ***Adaptation***: Protection and management of Sites of Special Scientific Interest; support to agri-environmental schemes
Coastal zones	***Vulnerability***: Flooding is likely to increase as a result of rising sea levels, more intense rainfall and possibly increased storminess ***Adaptation***: Flood defence measures, land-use planning
Forests	***Vulnerability***: Some benefit from increased CO_2 concentration, but a negative effect of wind, fire, pests and diseases
Human health	***Vulnerability***: Possible increase in heat-related deaths
Infrastructure and economy	***Vulnerability***: Economic impacts may include disruption to business, agricultural losses, costs associated with higher water demand and impact on the insurance industry ***Adaptation***: Building regulations; protection against natural disasters
Water resources	***Vulnerability***: Increased and more intense rainfall, and changes in the seasonal distribution of rainfall are likely ***Adaptation***: Water resource management, efficient use of water
Insurance	***Vulnerability***: Small increase in the intensity of major storms could increase damage costs

49. Climate modelling based on the United Kingdom's Climate Impacts Programme (UKCIP 02) was produced by the Hadley Centre and the Tyndall Centre. Socio-economic impacts were assessed based on four socio-economic scenarios, called National Enterprises, Local Stewardship, World Markets and Global Sustainability. The ERT noted that the UKCIP provides tools for stakeholders to develop their own adaptation responses. A framework was developed in 2003 by the Environment Agency to help assess climate risks and uncertainties and incorporate suitable adaptation measures into a decision. To build an evidence base on the impacts of climate change and adaptation, the United Kingdom has funded several research programmes which were to be completed by 2006.

50. To cooperate internationally on adaptation, the United Kingdom has funded the development of a regional model to assist developing countries assess their vulnerability to climate change impacts. Bilateral collaborative research projects on the impacts of climate change in China and India, supported through the contribution of funds to the Global Environment Facility (GEF), have been completed. In addition, the DFID has committed funds to the Special Climate Change Fund to mainstream climate change response into development planning. The DFID is also intending to contribute to the Least Developed Countries Fund and to support the implementation of National Adaptation Programmes of Action. Assistance is also being provided to African countries to support the integration of climate risk information into decision-making processes and to increase the long-term availability of climate observations.

E. Financial resources and transfer of technologies

51. In the NC4, the United Kingdom has described the measures taken to give effect to its commitments under Article 4, paragraphs 3, 4 and 5. The information presented is brief and clear but the ERT noted a few deviations from the requirements of the UNFCCC reporting guidelines. For example, tables 3 and 4 from the UNFCCC guidelines have been merged, table 5 appears not to be fully comprehensive, and table 6 (intended for presenting information on selected projects or programmes to facilitate technology transfer) has not been used. The information reported on technology transfer does not include success and failure stories. Overall, the ERT felt that, given the amount and scope of financial assistance provided by the United Kingdom, more information could be provided in this

chapter. The ERT recommends that the United Kingdom present its activities in providing financial resources and supporting technology transfer in more detail in its next national communication.

1. Financial resources

52. The United Kingdom has indicated in the NC4 that it provides "new and additional" financial resources pursuant to Article 4, paragraph 3, of the Convention. However, the ERT noted that the United Kingdom has not provided clarification of how it defined such resources as being "new and additional", although this definition is required by the UNFCCC reporting guidelines. The United Kingdom has informed the ERT of the additional funds provided under the Bonn Political Declaration. Compared to 2001/2002, the United Kingdom has increased its contributions by about 14.42 million GBP in the 2005/2006. The ERT recommends that such information be included in the Party's future national communications.

53. The United Kingdom implements a development assistance programme through the DFID, and the scale of this programme is increasing. Net bilateral official development assistance (ODA) in 2004 increased by 9.5 per cent from 2003 to 2004, and it amounted to 0.36 per cent of gross national income (GNI) in 2004. Table 7 contains summary information on the financial resources provided by the United Kingdom.

Table 7. Summary information on financial resources

Official development assistance (ODA)	USD 7,883 million (0.36 per cent of GNI) in 2004 as reported by OECD (see <http://www.oecd.org/dataoecd/0/40/35842553.pdf>)
Climate-related support programmes	Support to UNFCCC Trust Fund for developing country participation, UNFCCC core budget and UNFCCC Trust Fund for Supplementary Activities
Contributions to GEF (million USD)	USD 456,020,361 paid in as of 30 June 2004 (GEF Annual Report 2004)
Pledge for third GEF replenishment	Committed GBP 118 million
JI and CDM under the Kyoto Protocol in 2005	GBP 180,600 (GBP 11,300 for JI and GBP 169,300 for CDM)[a]
Other (bilateral/multilateral)	– Committed GBP 10 million to the SCCF over 3 years – Committed GBP 10 million to the LDCF over 3 years – Committed *c.* GBP 67 million over the next 2–5 years for: integration of climate risk information in decision-making processes and to increase the long-term availability of climate observations in Africa; mainstreaming climate change responses into development planning, policies and implementation in developing countries; collaborative and capacity development programme on climate adaptation; and disaster risk reduction

[a] The contribution was made to the UNFCCC secretariat to support the implementation of CDM- and JI-related activities.
Note: For the abbreviations used, see annex II.

54. The United Kingdom has also reported on the assistance provided to help developing country Parties that are vulnerable to the adverse effects of climate change meet the costs of adaptation-related activities. Furthermore, the United Kingdom has provided information on other financial resources related to the implementation of the Convention provided through bilateral, regional and other multilateral channels. The multilateral institutions to which the United Kingdom has contributed financial resources include the GEF, the World Bank, the International Finance Corporation, the African Development Bank, the European Bank for Reconstruction and Development (EBRD), the Inter-American Development Programme, the United Nations Development Programme (UNDP), the United Nations Environment Programme (UNEP), the UNFCCC and the World Meteorological Organization (WMO).

55. Paragraph 4.52 of the RDP reports that the United Kingdom contributed GBP 235,806 in 2005 to the Kyoto Protocol Interim Allocation, which was used to fund activities related to the entry into force of the Kyoto Protocol.

2. Transfer of technology

56. In the NC4, the United Kingdom reports that technology transfer is provided mainly through its bilateral and multilateral activities. The United Kingdom promotes and enhances developing countries' access to financing for "hard" or "soft" environmentally sound technologies by undertaking or participating in initiatives such as the Renewable Energy and Energy Efficiency Partnership (REEEP), the Climate Change and Energy Programme, the UK Technology Partnership Initiative, the International Energy Agency (IEA) Greenhouse Gas Technology Information Exchange, and the Climate Technology Initiatives of the Organisation for Economic Co-operation and Development (OECD) and the IEA.

57. Appendix D to the NC4 shows some of the bilateral/regional projects on climate mitigation and adaptation that have been initiated or implemented with financial contributions from the United Kingdom. However, the United Kingdom has not reported any lessons learned, success or failure stories or technology(ies) transferred. Table 6 of the UNFCCC reporting guidelines could be used to report such information and the ERT encourages the United Kingdom to use that table in its next national communication.

F. Research and systematic observation

58. In the NC4, the United Kingdom has provided the required information on its actions relating to research and systematic observation, and addressed both domestic and international activities, including the World Climate Programme, the International Geosphere–Biosphere Programme, the Global Climate Observing System (GCOS), and the activities of the Intergovernmental Panel on Climate Change (IPCC). The ERT noted that, like the NC3, the NC4 does not discuss opportunities for and barriers to the free and open international exchange of data.

59. There are no formal national plans for climate research and observation; nevertheless, the government funds a wide range of climate change research, much of which involves international collaboration. DEFRA provides about GBP 12 million annually for climate research, observation and policy formulation. Outputs from a new model developed by the Hadley Centre (HadGEM1) will be included in the Fourth Assessment Report of the IPCC. In support of the UNFCCC implementation plan for the Global Observing Systems of Climate, the United Kingdom Government fully endorsed the Global Earth Observation System of Systems. With respect to the GCOS, the ERT noted the new work that is being initiated by the United Kingdom to digitize ocean observations contained in ships' logs from the 1940s.

60. Systematic observations in the United Kingdom are made by national agencies and organizations such as the Meteorological Office, the Natural Environment Research Council (NERC) centres and surveys, and the Forestry Commission, as well as the European Space Agency and the European Organization for the Exploitation of Meteorological Satellites (EUMETSAT).

61. As part of its capacity-building activity, the United Kingdom Government has funded the development of the PRECIS regional climate modelling system and conducted workshops using the model to enable developing countries to generate their own local climate predictions without the need for supercomputers or individually developed modelling software. Workshops have been held in Cuba, Bhutan, Brazil, India, Turkey and Argentina and are planned for Ghana and Malaysia.

G. Education, training and public awareness

62. In the NC4, the United Kingdom has provided information on its actions relating to education, training and public awareness, as required by the UNFCCC reporting guidelines, except for reporting on the extent of public participation in the preparation or domestic review of the NC4. The ERT recommends that the United Kingdom include such information in its next national communication.

63. The United Kingdom has participated in the implementation of Article 6 of the UNFCCC through support to the development of an Internet-based Information Clearing House designed to disseminate information on education, training and public awareness to the public; training scientists from developing countries to use the PRECIS modelling system; capacity-building programmes implemented through the Meteorological Office; and involving educators and integrating understanding of climate change into the school curriculum, under the more general theme of sustainable development, to educate children and young people. The United Kingdom also has other innovative public awareness-raising programmes on climate change, such as the Carbon Trust Campaign, the Energy Saving Trust, the Climate Change Communications Initiative, the Sustainable Development Strategy and a three-year cross-government climate change communications initiative (Tomorrow's Climate, Today's Challenge) to raise awareness of the issue and inspire collective action.

III. Evaluation of information contained in the report demonstrating progress and of supplementary information under Article 7, paragraph 2, of the Kyoto Protocol

A. Information contained in the report demonstrating progress

64. The United Kingdom's RDP includes four chapters which contain the information required by decisions 22/CP.7 and 25/CP.8, including the evaluation of how domestic measures, in the light of the trends and projections, contribute to meeting the commitments under Article 3, paragraph 1, of the Kyoto Protocol. The ERT found the information contained in the RDP to be consistent with that in the NC4. The RDP contains relevant references to the NC4, which makes it easier to check the consistency of the two documents with each other.

65. United Kingdom's NC4 and RDP provide short descriptions of the national system and the national registry (for detailed information, a reference to the 2006 national inventory report (NIR) is made). The NC4 and RDP also provide information on the institutional steps taken that demonstrate the progress made towards implementing United Kingdom's commitment under the Kyoto Protocol to mitigate GHG emissions, notably the establishment of the Climate Change Projects Office (CCPO) in 2001; the appointment of a designated national authority for the CDM, and the appointment of a designated focal point for joint implementation (JI) projects. The ERT commends the United Kingdom for its role in the development of the registry software, which complies with EU/UNFCCC requirements and which is licensed to 15 other Annex I Parties to facilitate the operation of their national registries.

66. In 2004, the United Kingdom's annual emissions of the six GHGs covered by the Kyoto Protocol had decreased by 13.6 per cent below the base year (1990) level (table 4). The main drivers for these emission reductions are changes in the energy supply mix, energy efficiency improvements including a CHP support strategy and relevant targets up to 2010, the Renewables Obligation (2002), renewable energy support programmes, pollution control measures in the industrial sector, and reductions in non-CO_2 emissions, including the F-gases, achieved through the domestic ETS, the European Community's Integrated Pollution Prevention and Control (IPPC) Directive and voluntary agreements. The combined effect of these measures is estimated as a reduction of emissions by about 30 per cent by 2004, compared to a scenario without these measures.

67. The United Kingdom's legally binding commitment under the EU burden-sharing agreement is to reduce GHG emissions by 12.5 per cent below the base year (1990) level over the first commitment period. The actual emissions trends (1990–2004) and projections demonstrate that the United Kingdom is well on track to meet this target: without any additional measures GHG emissions are expected to be about 19.0 per cent below the base year level in 2010 (table 4). The United Kingdom's policies under the Climate Change Programme adopted in 2001 represent a significant part of the its actions to meet the Kyoto Protocol commitment. Table 8 shows the estimates of the emission reductions achieved through existing policies and measures, to a large extent within the UK Climate Change Programme.

68. The additional measures planned and adopted for implementation from 2005 to 2020 are included in the "with additional measures" scenarios. These measures are expected to deliver reductions beyond the Kyoto Protocol target of 12.5 per cent in order to achieve the ambitious national target to decrease CO_2 emissions by 20 per cent below the 1990 level by 2010. Among these additional measures, the EU ETS plays an important role: the emission reductions from the EU ETS second phase are estimated to be in the range of 11–29.3 Tg CO_2.

Table 8. Domestic measures as of 2005 to meet the Kyoto Protocol Target in 2010

Item	Sector and key measures	Estimated emission reductions, Tg CO_2 equivalent
1	Energy Supply (Renewables Obligation)	9.17
2	Households (EEC, Warm Front, Building Regulations (2002 and 2005) in England and Wales, Appliance standards and labelling and Community Energy)	13.20
3	Business (Climate Change Agreements, Climate Change Levy package, UK ETS, Carbon Trust programmes and Building Regulations in England and Wales)	17.23
4	Public Sector	0.73
5	Transport (voluntary agreements, 10 year plan and sustainable distribution)	11.73
6	Waste (EU landfill directive, landfill tax)	0.73
7	LULUCF (afforestation since 1990 under grant scheme)	2.57
	Total	**55.37**

Source: Table 3 of the RDP.
Note: The estimated emission reductions are principally reductions from the policies and measures included in the "with measures" scenario.

69. The UK's LULUCF sector, in contrast to that of many other Annex I Parties, was a net source of emissions from the base year 1990 until 1999, when it became a net CO_2 sink. The United Kingdom has reported about 0.4 Tg CO_2 emissions from deforestation in 1990, which will be reflected in the United Kingdom's assigned amount under the Kyoto Protocol. Under Article 3, paragraph 4, of the Kyoto Protocol, the United Kingdom intends to account for GHG removals by forest management. However, it has decided not to use cropland, grazing land management and revegetation because of the uncertainties associated with emissions from soils and the detailed monitoring required under the Kyoto Protocol.

70. DEFRA, as the designated national authority, has approved the participation of a number of UK companies in CDM projects, including afforestation or reforestation projects, which the United Kingdom considers as projects that contribute to sustainable development in non-Annex I Parties. The United Kingdom has not adopted a domestic JI programme, but such a programme may be considered in the future in the context of the United Kingdom's and the EU's ETS.

71. The United Kingdom is implementing the EU ETS based on the experience gained from the domestic ETS. Its national allocation plan (NAP) for phase I of the EU ETS is set to help reduce emissions by between 45 and 65 million tonnes CO_2 below projected emissions for the sectors covered. The second-phase NAP (2008–2012) is currently being developed and is expected to deliver emissions reductions of between 11 and 29.3 Tg CO_2

B. Supplementary information under Article 7, paragraph 2, of the Kyoto Protocol

72. The United Kingdom has provided the supplementary information required under Article 7, paragraph 2, of the Kyoto Protocol in its NC4 as well as in its RDP. This information reflects the steps taken to implement the relevant provisions of the Kyoto Protocol. The supplementary information, required under decision 15/CMP.1, is referenced in annex E to the NC4 and placed in different sections of the NC4 and RDP. Table 9 provides a summary and references to the NC4 and RDP chapters in which supplementary information is provided.

73. The United Kingdom has also reported on the efforts it is making to implement policies and measures in such a way as to minimize adverse effects, including the effects of climate change on international trade, and social, environmental and economic impacts on other Parties, particularly those identified in Article 4, paragraphs 8 and 9, of the Convention. These measures include research to

determine the extent of the impacts of response measures, measures to reduce emissions of those GHGs that do not come from fossil fuels, the use of emissions trading, measures to enhance carbon sinks and action to encourage carbon capture and storage.

74. The United Kingdom has indicated in the RDP that it has made the relevant choices of parameters and definitions required to ensure the implementation of activities under Article 3, paragraph 3, and any elected activities under Article 3, paragraph 4, of the Kyoto Protocol, and for details refers the reader to the United Kingdom's assigned amount report submitted to the European Commission in January 2006. The ERT recommends that the United Kingdom provide information on these choices, as well as information on the legislative arrangements and procedures in place that ensure that such activities also contribute to the conservation of biodiversity and the sustainable use of natural resources,[6] in its next national communication.

Table 9. Overview of supplementary information under Article 7, paragraph 2, of the Kyoto Protocol

Supplementary Information	Reference	Reported activities
Supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17	NC4, pp. 15, 25–26; RDP, pp. 30–33, NIR 2006	Domestic mitigation measures, use of EU ETS and CDM, short description of the national system and the national registry (reference to details in NIR 2006)
Policies and measures in accordance with Article 3, paragraphs 3 and 4	RDP, p. 34	Mandatory accounting of afforestation, reforestation and deforestation (Article 3, paragraph 3), and decision to account for forest management (Article 3, paragraph 4)
Policies and measures in accordance with Article 2	RDP, pp. 34–36; NC4, pp. 24–41; NC4, annex B	Evaluation of projected progress in emissions reductions by measures in individual sectors
Domestic and regional programmes and/or legislative arrangements and enforcement and administrative procedures	NC4, annex B; NC4, pp. 24–25; RDP, pp. 30–34	National policy instruments (regulatory, fiscal, economic, and negotiated agreements), legal arrangements including GHG emissions trading amendment (GRETA) and national emissions trading regulations; emissions inventory regulations 2005 and EU Registry regulations
Information under Article 10	NC4, pp. 84–104, RDP, pp. 39–40	Improvements in the UK inventory, adaptation policy framework developed, United Kingdom Climate Impacts Programme (UKCIP), adaptation research, scientific and technical cooperation, participation in UN global observing systems, capacity-building and contribution to adaptation in developing countries, information, awareness-raising, and education
Information under Article 11	RDP, p. 48; NC4, pp. 78–82	Financial assistance and technology transfer to developing countries

IV. Conclusions

75. The United Kingdom's GHG emissions were, in 2004, 14.3 per cent below its 1990 emissions (and 13.6 per cent below the estimated base year level under the Kyoto Protocol), at the same time as 2005 was the 14th consecutive year of positive economic growth. The emission reductions have been driven by a solid and coherent programme of action, which includes measures to increase energy efficiency across all sectors and to support the increase in the share of less carbon-intensive fuels in the national energy mix. Among the measures currently in place, the EU ETS is estimated to provide the greatest emission reductions by 2010. The UK Climate Change Programme includes measures which are projected to provide emission reductions amounting to between 19.4 and 37.8 Tg CO_2 by 2012. Besides its Kyoto Protocol target of –12.5 per cent, the United Kingdom has adopted two voluntary and challenging domestic targets: to reduce its CO_2 emissions by 20 per cent by 2010 and by 60 per cent by 2050, with real progress towards these targets expected by 2020.

76. The United Kingdom is likely to meet its Kyoto Protocol target and is well on its way to achieving further emission reductions aiming at the achievement of its domestic targets. In the NC4 and RDP, the United Kingdom presents GHG projections for the years 2010, 2015 and 2020. Three scenarios are included: (a) a baseline "with measures" scenario (including the effect of currently implemented and

[6] See paragraph 38 in decision 15/CMP.1.

adopted policies and measures); and (b) two "with additional measures" scenarios (including the effect of planned measures). The projected reductions in GHG emissions under the "with measures" scenario are 19.0 per cent below the base year level (or 19.4 per cent if LULUCF credits are included), and under the "with additional measures" scenarios are between 22.6 and 25.0 per cent below the base year level.

77. The ERT found the United Kingdom's NC4 to be transparent and concise. Nevertheless, in the course of the IDR the ERT formulated a number of recommendations relating to the completeness and transparency of the United Kingdom's reporting under the Convention and its Kyoto Protocol. The key recommendations[7] are that the United Kingdom:

- Use CO_2 equivalent as the main unit of measurement for GHG emissions in order to improve the comparability of information and facilitate the work of the ERT;
- Evaluate the total effect policies and measures, in addition to the individual effects of the policies and measures implemented, adopted and planned;
- Presents its activities in providing financial resources and supporting technology transfer in more detail in its next national communication;
- Include in the next national communication a description of national legislative arrangements and administrative procedures that seek to ensure that the implementation of activities under Article 3, paragraph 3, and any elected activities under Article 3, paragraph 4, of the Kyoto Protocol, also contributes to the conservation of biodiversity and sustainable use of natural resources.

78. The ERT calls the United Kingdom's attention particularly to the recommendation on reporting on financial assistance and technology transfer, for which the ERT believes that all Parties could benefit from a more thorough reporting by the United Kingdom.

[7] For a complete list of recommendations, the relevant sections of this report should be consulted.

Annex I

Documents and information used during the review

A. Reference documents

UNFCCC. Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part II: UNFCCC reporting guidelines on national communications of Annex I Parties. FCCC/SBSTA/1999/7. Available at <http://unfccc.int/resource/docs/cop5/07.pdf>.

UNFCCC. Guidelines for the preparation of the information required under Article 7 of the Kyoto Protocol, decision 15/CMP.1. FCCC/KP/CMP/2005/8/Add.2. Available at <http://unfccc.int/resource/docs/2005/cmp1/eng/08a02.pdf#page=54>.

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Department for Environment, Food and Rural Affairs of the United Kingdom of Great Britain and Northern Ireland (DEFRA). The United Kingdom's Report on Demonstrable Progress under the Kyoto Protocol. Available at <http://unfccc.int/resource/docs/dpr/uk1.pdf>.

The 2006 GHG inventory submission of the United Kingdom of Great Britain and Northern Ireland. Available at <http://unfccc.int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items/3734.php>.

B. Additional information provided by the Party

Responses to questions during the review were received from Mr. James Davey, Response Strategies Branch, Global Atmosphere Science Division, Department for Environment, Food and Rural Affairs of the United Kingdom of Great Britain and Northern Ireland (DEFRA).

Annex II

Acronyms and abbreviations

ACEA	European Automobile Manufacturers Association (Association des Constructeurs Européens d' Automobiles)
C	carbon
CDM	clean development mechanism
CH_4	methane
CHP	combined heat and power
CO_2 eq	carbon dioxide equivalent
CO_2	carbon dioxide
CRF	common reporting format
DEFRA	Department for Environment, Food and Rural Affairs (United Kingdom)
DFID	Department for International Development (United Kingdom)
EC	European Community
ERT	expert review team
ETS	emissions trading scheme
EU	European Union
F-gas	fluorinated gas
GBP	British pound
GCOS	Global Climate Observing System
GDP	gross domestic product
GEF	Global Environment Facility
GHG	greenhouse gas; unless indicated otherwise, GHG emissions are the weighted sum of CO_2, CH_4, N_2O, HFCs, PFCs and SF_6 without GHG emissions and removals from LULUCF
GNI	gross national income
GWe	Gigawatt of electric power
GWP	global warming potential
HFCs	hydrofluorocarbons
IDR	in-depth review
IEA	International Energy Agency
IPCC	Intergovernmental Panel on Climate Change
IPPC	Integrated Pollution Prevention and Control
ISO	International Organization for Standardization
JAMA	Japan Automobile Manufacturers Association
JI	joint implementation
kg	kilogram (1 kg = 1 thousand grams)
kWh	kilowatt hour
KAMA	Korea Automobile Manufacturers Association
LDCF	Least Developed Countries Fund
LULUCF	land use, land-use change and forestry
Mg	megagram (1 Mg = 1 tonne)
mg	milligram (1000 mg = 1 gram)
Mtoe	millions of tonnes of oil equivalent
N_2O	nitrous oxide
NC3	third national communication
NC4	fourth national communication
NIR	national inventory report
OECD	Organisation for Economic Co-operation and Development
PFCs	perfluorocarbons
PPP	purchasing power parities
RDP	Report demonstrating progress under the Kyoto Protocol
SF_6	sulphur hexafluoride
SMEs	small and medium-sized enterprises
SO_2	sulphur dioxide
SCCF	Special Climate Change Fund
Tg	teragram (1 Tg = 1 million tonnes)
toe	tonnes of oil equivalent
TPES	total primary energy supply
UK	United Kingdom
UKCIP	United Kingdom Climate Impacts Programme
UNFCCC	United Nations Framework Convention on Climate Change
USD	US dollar

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