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Report on the technical review of the seventh national communication of the United Kingdom of Great Britain and Northern Ireland

Parties included in Annex I to the Convention were requested by decision 9/CP.16 to submit their seventh national communication to the secretariat by 1 January 2018. According to decision 15/CMP.1, Parties included in Annex I to the Convention that are also Parties to the Kyoto Protocol are required to include in their national communications supplementary information under Article 7, paragraph 2, of the Kyoto Protocol. This report presents the results of the technical review of the seventh national communication and relevant supplementary information under the Kyoto Protocol of the United Kingdom of Great Britain and Northern Ireland, conducted by an expert review team in accordance with the "Guidelines for the technical review of information reported under the Convention related to greenhouse gas inventories, biennial reports and national communications by Parties included in Annex I to the Convention" and the "Guidelines for review under Article 8 of the Kyoto Protocol".

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Abbreviations and acronyms

AEA	annual emission allocation
Annex II Party	Party included in Annex II to the Convention
AR4	Fourth Assessment Report of the Intergovernmental Panel on Climate Change
BEIS	Department for Business, Energy and Industrial Strategy
BR	biennial report
CCC	Committee on Climate Change
CCS	carbon capture and storage
CH_4	methane
CIFs	Climate Investment Funds
CO_2	carbon dioxide
CO_2 eq	carbon dioxide equivalent
CTF	common tabular format
DEFRA	Department for Environment, Food and Rural Affairs
EEP	Energy and Emissions Projections
ERT	expert review team
ESD	effort-sharing decision
EU	European Union
EU ETS	European Union Emissions Trading System
F-gas	fluorinated gas
GBP	pounds sterling
GCF	Green Climate Fund
GDP	gross domestic product
GEF	Global Environment Facility
GHG	greenhouse gas
HFC	hydrofluorocarbon
ICF	International Climate Finance
IE	included elsewhere
IMO	International Maritime Organization
IPCC	Intergovernmental Panel on Climate Change
IPPU	industrial processes and product use
LCPD	Large Combustion Plants Directive (2001/80/EC)
LULUCF	land use, land-use change and forestry
NA	not applicable
NC	national communication
NF_3	nitrogen trifluoride
NIR	national inventory report
NO	not occurring
non-Annex I Party	Party not included in Annex I to the Convention
non-ETS sectors	sectors not covered by the European Union Emissions Trading System
N_2O	nitrous oxide
ODA	official development assistance
PaMs	policies and measures
PFC	perfluorocarbon
reporting guidelines for supplementary information	"Guidelines for the preparation of the information required under Article 7 of the Kyoto Protocol. Part II: Reporting of supplementary information under Article 7, paragraph 2"
RED	Renewable Energy Directive (2009/28/EC)

RES	renewable energy sources
RTFO	Renewable Transport Fuel Obligation
SF_6	sulfur hexafluoride
UKFS	United Kingdom Forestry Standard
UNFCCC reporting guidelines on BRs	"UNFCCC biennial reporting guidelines for developed country Parties"
UNFCCC reporting guidelines on NCs	"Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part II: UNFCCC reporting guidelines on national communications"
WAM	'with additional measures'
WEM	'with measures'
WOM	'without measures'

I. Introduction and summary

A. Introduction

1. This is a report on the in-country technical review of the NC7 of the United Kingdom of Great Britain and Northern Ireland. The review was coordinated by the secretariat in accordance with the "Guidelines for the technical review of information reported under the Convention related to greenhouse gas inventories, biennial reports and national communications by Parties included in Annex I to the Convention", particularly "Part V: UNFCCC guidelines for the technical review of national communications from Parties included in Annex I to the Convention" (annex to decision 13/CP.20), and the "Guidelines for review under Article 8 of the Kyoto Protocol" (annex to decision 22/CMP.1 and annex I to decision 4/CMP.11).[1]

2. In accordance with the same decisions, a draft version of this report was transmitted to the Government of the United Kingdom, which provided comments that were considered and incorporated, as appropriate, into this final version of the report.

3. The review was conducted from 4 to 9 June 2018 in London by the following team of nominated experts from the UNFCCC roster of experts: Ms. Gabriela Fischerova (Slovakia), Mr. Liviu Gheorghe (Romania), Ms. Marian Van Pelt (United States of America), Mr. Marcelo Rocha (Brazil), and Mr. Benon Bibbu Yassin (Malawi). Ms. Fischerova and Mr. Rocha were the lead reviewers. The review was coordinated by Ms. Xuehong Wang (UNFCCC secretariat).

B. Summary

4. The ERT conducted a technical review of the information reported in the NC7 of the United Kingdom in accordance with the UNFCCC reporting guidelines on NCs (decision 4/CP.5) and the reporting guidelines for supplementary information, in particular the supplementary information required under Article 7, paragraph 2, and on the minimization of adverse impacts under Article 3, paragraph 14, of the Kyoto Protocol (annex to decision 15/CMP.1 and annex III to decision 3/CMP.11).

1. Timeliness

5. The NC7 was submitted on 30 December 2017, before the deadline of 1 January 2018 mandated by decision 9/CP.16.

2. Completeness, transparency of reporting and adherence to the reporting guidelines

6. Issues and gaps identified by the ERT related to the reported information are presented in table 1. The information reported by the United Kingdom in its NC7, including the supplementary information under the Kyoto Protocol, mostly adheres to the UNFCCC reporting guidelines on NCs.

[1] The implementation of the provisions of the Doha Amendment is therefore considered in this report in the context of decision 1/CMP.8, paragraph 6, pending the entry into force of the amendment.

Table 1
Assessment of completeness and transparency of mandatory information reported by the United Kingdom in its seventh national communication, including supplementary information under the Kyoto Protocol

Section of NC	*Completeness*	*Transparency*	*Reference to description of recommendations*	*Supplementary information under the Kyoto Protocol*	*Completeness*	*Transparency*	*Reference to description of recommendations*
Executive summary				National system	Complete	Transparent	
National circumstances	Complete	Transparent		National registry	Complete	Transparent	
GHG inventory	Complete	Transparent		Supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17	Complete	Transparent	
PaMs	Complete	Mostly transparent	Issue 1 in table 6	PaMs in accordance with Article 2	Complete	Transparent	
Projections and the total effect of PaMs	Complete	Transparent		Domestic and regional programmes and/or arrangements and procedures	Complete	Transparent	
Vulnerability assessment, climate change impacts and adaptation measures	Complete	Transparent		Information under Article 10	Complete	Transparent	
Financial resources and transfer of technology	Mostly complete	Mostly transparent	Issues 1 and 2 in table 13; issue 1 in table 14	Financial resources	Complete	Mostly transparent	Issue 1 in table 13
Research and systematic observation	Complete	Transparent		Minimization of adverse impacts in accordance with Article 3, paragraph 14	Complete	Mostly Transparent	Paragraph 57
Education, training and public awareness	Complete	Transparent					

Note: A list of recommendations pertaining to the completeness and transparency issues identified in this table is included in chapter III below.

3. Summary of reviewed supplementary information under the Kyoto Protocol

7. The supplementary information under Article 7, paragraph 2, of the Kyoto Protocol is incorporated in different sections of the NC7, and the supplementary information under Article 7, paragraph 1, of the Kyoto Protocol is reported in the NIR of the 2017 annual submission. Table 2 provides references to where the information is reported. The technical assessment of the information reported under Article 7, paragraphs 1 and 2, of the Kyoto Protocol is contained in the relevant sections of this report.

Table 2
Overview of supplementary information under the Kyoto Protocol reported by the United Kingdom

Supplementary information	*Reference to the section of NC7*
National registry	Chapter 2
National system	Chapter 2
Supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17	Chapter 3
PaMs in accordance with Article 2	Chapters 3, 4 and 6
Domestic and regional programmes and/or legislative arrangements and enforcement and administrative procedures	Chapters 1 and 3
Information under Article 10	Chapter 6
Financial resources	Chapter 5
Minimization of adverse impacts in accordance with Article 3, paragraph 14	Chapter 6 and Annex 1 and also reported in the NIR of the Party's 2017 and 2018 annual submissions

II. Technical review of the information reported in the seventh national communication, including the supplementary information under the Kyoto Protocol

A. Information on national circumstances and greenhouse gas emissions and removals

1. National circumstances relevant to greenhouse gas emissions and removals

(a) Technical assessment of the reported information

8. In its NC7, the United Kingdom has provided a detailed description of the national circumstances relevant to GHG emissions and removals and has elaborated on the framework legislation and key policy documents on climate change. Further information on the review of the institutional and legislative arrangements for the coordination and implementation of PaMs are provided in chapter II.B below.

9. The ERT noted that although the description of national circumstances is complete and transparent, the reporting could be enhanced by providing more clarity on the Government's approach to harmonizing different policies and on how the responsibilities among four governments are shared in terms of compliance with the overall target. Additional information on the governance system for national climate policy and cooperation among relevant departments was provided during the review week, and including this description in the next NC could increase the value of the report. The main body responsible for climate change policy in the Government of the United Kingdom is BEIS. Climate change policy is devolved to the governments of Scotland, Wales and Northern Ireland. Scotland and Wales have also passed their own legislation relating to emission reduction. BEIS coordinates preparation and implementation of climate strategy with other relevant departments, such as

DEFRA, the Department for Transport and the Ministry of Housing, Communities and Local Government. The Government receives advice on and scrutiny of its climate strategy from CCC. This Committee was established by the Climate Change Act of 2008 as an independent body that advises the Government of the United Kingdom and the devolved administrations on emission targets. CCC prepares a report on the progress the devolved administrations have made in reducing GHG emissions, which they are required to respond to.

10. Since the NC6, the Department of Energy and Climate Change has been transformed into BEIS, which is responsible for setting domestic climate strategies and policies for mitigation and for promoting international action to mitigate climate change. Adaptation at the national level in England remains under the responsibility of DEFRA. Responsibility for adaptation action in Scotland, Wales and Northern Ireland is devolved to their respective governments.

11. The ERT noted that during the period 1990–2015 the United Kingdom's population and GDP per capita increased by 15 and about 44 per cent, respectively, while GHG emissions per GDP unit and GHG emissions per capita decreased by 61.1 and 44.1 per cent, respectively. The global financial crisis in 2008 and 2009 affected the United Kingdom in terms of both economic and population growth. Recovery began towards the end of 2009 but growth was slower than in the period prior to 2008. Until the crisis, the rate of growth of the real GDP had exceeded the rate of population growth. However, in 2014, GDP per capita remained below its 2007 level. Emission trends in GHG emissions per capita and GHG emissions per GDP unit continued to decrease. Table 3 illustrates the national circumstances of the United Kingdom by providing some indicators relevant to emissions and removals.

Table 3
Indicators relevant to greenhouse gas emissions and removals for the United Kingdom for the period 1990–2016

						Change %	
Indicator	*1990*	*2000*	*2010*	*2014*	*2015*	*1990–2015*	*2014–2015*
GDP per capita (thousands 2011 USD using purchasing power parity)	26.77	32.96	36.20	37.98	38.51	43.9	1.4
GHG emissions without LULUCF per capita (t CO_2 eq)	13.92	12.11	9.81	8.15	7.78	–44.1	–4.5
GHG emissions without LULUCF per GDP unit (kg CO_2 eq per 2011 USD using purchasing power parity)	0.52	0.37	0.27	0.21	0.20	–61.1	–5.8

Sources: (1) GHG emission data: The United Kingdom's 2017 GHG inventory submission, version 2; (2) population and GDP: World Bank.

Note: 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.

(b) Assessment of adherence to the reporting guidelines

12. The ERT assessed the information reported in the NC7 of the United Kingdom and recognized that the reporting is complete, transparent and adhering to the UNFCCC reporting guidelines on NCs. There were no issues raised during the review relating to the topics discussed in this chapter of the review report.

2. Information on greenhouse gas emissions and removals

(a) Technical assessment of the reported information

13. Total GHG emissions[2] excluding emissions and removals from LULUCF decreased by 40.9 per cent between 1990 and 2016, whereas total GHG emissions including net emissions or removals from LULUCF decreased by 39.2 per cent over the same period. Table 4 illustrates the emission trends by sector and by gas for the United Kingdom.

Table 4
Greenhouse gas emissions by sector and by gas for the United Kingdom for the period 1990–2016

	GHG emissions (kt CO_2 eq)					*Change (%)*		*Share (%)*	
	1990	*2000*	*2010*	*2015*	*2016*	*1990–2016*	*2015–2016*	*1990*	*2016*
Sector									
1. Energy	615 668.71	565 606.67	507 315.65	415 603.59	392 543.58	–36.2	–5.5	77.2	83.4
A1. Energy industries	236 989.52	199 606.26	194 189.55	134 013.35	111 115.57	–53.1	–17.1	29.7	23.6
A2. Manufacturing industries and construction	96 928.81	91 402.88	63 172.61	56 516.54	51 985.55	–46.4	–8.0	12.2	11.0
A3. Transport	122 130.15	130 013.66	121 526.67	121 841.95	124 320.74	1.8	2.0	15.3	26.4
A4. and A5. Other	117 931.01	122 488.18	114 913.21	92 230.11	95 251.91	–19.2	3.3	14.8	20.2
B. Fugitive emissions from fuels	41 689.22	22 095.69	13 513.61	11 001.64	9 869.81	–76.3	–10.3	5.2	2.1
C. CO_2 transport and storage	NO	NO	NO	NO	NO	NA	NA	NA	NA
2. IPPU	66 538.33	40 587.37	35 603.84	33 762.30	30 766.61	–53.8	–8.9	8.3	6.5
3. Agriculture	49 998.65	46 728.25	41 703.60	41 922.28	42 002.31	–16.0	0.2	6.3	8.9
4. LULUCF	–2 128.01	–7 873.05	–14 440.14	–15 087.69	–14 543.19	583.4	–3.6	NA	NA
5. Waste	66 911.48	63 102.82	29 977.98	19 214.64	20 183.14	–69.8	5.0	8.4	4.3
6. Other	NO	NO	NO	NO	NO	NA	NA	NA	NA
Gas [a]									
CO_2	596 239.91	556 235.24	495 083.45	404 926.00	381 304.51	–36.0	–5.8	74.8	81.0
CH_4	133 670.78	109 576.31	64 936.74	51 978.50	51 985.70	–61.1	0.0	16.8	11.0
N_2O	49 755.85	30 049.52	22 66.19	21 670.62	21 528.54	–56.7	–0.7	6.2	4.6
HFCs	14 391.43	9 874.86	16 499.13	16 054.75	15 272.26	6.1	–4.9	1.8	3.2
PFCs	1 651.49	596.78	287.71	327.23	353.94	–78.6	8.2	0.2	0.1
SF_6	1 279.29	1 817.65	686.43	457.58	507.03	–60.4	10.8	0.2	0.1
NF_3	0.42	1.69	0.27	0.44	0.48	16.2	10.0	0.0	0.0
Total GHG emissions without LULUCF	**799 117.17**	**716 025.11**	**614 601.06**	**510 502.80**	**485 495.64**	**–39.2**	**–4.9**	**100.0**	**100.0**
Total GHG emissions with LULUCF	**796 989.17**	**708 152.06**	**600 160.92**	**495 415.11**	**470 952.46**	**–40.9**	**–4.9**	**NA**	**NA**

Source: GHG emission data: The United Kingdom's 2018 annual submission, version 1.1.
[a] Emissions by gas without LULUCF and without indirect CO_2.

[2] In this report, the term "total GHG emissions" refers to the aggregated national GHG emissions expressed in terms of CO_2 eq excluding LULUCF, unless otherwise specified. Values in this paragraph are calculated based on the 2018 annual submission, version 1.1.

14. The decrease in total emissions was driven mainly by a decrease in emissions from the energy sector, particularly from power stations (IPCC category 1A1a) due to a significant switching from coal use to other less carbon intensive fuels and renewables.

15. Between 1990 and 2016, GHG emissions from the energy sector decreased by 36.2 per cent (223,125.12 kt CO_2 eq) owing mainly to fuel switching (i.e. strong move away from coal and oil generation towards use of gas and non-nuclear renewable energy generation), structural change (e.g. improvements to the gas distribution network), and improvements in end-use efficiency.

16. Between 1990 and 2016, GHG emissions from IPPU decreased by 53.8 per cent (35,771.72 kt CO_2 eq) owing mainly to nitric acid production plant closures combined with the installation of abatement equipment at the adipic acid plant, the closure of many kilns, decreasing cement production, significant improvements in aluminium process control, an increase in the rate of aluminium recycling and the closure of aluminium plants. Between 1990 and 2016, GHG emissions from the agriculture sector decreased by 16.0 per cent (7,996.34 kt CO_2 eq), owing mainly to a decline in animal numbers and a decrease in synthetic fertilizer application, particularly to grasslands. The LULUCF sector was a net sink of 14,543.19 kt CO_2 eq in the United Kingdom in 2016; net GHG removals have increased by 12,415.18 kt CO_2 eq since 1990. The trend was mainly driven by the maturing of forests planted during the 1970s and 1980s and assisted by the growth of forests planted – at an average of 24.0 kha per year – since 1990. Between 1990 and the latest available reported year, GHG emissions from the waste sector decreased by 69.8 per cent (46,728.35 kt CO_2 eq) owing mainly to the increased implementation of CH_4 recovery systems at landfill sites and less biodegradable waste being sent to landfill.

17. The summary information provided on GHG emissions was consistent with the information reported in the 2017 annual submission. However, the summary information was not consistent with the information reported in the 2018 annual submission. The inconsistencies were associated with different geographical coverage of the Crown dependencies and overseas territories. The totals presented throughout the NC7 tables follow the geographic coverage of the Convention, which is extended to include all Crown dependencies and overseas territories, including Bermuda. The geographic coverage of the 2018 annual submission includes the Crown dependencies and overseas territories included in the scope of the second commitment period of the Kyoto Protocol and hence excludes Bermuda.

(b) Assessment of adherence to the reporting guidelines

18. The ERT assessed the information reported in the NC7 of the United Kingdom and recognized that the reporting is complete, transparent and adhering to the UNFCCC reporting guidelines on NCs. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

3. National system for the estimation of anthropogenic emissions by sources and removals by sinks

(a) Technical assessment of the reported information

19. The United Kingdom provided in the NC7 a description of how its national system for the estimation of anthropogenic emissions by sources and removals by sinks of all GHGs not controlled by the Montreal Protocol is performing the general and specific functions defined in the annex to decision 19/CMP.1. The description includes all the elements mandated by paragraph 30 of the annex to decision 15/CMP.1. The NC7 also contains a reference to the description of the national system provided in the NIR of the 2017 annual submission. The ERT took note of the review of the changes to the national system reflected in the report on the individual review of the 2017 annual submission of the United Kingdom.

(b) Assessment of adherence to the reporting guidelines

20. The ERT assessed the information reported in the NC7 of the United Kingdom and recognized that the reporting is complete and transparent. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

4. National registry

(a) Technical assessment of the reported information

21. In the NC7 the United Kingdom referred to the NIR where it describes in detail how its national registry performs the functions in accordance with the annex to decision 13/CMP.1 and the annex to decision 5/CMP.1 and complies with the requirements of the technical standards for data exchange between registry systems. The ERT took note of the review of the changes to the national registry reflected in the report on the individual review of the 2017 annual submission of the United Kingdom.

(b) Assessment of adherence to the reporting guidelines

22. The ERT assessed the information reported in the NC7 of the United Kingdom and recognized that the reporting is complete and transparent. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

B. Information on policies and measures and institutional arrangements

1. Domestic and regional programmes and/or legislative arrangements and procedures related to the Kyoto Protocol

(a) Technical assessment of the reported information

23. The United Kingdom has reported in its NC7 comprehensive and well-organized information on domestic and regional programmes and/or legislative arrangements and procedures related to the Kyoto Protocol.

24. For the second commitment period of the Kyoto Protocol, from 2013 to 2020, the United Kingdom committed to contributing to the joint EU effort to reduce GHG emissions by 20 per cent below the base-year level.

25. The main legislative act ensuring the implementation of the Kyoto Protocol is the Climate Change Act (2008), which provides a long-term legally binding framework for institutions and PaMs to reduce GHG emissions. The act's carbon budgets set the emissions trajectory that ensures the 2050 target of reducing emissions by at least 80 per cent by 2050 relative to 1990 levels will be met. Each carbon budget sets a limit on the quantity of GHG emissions that the United Kingdom can emit over a five-year period. At the end of 2017, the United Kingdom had agreed to five carbon budgets, namely 2008–2012, 2013–2017, 2018–2022, 2023–2027 and 2028–2032. The coverage of the targets set through the carbon budgets comprises the United Kingdom territory only and does not include Crown dependencies or overseas territories. The carbon budgets include the sectors covered by the EU ETS and the non-EU ETS, in addition to the impact of LULUCF, but exclude international aviation and shipping. Further emission reduction efforts have been deployed, with PaMs introduced with the 2013 Electricity Market Reform package. The devolved administrations in Scotland and Wales have passed their own legislation relating to emission reduction.

26. The Climate Change Act also provides for a strong accountability system. The Government prepares ex ante impact assessments for policy design and monitors and evaluates the implementation and effectiveness of PaMs systematically. Furthermore, CCC, which is a highly specialized, legally mandated and publicly funded quasi-autonomous independent statutory body, advises the Government on planning the carbon budgets and on developing the policies to meet them using an evidence-based approach. CCC also monitors and evaluates progress in meeting the carbon budgets and in reducing emissions to achieve the 2050 target and makes recommendations to the Government on the way forward in its annual report on progress to Parliament. BEIS is also required to publish an annual report

outlining its response to the points raised in the CCC progress report. The devolved administrations (Scottish Government, Welsh Government, and Northern Ireland Executive) are responsible for responding to recommendations relating to devolved policy. At the end of a budget period, having taken into account the advice of CCC and in consultation with the devolved administrations, the United Kingdom can bank some or all of any surplus from one carbon budget into the next budgetary period.

27. The New Clean Growth Strategy has been published and sets out a comprehensive set of PaMs that aim to accelerate the pace of clean growth and to help reach the targets in the fourth and fifth carbon budgets.

28. The ERT noted that documentation on the Climate Change Act and the fulfilment of carbon budgets and information on legislative arrangements are publicly accessible on the Internet, and public consultations are held in the process of developing PaMs. The United Kingdom has legislative arrangements and administrative procedures in place to make information publicly accessible on the web pages of BEIS[3] and the Clean Growth Strategy[4], the general climate action web page of the Government of the United Kingdom[5] and many others. Public consultations are held during the preparation of all relevant climate strategies.

29. The United Kingdom provided in its NC7 a description of national legislative arrangements and administrative procedures that seek to ensure that the implementation of activities under Article 3, paragraph 3, and elected activities under Article 3, paragraph 4, of the Kyoto Protocol also contribute to the conservation of biodiversity and the sustainable use of natural resources. Forestry policy in the United Kingdom is the responsibility of the devolved administrations and of the Government of the United Kingdom in England; all have established policies for woodland creation, co-financed through the EU rural development programme. A strong regulatory framework continues to protect existing woodland from deforestation and degradation. The United Kingdom has developed a woodland carbon code. A revised UKFS was published in November 2011, including a new guideline on forests and climate change. The requirement for climate change mitigation is embedded in the standard, which indicates that forest management should contribute to climate change mitigation over the long term through the net capture and storage of carbon in the forest ecosystem and in wood products. Meeting the requirements of the UKFS is a condition of grant aid and underpins the woodland carbon code.

(b) Assessment of adherence to the reporting guidelines

30. The ERT assessed the information reported in the NC7 of the United Kingdom and recognized that the reporting is complete and transparent. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

2. Policies and measures, including those in accordance with Article 2 of the Kyoto Protocol

(a) Technical assessment of the reported information

31. The United Kingdom provided information on its package of PaMs implemented, adopted and planned, by sector including references to the affected gases, in order to fulfil its commitments under the Convention and its Kyoto Protocol. The United Kingdom reported on its policy context and legal and institutional arrangements put in place to implement its commitments and monitor and evaluate the effectiveness of its PaMs.

32. The United Kingdom provided information on a set of PaMs similar to those previously reported, with a few exceptions (e.g. Woodland Creation Planning Grant). The United Kingdom's overarching policy framework relating to energy and climate change remains its Climate Change Act of 2008, which set the basis for the United Kingdom's

[3] https://www.gov.uk/government/organisations/department-for-business-energy-and-industrial-strategy

[4] https://www.gov.uk/government/publications/clean-growth-strategy

[5] https://www.gov.uk/government/topics/climate-change

domestic carbon budgets. The devolved administrations in Scotland and Wales have passed their own legislation relating to emission reduction. The United Kingdom also provided information on changes made since the previous submission to its institutional, legal, administrative and procedural arrangements used for domestic compliance, monitoring, reporting, archiving of information and evaluation of the progress made towards its target. Since the NC6, the former Department of Energy and Climate Change has been transformed into BEIS, which is responsible for setting domestic climate strategies and policies for mitigation and for promoting international action to mitigate climate change. Adaptation at the national level remains under the responsibility of DEFRA. BEIS coordinates United Kingdom policy on climate change at an official level through interdepartmental committees chaired by BEIS. A Cabinet committee chaired by the Chancellor of the Exchequer makes decisions at the ministerial level. During the review, the ERT learned that although coordination and cooperation among different departments and different administrations (Scottish, Welsh and Northern Ireland) are not very formalized, they work well and deliver any required action.

33. The United Kingdom gave priority to implementing the PaMs that make the most significant contribution to its emission reduction efforts for the least cost. The United Kingdom provided information on how it believes its PaMs are modifying longer-term trends in anthropogenic GHG emissions and removals in accordance with the objective of the Convention. The United Kingdom reported on how it periodically updates its PaMs to reduce greater levels of emissions. During the review, the ERT received more details on the PaMs that have been discontinued since the previous submission.

34. PaMs are implemented by the Government of the United Kingdom or by the devolved administrations, when responsibility for implementing the relevant policy has been devolved. Most of the PaMs are implemented with the support of the devolved administrations, while the Government of the United Kingdom has overall responsibility for ensuring that a programme is put in place to deliver its Kyoto target and its domestic carbon budgets. The Environment (Wales) Act 2016 sets a statutory target and a duty on Welsh ministers to reduce GHG emissions in Wales by at least 80 per cent by 2050 and requires interim targets for 2020, 2030 and 2040. The Climate Change (Scotland) Act 2009 sets targets to reduce GHG emissions in Scotland by at least 42 per cent by 2020 and 80 per cent by 2050, compared to the 1990/1995 baseline. The Northern Ireland Programme for Government (2011–2015) commits the Northern Ireland executive to reduce GHG emissions by 35 per cent from 1990 levels by 2025. During the review process, the United Kingdom explained that there has not been an Executive in Northern Ireland since January 2017 and a new Programme for Government for 2016 onward has not been agreed, so this target does not currently apply.

35. The key overarching related cross-sectoral policy in the EU is the 2020 climate and energy package, adopted in 2009, which includes the revised EU ETS and the ESD. The package is supplemented by renewable energy and energy efficiency legislation and legislative proposals on the 2020 targets for CO_2 emissions from cars and vans, the CCS directive, and the general programmes for environmental conservation, namely the 7th Environment Action Programme and the clean air policy package.

36. In operation since 2005, the EU ETS is a cap-and-trade system that covers all significant energy-intensive installations (mainly large point emissions sources such as power plants and industrial facilities) that produce 40–45 per cent of the GHG emissions of the EU. It is expected that the EU ETS will guarantee that the 2020 target (a 21 per cent emission reduction below the 2005 level) will be achieved for sectors under the scheme. The third phase of the EU ETS started in 2013 and the system now includes aircraft operations (since 2012) as well as N_2O emissions from chemical industries, PFC emissions from aluminium production and CO_2 emissions from industrial processes (since 2013).

37. The ESD became operational in 2013 and covers sectors outside the EU ETS, including transport (excluding domestic and international aviation, and international maritime transport), residential and commercial buildings, agriculture and waste, together accounting for 55–60 per cent of the GHG emissions of the EU. The aim of the ESD is to decrease GHG emissions in the EU by 10 per cent below the 2005 level by 2020 and includes binding annual targets for each member State for 2013–2020.

38. The United Kingdom did not emphasize the EU-wide mitigation actions that are under development, such as the legislative proposal by the European Commission to reform the EU ETS for the period after 2020 that is being discussed in the trilogue process, which is an informal meeting for the EU's ordinary legislative procedures that involves representatives from the European Parliament, Council of the EU and European Commission, with the goal of reaching a common position between the European Parliament and the Council before it can be adopted. However, the United Kingdom declared that it is considering its future participation in the EU ETS after its exit from the EU and is firmly committed to carbon pricing as an emission reduction tool while ensuring energy- and trade-intensive businesses are appropriately protected from any detrimental impacts on competitiveness.

39. The Government of the United Kingdom introduced both policies at the level of the United Kingdom and national policies for England only to achieve its targets under the ESD and domestic emission reduction targets. The key policies reported are the new energy supply policies, Building Regulations Part L and RTFO (see Table 5 below). The mitigation effect of the new energy supply policies (about 36,170.12 kt CO_2 eq in 2020) is the most significant. Other policies that have delivered significant emission reductions are Building Regulations Part L, expected to deliver about 10,140.43 kt CO_2 eq in 2020, and RTFO, expected to deliver about 5,817.91 kt CO_2 eq in 2020.

40. The United Kingdom highlighted the domestic mitigation actions under development, such as CCS, use of more nuclear power and electrification of road transportation. All these actions target the achievement of the fourth and fifth carbon budgets (2023–2027 and 2028–2032, respectively), as the target for 2020 is considered easily achievable through the policies already in place. These mitigation actions are among the most significant and are critical for the United Kingdom to attain its 2032 emission reduction target.

Table 5
Summary of information on policies and measures reported by the United Kingdom

Sector	*Key PaMs*	*Estimate of mitigation impact by 2020 (kt CO_2 eq)*	*Estimate of mitigation impact by 2030 (kt CO_2 eq)*
Policy framework and cross-sectoral measures	Carbon budget, Clean Growth Strategy, EU ETS, ESD	NE	NE
Energy	New energy supply policies: Policies to increase the proportion of low carbon (nuclear, CCS) and renewables electricity generation	36 170.12	43 239.98
Transport	Car fuel efficiency policies: Policies to improve fuel efficiency and reduce CO_2 emissions from cars	4 882.37	17 296.99
	RTFO – Increase target to meet RED: Policies targeted to reduce the fossil carbon content of transport fuels	5 817.91	5 400.49
	RTFO – Currently 5 per cent by volume: Policies targeting to reduce the fossil carbon content of transport fuels	2 343.59	2 149.63
Renewable energy	Renewable heat incentive: Policies targeting to encourage the generation of renewable heat in all sectors	2 401.29	2 417.63
Energy efficiency	Building Regulations Part L (2002+2005/6): Policies targeting to improve energy efficiency of buildings	10 140.43	5 110.46
	Building Regulations 2010 Part L: Policies targeting to improve energy efficiency of buildings	5 382.24	4 831.97
	Smart metering: Policies targeting to reduce consumption of electricity and gas by providing better management information	2 058.36	1 851.04
IPPU	F-gas regulation 2014: Implementation of F-gas regulation no. 517/2014 to reduce emissions of F-gases	4 569.40	12 343.20

Sector	*Key PaMs*	*Estimate of mitigation impact by 2020 (kt CO_2 eq)*	*Estimate of mitigation impact by 2030 (kt CO_2 eq)*
Agriculture	Agricultural action plan: Policies targeting to reduce emissions from farming	2 428.57	3 197.15
LULUCF	Recent forestry policies: Policies to increase afforestation	–178.28	9.82
Waste	Waste measures: Policies to increase recycling and reuse and to reduce harmful disposal, including the waste framework directive (2008/98/EC), landfill directive (1999/31/EC), waste incineration directive (2000/76/EC) and the United Kingdom landfill tax, which is an escalating tax on biodegradable waste	IE[a]	IE

Note: The estimates of mitigation impact are estimates of emissions of CO_2 or CO_2 eq avoided in a given year as a result of the implementation of mitigation actions.

[a] The United Kingdom explained that due to the complexity of the estimation methods, individual effects could not be estimated; therefore, the Party could notice the decreasing effects but could not very easily differentiate between the effects of this set of policies and other sets of policies.

41. Through the Climate Change Act, the Government of the United Kingdom has set a target for 2050 and a path to achieve the objective. It has also created a formal set-up for monitoring progress and advisory in the form of the CCC, which is an independent professional advisory committee. The Climate Change Act requires the Government to set legally binding carbon budgets (caps on the amount of GHGs in the United Kingdom over a five-year period) towards the 2050 target. Budgets must be set 12 years in advance to allow policymakers, businesses and individuals enough time to prepare.

42. The CCC advises on the appropriate level of each carbon budget, reports annually to Parliament on the progress made in reducing GHG emissions and the further progress needed to meet future targets, and publishes its advice and reasons for that advice. After a carbon budget has been set, the Climate Change Act places an obligation on the Government to prepare policies to ensure the budget is met.

43. The ERT noted that the United Kingdom has a robust system for climate change policymaking, implementation, monitoring and evaluation. When monitoring progress towards meeting carbon budgets, the United Kingdom monitors actual emissions against the best estimate for the cost-effective path to the 2050 target, on which the carbon budgets have been based. This cost-effective path reflects the actions needed in each sector (e.g. uptake of renewable electricity generation, insulation, electric vehicles) to reduce emissions and to be on track to meet the 2050 target at least cost; however, baseline projections are also uncertain; therefore, the United Kingdom runs the estimation models recurrently so that it can reduce the uncertainties and increase the precision of its estimates. For some of the sectors, estimation is more difficult, and it is assumed that for these sectors (e.g. agriculture), decarbonization will intensify later.

(b) Policies and measures in the energy sector

44. **Energy supply**. The energy sector is the main source of GHG emissions in the United Kingdom, with 29.1 per cent (145.50 Mt CO_2 eq) of overall emissions in 2015. The value is below the share of the sector in 1990 (34.8 per cent) and decreased by 48.0 per cent in terms of GHG emissions. Also, between 1990 and 2016, final energy consumption decreased by 4.0 per cent, from 147.30 Mtoe to 140.70 Mtoe. The energy mix (electricity) in the United Kingdom has changed over time, from about 75.0 per cent fossil fuel (coal accounted for 69.0 per cent) in 1990 to about 53.0 per cent fossil fuel (coal accounted for 9.0 per cent) in 2016. This change is mainly due to the new energy supply policies implemented, such as EU ETS; the EU RED directive, with more RES capacities having been installed; the EU LCPD, which led to the closure of several coal-fired units and to implement a fuel switch in others (coal to biomass or coal to natural gas), as well as to conduct structural changes in the economy and to ensure the stable demand for energy in space heating. Policies such as CCS are expected to deliver results after 2020, as they are not fully implemented on a commercial

scale and suffered a drawback in 2015. Nuclear energy has also contributed to the decrease of GHG emissions in energy supply, given the reduced number of outages of the existing power units. Other effective policies implemented by the United Kingdom include the carbon price floor (setting a minimum carbon price for the electricity generated from fossil fuels, in the form of a carbon tax, which is higher than the price for the EU allowance on the ETS market) and the electricity market reform (adding a cost to emitting CO_2 to set a floor for the carbon price for electricity supply).

45. **Renewable energy sources**. Electricity generation from RES has increased from about 2.0 per cent (1990) to about 24.6 per cent (2016), in total electricity generation, which indicates the success of the implemented policies. A further increase of RES is expected based on the implemented instruments (regulation and incentives), mainly due to the EU RES directive; however, one of the main policies in the United Kingdom was the Renewables Obligation, which is a market-based support mechanism that worked by placing an obligation on licensed electricity suppliers to submit a certain number of Renewables Obligation certificates to Ofgem, the administrator of the scheme, in respect of each megawatt hour of electricity supplied each year. In April 2017, this policy was replaced by the contracts for difference policy.[6] A feed-in tariffs scheme was introduced in 2010 to encourage the deployment of small-scale (up to 5 MW) low-carbon technologies in photovoltaics, wind, hydro, anaerobic digestion and micro combined heat and power (less than 2 kW). The other key policy is the Electricity Market Reform, which provides support for low-carbon technologies in the short to medium term, working towards a long-term vision of a competitive market where all technologies participate on a level playing field without direct financial support.

46. **Energy efficiency**. The United Kingdom's energy efficiency policy goes beyond the EU energy policy in terms of targets, sectors and instruments for achievement, and it includes public and private sectors as well as domestic and economic activities. The main energy-efficiency regulation is driven by the EU energy-efficiency directive (2012/27/EU) and the EU energy efficiency in buildings directive (2012/27/EU); however, the United Kingdom has further enhanced these requirements by creating adapted instruments, including the Carbon Reduction Commitment Energy Efficiency Scheme, and the Energy Company Obligation, which replaced the Carbon Emissions Reduction Target and the Community Energy Saving Programme. Details on the effects of energy-efficiency policies are provided in the sectoral policies listed below.

47. **Residential and commercial sectors**. Residential sector emissions decreased by approximately 35.0 per cent between 1990 (171.50 Mt CO_2 eq) and 2015 (112.10 Mt CO_2 eq). This net change was the result of interactions between three major contributing factors: a growth in demand for underlying energy services (such as warm homes, hot water and home entertainment), improvement of energy efficiency policies and reduction in carbon intensity of grid electricity. The highest impact measures are related to the energy performance of buildings directive (i.e. energy efficiency obligations, building regulations and boiler replacement standards); smart metering and billing, which also play a key role in the household sector in terms of expected savings; and product policy and the market transformation programme, which are related to the energy labelling of household appliances directive. In addition, the energy suppliers have an obligation to deliver energy-efficient measures to householders via the Energy Company Obligation.

48. Public sector emissions fell from an estimated 31.50 Mt CO_2 eq in 1990 to 14.60 Mt CO_2 eq in 2015. This was largely driven by a reduction in the use of oil in this sector, but was also due to the implementation of PaMs such as smart metering. In 2015, emissions from the business sector (businesses, excluding industrial process emissions) were estimated to be 25.9 per cent below 1990 levels, representing an estimated 17.0 per cent of total emissions. A number of factors contributed to this decrease, including a reduction in emissions from industrial combustion (including iron and steel). The main policies implemented are the Carbon Reduction Commitment Energy Efficiency Scheme, which is a mandatory carbon emission reduction scheme in the United Kingdom that applies to large energy-intensive organizations in the public and private sectors; the Climate Change Levy, which is a carbon

[6] https://en.wikipedia.org/wiki/Contract_for_difference.

tax added to electricity and fuel bills and paid by industrial, commercial, agricultural and public services for use of electricity, gas and solid fossil fuels; and the climate change agreements, which are voluntary agreements made by United Kingdom industry and the Environment Agency to reduce energy use and CO_2 emissions.

49. **Transport sector**. Transport accounted for around 24.0 per cent of the United Kingdom's GHG emissions in 2015, which represented an emission increase of 1.8 per cent since 1990, with road transport being the most significant source of emissions in the sector. Also in 2015, transport accounted for the largest share of all final energy consumption in the United Kingdom (37.0 per cent). The slowdown in the rate of increase is mainly due to technology advancements (more efficient engines and car park renewal). The United Kingdom's long-term strategy to reduce transport emissions includes the RTFO, which requires 9.7 per cent of transport fuel sold in the United Kingdom to come from renewable sources by 2020, rising to 12.4 per cent in 2032. As the transport sector holds such a high share in the total GHG emissions, the United Kingdom is implementing a set of PaMs that envisage an acceleration in the take-up of ultra-low emission vehicles, which involves financial support for buying or installing electric vehicles and charging stations through the Electric Vehicle Home-charge Scheme and Workplace Charging Scheme; development of hydrogen infrastructure and use; and other measures including low-carbon alternatives such as using public transportation, walking and cycling, and electrification of the railways.

50. The NC7 includes information on how the United Kingdom promotes and implements the decisions of the International Civil Aviation Organization and the IMO to limit emissions from aviation and marine bunker fuels. The United Kingdom has volunteered to participate in the Carbon Offsetting and Reduction Scheme for International Aviation from the beginning, in 2021; in international shipping, the United Kingdom continues to engage in IMO activities and in the generation and adoption of an initial strategy (Comprehensive IMO strategy on reduction of GHG emissions from ships) in spring 2018, with a revised strategy expected in spring 2023.

51. **Industrial sector**. Since 1990, emissions from business and industry have almost halved, mainly due to efficiency gains and a shift in manufacturing to cleaner fuels, as well as changes to the industrial structure of the United Kingdom economy. Much of this reduction has taken place in the most energy intensive industries (e.g. each tonne of steel produced in the United Kingdom requires 40.0 per cent less energy to produce than 40 years ago). In addition, the energy efficiency of non-domestic buildings has been improved since 1990, driving to emissions 18.0 per cent lower in 2015. The main policy measures at the level of the United Kingdom are climate change agreements and the climate change levy, which is a combination of energy taxation and tax relief connected to voluntary agreements.

(c) Policies and measures in other sectors

52. **Industrial processes**. Industrial processes emissions decreased by an estimated 79.0 per cent between 1990 and 2015, from 60.00 to 12.70 Mt CO_2 eq. The largest reductions are due to emissions trading schemes and the chemical manufacturing industry, most notably the abatement of N_2O emissions from nitric and adipic acid manufacture in response to the EU Integrated Pollution Prevention Control regulation. Also, implementation of the F-gas regulation (EU regulation 517/2014 of the European Parliament and of the Council on fluorinated greenhouse gases specifying details on phasing out F-gases) has contributed to the decrease of GHG emissions.

53. **Agriculture**. Agriculture emissions decreased slightly from 59.30 to 49.4 Mt CO_2 eq between 1990 and 2015. The fall in emissions was the result of decreasing animal numbers and fertilizer use through the PaMs implemented by the Party. The most representative PaM for this sector is the GHG Action Plan, a voluntary initiative to reduce the level of GHG emissions produced from agriculture in England, expected to contribute to a reduction of 3 Mt CO_2 eq in 2020. The action plan was reviewed in 2016 to focus on the measures already proven effective. In addition, in the perspective of the withdrawal of the United Kingdom from the EU, the Party is expecting to design and implement a new agriculture supporting mechanism that will deliver better environmental outcomes, including climate change mitigation and adaptation. Agriculture policymaking is devolved to the Scottish Government,

Welsh Government and Northern Ireland Executive, which will need to determine how to support their farmers and land managers after the United Kingdom leaves the EU.

54. **LULUCF**. LULUCF GHG emissions decreased from a net source of 5.7 Mt CO_2 eq to a net sink of 7.4 Mt CO_2 eq between 1990 and 2015. The trend was mainly driven by the change of the age structure of the forest stock. The United Kingdom projects a reduction of the net sink due to ageing of forests and associated harvesting; however, the Government of the United Kingdom and the devolved administrations have each developed policy frameworks to reduce all GHG emissions from the forestry and land management sector, largely based on voluntary measures and support schemes. The recent forestry policies deliver negative savings in the first years (due to specific planting works) and are projected to deliver sinks only at the 2030s horizon, which demonstrates the long-term character of the measures. The revised UKFS (2011) is a regulatory and information measure that aims to enhance removals and reduce emissions through woodland creation and sustainable forest management. The revised standard consists of an updated national standard for sustainable forest management, which includes a new guideline on climate change adaptation and mitigation.

55. **Waste management**. In the waste management sector, between 1990 and 2015, GHG emissions decreased by 73.0 per cent, from 66.9 Mt CO_2 eq to 18.4 kt CO_2 eq. The change was mainly driven by policies implemented in accordance with the waste hierarchy, which is a legal requirement of the 2008 EU waste framework directive. The United Kingdom waste policy contributes to emission reductions via five routes: reductions in CH_4 emissions from landfills; emission reductions from more efficient use of materials; waste prevention; reuse and recycling; and energy recovery from waste, which offsets fossil fuel energy generation elsewhere in the economy. CH_4 emissions from biodegradable waste in landfills alone account for about 40 per cent of all CH_4 emissions and 3 per cent of all GHG emissions. A combination of permit conditions and financial incentives for capturing CH_4 from landfills and anaerobic digestion has driven investment to significantly increase CH_4 capture at landfill sites.

(d) Minimization of adverse impacts in accordance with Article 2 and Article 3, paragraph 14, of the Kyoto Protocol

56. As part of the supplementary information under the Kyoto Protocol, in the NC7 the United Kingdom reported some information on how it strives to implement PaMs under Article 2 of the Kyoto Protocol in such a way as to minimize adverse effects, including the adverse effects of climate change and effects on international trade and social, environmental and economic impacts on other Parties, especially developing country Parties.

57. Further information on how the United Kingdom strives to implement its commitments under Article 3, paragraph 14, of the Kyoto Protocol in such a way as to minimize adverse social, environmental and economic impacts on developing country Parties was reported in the 2017/2018 annual NIR submission. The Party reported on the assessment of economic and social consequences of response measures; adverse effects of climate change; the minimization of effects on international trade; and social, environmental and economic impacts on other Parties. The reporting included information on cooperation on the development of technologies, assisting developing Parties that are highly dependent on the export of fossil fuels in diversifying their economies and conducting relevant research. The TTE noted that it could be helpful if the United Kingdom makes a cross-reference to the NIR on this information, in its next NC submission.

58. Many programmes, initiatives and actions were listed under adaptation and financial support, and most of them related to the mitigation and minimization of adverse effects of climate change on particularly vulnerable developing countries. The United Kingdom has developed studies on approaches to avoid indirect land use change impacts of biofuels from biofuels production, on the sustainability of feedstock and on embedded carbon emissions. In addition, the United Kingdom explained that its ICF provided GBP 3.87 billion of climate finance from 2011 to 2016 to focus on helping the poorest people adapt to the effects of climate change, helping to encourage low-carbon development, and protecting the world's forests and the livelihoods of the people who depend on them. Several other financing programmes have run in parallel, including providing GBP 75 million to Green Mini-Grids

Africa to increase energy access in Africa through expanding the deployment of clean energy mini-grids, a GBP 15 million grant between 2012 and 2018 to support the growth of Silvopastoral Systems in Colombia to reduce GHG emissions, improving the livelihood of farmers, protecting local forests and increasing biodiversity, helping 72 developing countries pilot low-emission and climate-resilient development, and through the Clean Technology Fund.

(e) Assessment of adherence to the reporting guidelines

59. The ERT assessed the information reported in the NC7 of the United Kingdom and identified issues relating to completeness, transparency and adherence to the UNFCCC reporting guidelines on NCs. The findings are described in table 6.

Table 6

Findings on policies and measures, including those in accordance with Article 2 of the Kyoto Protocol, from the review of the seventh national communication of the United Kingdom

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
1	Reporting requirement specified in paragraph 23	The United Kingdom reported on the estimated mitigation impact of some PaMs for 2020 and 2030. However, it did not give an estimated mitigation impact for several of its PaMs, mostly in the agriculture, waste and LULUCF sectors.
	Issue type: transparency	During the review, the Party explained that it could not quantify some impacts due to the complexity of the methodologies used for estimating emission reduction for the particular PaMs.
	Assessment: recommendation	The ERT therefore recommends that the United Kingdom improves the transparency of its reporting by providing the estimated impact of the PaMs for each PaM and year or provide clear explanations as to why this may not be possible in its next NC.
2	Reporting requirement specified in paragraph 24	The United Kingdom provided information on its PaMs, including on the PaMs it has implemented or plans to implement to achieve its economy-wide emission reduction target. However, the Party has not provided additional information on the cost of its PaMs.
	Issue type: transparency	During the review, more information and explanations were provided (for example, on the Renewable Heat Incentive, on policies to promote cogeneration of heat and power), contributing to the clarity of reporting.
	Assessment: encouragement	The ERT encourages the United Kingdom to improve the transparency of its reporting by including information on the cost of its PaMs.
3	Reporting requirement specified in paragraph 26	The United Kingdom provided information on its PaMs, including on the PaMs it has implemented or plans to implement to achieve its economy-wide emission reduction target. However, the Party has not provided explanatory information on the PaMs listed in previous NCs that are no longer in place.
	Issue type: completeness	During the review, more information and explanations were provided, for example on the Renewable Heat Incentive, that contributed to the clarity of reporting.
	Assessment: encouragement	The ERT encourages the United Kingdom to improve the completeness of its reporting by explaining in the next NC why some PaMs listed in previous NCs may no longer be in place.

Notes: Paragraph number listed under reporting requirement refers to the relevant paragraph of the UNFCCC reporting guidelines on NCs. The reporting on the requirements not included in this table is considered to be complete, transparent and adhering to the UNFCCC reporting guidelines on NCs.

C. Projections and the total effect of policies and measures, including information on supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17 of the Kyoto Protocol

1. Projections overview, methodology and results

(a) Technical assessment of reporting information

60. The United Kingdom reported updated projections for 2020 and 2030 relative to actual inventory data for 2015 under the WEM scenario. The WEM scenario reported by the United Kingdom includes implemented and adopted PaMs until July 2017.

61. The United Kingdom did not present a WAM scenario. During the review the Party has indicated that it would be possible to elaborate such scenario for the next NC and presented preliminary results estimating using the same methodology of the WEM scenario. It also did not present a WOM scenario as the United Kingdom considers that within the current projections methodology it would not be possible to remove the effects of all PaMs from historical data.

62. The projections are presented on a sectoral basis, using the same sectoral categories as those used in the reporting on mitigation actions, and on a gas-by-gas basis for CO_2, CH_4, N_2O, PFCs, HFCs and SF_6 (treating PFCs and HFCs collectively in each case) for 1990–2030. The projections are also provided in an aggregated format for each sector as well as for a Party total using global warming potential values from the AR4.

63. The United Kingdom did not report emission projections for indirect GHGs such as carbon monoxide, nitrogen oxides, non-methane volatile organic compounds or sulfur oxides.

64. Emission projections related to fuel sold to ships and aircraft engaged in international transport were not reported separately and were not included in the totals.

(b) Methodology, assumptions and changes since the previous submission

65. The methodology used for the preparation of the projections is identical to that used for the preparation of the emission projections for the NC6/BR2. Projections related to CO_2 emissions from energy are estimated annually using an EEP model suite composed of (1) the final energy demand model, (2) the dynamic dispatch model and (3) the price and bills model. Other emissions are estimated exogenously and incorporated into the projections, including all non-CO_2 emissions from agriculture, waste and LULUCF (agriculture emissions are estimated by Rothamsted Research on behalf of DEFRA, and LULUCF emissions by the Centre for Ecology and Hydrology and Forest Research on behalf of BEIS).

66. To prepare its projections, the United Kingdom relied on the following key underlying assumptions: GDP growth rate, population growth, household growth, fossil fuel prices (crude oil, gas and coal), EU ETS carbon price, electricity generation carbon price and exchange rates (pound sterling to United States dollar and pound sterling to euro). These variables and assumptions were reported in CTF table 5. In most cases, they are forecasts (public available) made by the United Kingdom's Office for Budget Responsibility and Office for National Statistics, supplemented by International Monetary Fund projections of world growth. The assumptions were updated on the basis of the most recent economic developments known at the time of the preparation of the projections. Projections were combined from estimates made for England, Scotland, Wales and Northern Ireland.

67. The United Kingdom provided information in CTF table 5 on the assumptions, methodologies, models and approaches used and on the key variables and assumptions used in the preparation of the projection scenarios. To explain the changes, the United Kingdom provided supporting documentation. The United Kingdom also provided information on sensitivity analyses.

68. Sensitivity analyses were conducted for a number of important assumptions, such as low and high fossil fuel prices and low and high United Kingdom GDP rates. As a result, it

is projected that in 2020, GHG emissions in the United Kingdom will be between 47 per cent and 52 per cent below 1990 levels, with the central estimate 50 per cent below.

(c) Results of projections

69. The projected emission levels under different scenarios and information on the Kyoto Protocol targets and the quantified economy-wide emission reduction target are presented in table 7 and the figure below. During the review week, the United Kingdom presented the latest projections produced for national reporting (EEP, 2018). According to this report, by 2020 emissions are projected to be 50% below 1990 levels in the reference case (assuming implemented, adopted and agreed policies).

Table 7
Summary of greenhouse gas emission projections for the United Kingdom

	GHG emissions (kt CO_2 eq per year)	*Changes in relation to base-year[a] level (%)*	*Changes in relation to 1990 level (%)*
Kyoto Protocol base year[b]	803 191.32	NA	
Quantified emission limitation or reduction commitment under the Kyoto Protocol (2013–2020)[c]	2 744 937.33		
Quantified economy-wide emission reduction target under the Convention[d]	NA	NA	NA
Inventory data 1990[e]	799 117 17	NA	NA
Inventory data 2016[e]	485 495.64	–37.8	–37.8
WEM projections for 2020[f]	425 484.10	–47.0	–47.0
WEM projections for 2030[f]	389 076.80	–51.0	–51.0

[a] "Base year" in this column refers to the base year used for the target[s] under the Kyoto Protocol, while for the target under the Convention it refers to the base year used for that target.

[b] The Kyoto Protocol base-year level of emissions is provided in the initial review report, contained in document FCCC/IRR/2016/ISO.

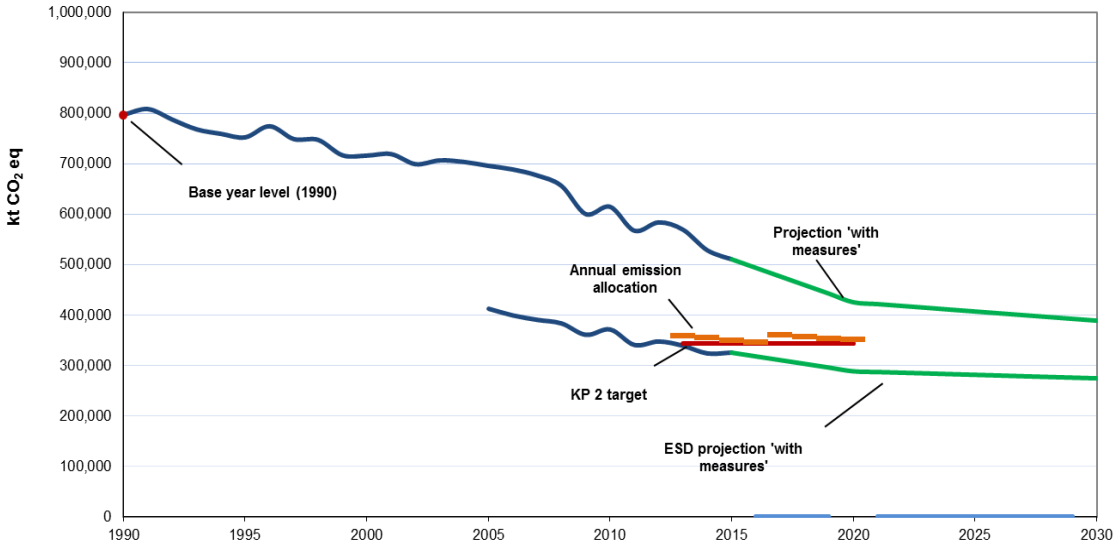
[c] The Kyoto Protocol target for the second commitment period (2013–2020) is a joint target of the EU and its 28 member States and Iceland. The target is to reduce emissions by 20 per cent compared with the base-year (1990) level by 2020. The target for non-ETS sectors is -16.00 per cent for United Kingdom under the ESD. The value presented in this line is based on annex II to European Commission decision 2013/162/EU and as adjusted by Commission implementing decision 2013/634/EU that established the assigned amount for the EU MS and divided by 8 years to calculate the annual emission level.

[d] The quantified economy-wide emission reduction target under the Convention is a joint target of the EU and its 28 member States. The target is to reduce emissions by 20 per cent compared with the base-year (1990) level by 2020.

[e] From United Kingdom's 2018 annual inventory submission.

[f] From United Kingdom's NC7 and/or BR3.

Greenhouse gas emission projections reported by United Kingdom



Sources: (1) data for the years 1990–2016: United Kingdom's 2018 annual inventory submission, version 1.1; total GHG emissions excluding LULUCF; (2) data for the years 2016–2020/2030: United Kingdom's NC7 and BR3; total GHG emissions excluding LULUCF.

70. For the United Kingdom, total GHG emissions excluding LULUCF in 2020 and 2030 are projected to be 425,484.10 and 389,076.80 kt CO_2 eq, respectively, under the WEM scenario, which represents a decrease of 47.0 per cent and 51.0 per cent, respectively, below the 1990 level. The 2020 projections suggest that United Kingdom will continue contributing to the achievement of the EU target under the Convention.

71. United Kingdom's target for non-ETS sectors is to reduce its total emissions by 16.0 per cent below the 2005 level by 2020. United Kingdom's AEAs, which correspond to its national emission target for non-ETS sectors, change linearly from 358,741.69 kt CO_2 eq in 2013 to 350,926.22 kt CO_2 eq for 2020. According to the projections under the WEM scenario, emissions from non-ETS sectors are estimated to reach 287,955.04 kt CO_2 eq by 2020. The projected level of emissions under the WEM scenario is 17.9 per cent below the AEAs for 2020. The ERT noted that this suggests that United Kingdom expects to meet its target under the WEM scenario.

72. In addition to its target for non-ETS sectors. United Kingdom committed itself to achieving a domestic target of a 34 per cent reduction in emissions below the 1990 level by 2020. The projections indicate that United Kingdom expects to meet its domestic target.

73. The domestic target is presented as "carbon budgets" set under the 2008 Climate Change Act. According to the 2017 edition of the EEP (published January 2018), the United Kingdom met the first carbon budget (2008–12) with headroom of 36 Mt CO_2 eq and is projected to meet the second (2013–17) and third (2018–22) carbon budgets with headroom of 125 and 143 Mt CO_2 eq respectively. There are projected shortfalls against the fourth (2023–27) and fifth (2028–32) carbon budgets of 64 Mt CO_2 eq and 116 Mt CO_2 eq respectively.

74. United Kingdom presented the WEM scenarios by sector for 2020 and 2030, as summarized in table 8.

Table 8
Summary of greenhouse gas emission projections for the United Kingdom presented by sector

	GHG emissions and removals (kt CO_2 eq)			*Change (%)*	
		2020	*2030*	*1990–2020*	*1990–2030*
Sector	*1990*	*WEM*	*WEM*	*WEM*	*WEM*
Energy (not including transport)	487 601.60	237 549.10	214 835.30	–51.3	–55.9
Transport	123 029.30	117 135.80	109 398.60	–4.8	–11.1
Industry/industrial processes	59 950.00	10 013.70	9 030.30	–83.3	–84.9
Agriculture	59 309.80	46 862.90	44 583.80	–21.0	–24.8
LULUCF	5 700.10	–11 081.20	–6 711.00	–294.4	–217.7
Waste	66 925.10	13 922.60	11 229.00	–79.1	–83.2
Other (specify)					
Total GHG emissions without LULUCF	**796 815.80**	**425 484.10**	**389 076.80**	**–46.6**	**–51.2**

Source: United Kingdom's BR3 CTF table 6.

75. According to the projections reported for 2020 under the WEM scenario, the most significant emission reductions are expected to occur in the energy and waste sector, amounting to projected reductions of 250.052.50 kt CO_2 eq (–51.28 per cent) and 53.002.50 kt CO_2 eq (–79.09 per cent) between 1990 and 2020, respectively. The pattern of projected emissions reported for 2030 under the same scenario remains the same.

76. United Kingdom presented the WEM scenarios by gas for 2020 and 2030, as summarized in table 9.

Table 9
Summary of greenhouse gas emission projections for United Kingdom presented by gas

	GHG emissions and removals (kt CO_2 eq)			*Change (%)*	
		2020	*2030*	*1990–2020*	*1990–2030*
Gas	*1990*	*WEM*	*WEM*	*WEM*	*WEM*
CO_2	595 297.38	346 464.04	322 856.75	–41.8	–45.8
CH_4	135 330.83	46 785.31	41 183.56	–65.4	–69.6
N_2O	48 865.15	20 499.00	20 039.82	–58.1	–59.0
HFCs	14 391.43	11 096.91	4 311.03	–22.9	–70.0
PFCs	1 651.53	256.95	256.97	–84.4	-84.4
SF_6	1 279.06	381.84	428.70	–70.2	–66.5
NF_3	0.42	0.00	0.00	–100.0	–100.0
Total GHG emissions without LULUCF	**796 815.80**	**425 484.10**	**389 076.80**	**–46.6**	**–51.2**

Source: United Kingdom's BR3 CTF table 6.

77. For 2020 the most significant reductions are projected for CO_2 and CH_4 emissions: 248,833.34 kt CO_2 eq (–45.8 per cent) and 88,545.52 kt CO_2 eq (–69.6 per cent) between 1990 and 2020, respectively. The pattern of projected emissions reported for 2030 under the same scenario remains the same.

(d) Assessment of adherence to the reporting guidelines

78. The ERT assessed the information reported in the NC7 of United Kingdom and identified issues relating to completeness, transparency and adherence to the UNFCCC reporting guidelines on NCs. The findings are described in table 10.

Table 10
Findings on greenhouse gas emission projections reported in the seventh national communication of the United Kingdom

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
1	Reporting requirement specified in paragraph 28 Issue type: completeness Assessment: encouragement	The United Kingdom did not present a WAM and a WOM scenario in its NC7. During the review week, United Kingdom has presented a WAM scenario (with preliminary estimates) elaborated for national reporting purposes. It was explained that such scenario could be adapted for the next NC submission using the same methodology as for the WEM scenario. The ERT encourages the United Kingdom to include both a WAM and WOM scenario in the next NC submission.
2	Reporting requirement specified in paragraph 35 Issue type: completeness Assessment: encouragement	The United Kingdom did not present projections of the indirect GHGs. The ERT encourages the United Kingdom to report emission projections for indirect GHGs in the next submission.
3	Reporting requirement specified in paragraph 36 Issue type: transparency Assessment: encouragement	The United Kingdom did not present emission projections related to fuel sold to ships and aircraft engaged in international transport separately. The ERT encourages the United Kingdom to report such emissions separately in the next submission.

Note: Paragraph number listed under reporting requirement refers to the relevant paragraph of the UNFCCC reporting guidelines on NCs. The reporting on the requirements not included in this table is considered to be complete, transparent and adhering to the UNFCCC reporting guidelines on NCs and on BRs.

2. Assessment of the total effect of policies and measures

(a) Technical assessment of the reported information

79. In the NC7 United Kingdom presented the estimated and expected total effect of implemented and adopted PaMs. Information is presented in terms of GHG emissions avoided or sequestered on a CO_2 eq basis in 2015, 2020, 2025, 2030 and 2035.

80. United Kingdom reported that the total estimated effect of its adopted and implemented PaMs (between April 2009 and July 2017) is 69,013.98 kt CO_2 eq in 2020; 88,782.64 kt CO_2 eq in 2025; 97,937.28 kt CO_2 eq in 2030 and 108,904.13 kt CO_2 eq in 2035. According to the information presented during the review week the total effects of PaMs are divided between energy supply side and the energy demand side (i.e. Low Carbon Transition Plan). Table 11 provides an overview of the total effect of PaMs as reported by United Kingdom.

Table 11
Projected effects of the United Kingdom's implemented and adopted policies and measures by 2020 and 2030

	2020	*2030*
Sector	*Effect of implemented and adopted measures (kt CO_2 eq)*	*Effect of implemented and adopted measures (kt CO_2 eq)*
Energy supply	36 170.12	43 239.98
Energy demand – Low Carbon Transition Plan	32 842.86	54 697.30
Total	**69 013.98**	**97 937.28**

Source: Additional information provided by the United Kingdom during the review week.

(b) Assessment of adherence to the reporting guidelines

81. The ERT assessed the information reported in the NC7 of United Kingdom and identified an issue relating to transparency and adherence to the UNFCCC reporting guidelines on NCs. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

3. Supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17 of the Kyoto Protocol

(a) Technical assessment of the reported information

82. In the NC7 the United Kingdom provided information on how its use of the mechanisms under Articles 6, 12 and 17 of the Kyoto Protocol is supplemental to domestic action.

83. In the IDR6, the ERT recommends that the United Kingdom provide information in its next NC on institutional arrangements and decision-making procedures that it has in place to coordinate activities related to participation in the mechanisms under Articles 6, 12 and 17 of the Kyoto Protocol, including the participation of legal entities. However, the ERT noted that the United Kingdom is overachieving its reduction target and does not plan to use flexible mechanisms, thus the information on how the use of the mechanisms under Articles 6, 12 and 17 of the Kyoto Protocol is supplemental to domestic action, is not applicable.

84. During the review, the United Kingdom confirmed that it does not plan to use the market-based mechanisms to meet its Kyoto Protocol target. The United Kingdom has outperformed of its first carbon budget (2008 to 2012) by one per cent and projects that it will outperform against its second and third budgets, covering the years 2013 to 2022 by about four per cent and six per cent respectively. In doing so, the United Kingdom also expects to over-achieve its international commitments under the Kyoto Protocol.

(b) Assessment of adherence to the reporting guidelines

85. The ERT assessed the information reported in the NC7 of the United Kingdom and recognized that the reporting is complete and transparent. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

D. Provision of financial and technological support to developing country Parties, including information under Articles 10 and 11 of the Kyoto Protocol

1. Financial resources, including under Article 11 of the Kyoto Protocol

(a) Technical assessment of the reported information

86. The United Kingdom reported information on the provision of financial support required under the Convention and its Kyoto Protocol, including on financial support provided, committed and pledged, allocation channels and annual contributions.

87. The United Kingdom indicated what "new and additional" financial resources it has provided and clarified how it has determined such resources as being "new and additional". The United Kingdom explains that ICF represents a new, dedicated climate commitment which is additional to historic (ODA) levels and has not diverted funds from existing development spending. The United Kingdom reports that it has put in place a dedicated ring-fence to ensure that climate finance is identifiable from non-climate ODA.

88. The United Kingdom described how its resources address the adaptation and mitigation needs of non-Annex I Parties. It also described how those resources assist non-Annex I Parties to mitigate and adapt to the adverse effects of climate change, facilitate economic and social response measures, and contribute to technology development and transfer and capacity-building related to mitigation and adaptation. The United Kingdom reported information on the assistance that it has provided to developing country Parties that are particularly vulnerable to the adverse effects of climate change to help them to meet the costs of adaptation to those adverse effects. The United Kingdom's ICF helps developing countries mitigate and adapt to the impacts of climate change, reduce deforestation and pursue clean economic growth. ICF is focussed on transformational change, reflecting the scale of the challenge of climate change. The United Kingdom also notes that the scale of its commitment reflects its view that climate change is the biggest threat to the long-term eradication of global poverty, and that the impacts of climate change will hit the poorest hardest.

89. With regard to the most recent financial contributions aimed at enhancing the implementation of the Convention by developing countries, the United Kingdom reported that its climate finance has been allocated on the basis of providing support which is transparent, transformative, and in line with the needs and priorities of developing countries. The United Kingdom reports that it remains committed to promoting climate smart development consistent with the Global Goals and driving sustainable development and effective climate action. The United Kingdom, and Australia, working with other developed countries, produced the Roadmap at COP22, which committed to the joint developed country agreement to mobilize $100 billion of climate finance a year.

90. The United Kingdom describes how its finance has been allocated, including adaptation and mitigation and with detailed examples of programming in its priority areas of forestry, private finance, and carbon markets. The United Kingdom uses a number of multilateral climate funds to support transformational projects, including the CIFs, the GEF and the GCF. The United Kingdom is the largest contributor to the CIFs, a major contributor to the GEF and a significant stakeholder in the GCF, and it has committed to ensuring that all of these funds deliver maximum impacts. The United Kingdom notes that the GCF has a commitment to provide 50/50 allocation of resources for mitigation and adaptation, and that 50 per cent of the adaptation support is to be provided to particularly vulnerable countries. In terms of bilateral support, the United Kingdom supports decarbonization activities, raising capacity and building on the United Kingdom's low-carbon experience and expertise; and on assisting people to anticipate the impact of climate change, adapt to long term impacts, and absorb the effects through effective and rapid response. Table 12 includes some of the information reported by the United Kingdom on its provision of financial support.

Table 12
Summary of information on provision of financial support by the United Kingdom in 2015–2016
(Millions of United States dollars)

	Year of disbursement	
Allocation channel of public financial support	*2015*	*2016*
Official development assistance[a]	4331.0	3343.4
Climate-specific contributions through multilateral channels, including:	765.5	361.6
GEF	0	28.34
Least Developed Countries Fund	0	40.49
GCF	366.41	218.25
Other multilateral climate change funds	379.68	74.53
Climate-specific contributions through bilateral, regional and other channels	1168.9	1054.9

[a] *Sources*: (1) Query Wizard for International Development Statistics, available at http://stats.oecd.org/qwids/; (2) BR3 CTF tables.

91. The United Kingdom provides information on a large number and variety of projects and programmes supported by its substantial climate finance:

(a) Within the United Kingdom, climate finance is addressed by: (1) ICF, a cross-departmental fund managed by the Department for International Development, BEIS and DEFRA; (2) the Prosperity Fund, which works through the Foreign and Commonwealth Office and its networks throughout the world supporting low-carbon growth; and (3) the Global Challenge Research Fund and the Newton Fund, which leverage the strength of the United Kingdom's research base to promote research and innovation;

(b) The United Kingdom's contributions support the cross-cutting efforts of the CIFs, the GEF and the GCF to support transformational projects that have a strong focus on leveraging private finance;

(c) Funding for mitigation promotes technology at scale, by building capacity to raise ambition, delivering clean energy, demonstrating and deploying technology, and driving decarbonization at scale;

(d) Adaptation funding supports efforts to adapt, anticipate, and absorb impacts of climate change;

(e) Funding efforts to halt deforestation through sustainable climate resilient growth, capacity-building to improve and address sustainable land use, and private sector supply chain initiatives;

(f) Mobilizing private finance to create the conditions to enable the private sector to mobilize the investment needed and designing approaches that can be scaled by the private sector;

(g) And supporting carbon pricing to provide a cost effective and technology neutral way to reduce emissions and mobilize the private sector.

92. The United Kingdom reports that its climate finance has supported 34 million people to cope with the effects of climate change; protected 12 million people with improved access to energy, reduced or avoided 9.2 million tonnes of GHG emissions, installed more than 400 MW of clean energy capacity, and mobilized 2.2 billion and 500 million private finance for climate change.

(b) Assessment of adherence to the reporting guidelines

93. The ERT assessed the information reported in the NC7 of the United Kingdom and identified an issue related to completeness, transparency and adherence to the UNFCCC reporting guidelines on NCs. These findings are described in Table 13.

Table 13
Findings on financial resources, including under Article 11 of the Kyoto Protocol, from the review of the seventh national communication of the United Kingdom

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
1	Reporting requirement specified in paragraph 51 and paragraph 41 of Annex, Decision 15/CMP.1 Issue type: transparency Assessment: recommendation	The United Kingdom did not clarify how it has determined its resources as being new and additional. During the review, the United Kingdom asserted that ICF represents a new, dedicated climate commitment which is additional to historic (ODA) levels and has not diverted funds from existing development spending. The United Kingdom reports that it has put in place a dedicated ring-fence to ensure that climate finance is identifiable from non-climate ODA. Further, IDR.6 noted that the United Kingdom clarified that after the fifteenth session of the Conference of the Parties (United Nations Climate Change Conference in Copenhagen, Denmark, 2009), with its international cooperation being fully informed by climate change considerations, all funding additional to the level of funding in 2009 is to be considered "new and additional" finance. The ERT reiterates the recommendation that the United Kingdom improve transparency in reporting on how the Party determines that financial resources are "new and additional", by, e.g. providing information on the use of 2009 as threshold for determining new and additional financial resources.
2	Reporting requirement specified in paragraph 51 Issue type: completeness Assessment: recommendation	In its seventh national communication, the United Kingdom did not report financial contributions to the GEF in accordance with the format of table 3 of the UNFCCC reporting guidelines on NCs (e.g. for the last 3 years). To ensure completeness of reporting, the ERT recommends that the United Kingdom report information on at least its past three years of GEF funding - and suggests the United Kingdom report its last four years of GEF funding - consistent with table 3 of the UNFCCC reporting guidelines on NCs, in its next national communication.
3	Reporting requirement specified in paragraph 53 Issue type: completeness Assessment: encouragement	In its seventh national communication, the United Kingdom did not report financial contributions in accordance with the format of tables 4 and 5 of the UNFCCC reporting guidelines on NCs. To ensure completeness of reporting, the ERT encourages the United Kingdom to report information on its past three years of contributions to multilateral institutions and programmes and bilateral and regional support in its next national communication.

Note: Paragraph numbers listed under reporting requirement refer to the relevant paragraphs of the UNFCCC reporting guidelines on NCs. The reporting on the requirements not included in this table is considered to be complete, transparent and adhering to the UNFCCC reporting guidelines on NCs.

2. Technology development and transfer, including information under Article 10 of the Kyoto Protocol

(a) Technical assessment of the reported information

94. The United Kingdom provided information on steps, measures and activities related to technology transfer, access and deployment benefiting developing countries, including information on activities undertaken by the public and private sectors. The United Kingdom provided examples of support provided for the deployment and enhancement of the endogenous capacities and technologies of non-Annex I Parties.

95. The ERT noted that the United Kingdom reported on its PaMs as well as success and failure stories in relation to technology transfer, and in particular on measures taken to promote, facilitate and finance the transfer and deployment of climate-friendly technologies. For example, the Clean Technology Fund, to which the United Kingdom reports being the largest contributor, has financed the first generation of utility scale Concentrated Solar Power (CSP) to be built in developing countries, and the plant in South Africa is now providing

power to 80,000 people and winning a Momentum for Change award from the UNFCCC. The United Kingdom also reports that with the IFC, they have to date supported more than 34 million people adapt to the impacts of climate change.

96. The United Kingdom provided information on steps taken to promote, facilitate and finance the transfer of technology to developing countries and to build their capacity in order to facilitate implementation of Article 10 of the Kyoto Protocol.

97. The United Kingdom reports the priority to accelerate the deployment of low-carbon energy technologies and increase energy efficiency in order to address the global challenges of energy security, climate change and economic development. Some examples of initiatives reported include technology transfer in the areas of CCS to raise the level of technical understanding of CCUS; ADB's Clean Energy Fund, to improve energy access, energy security and the transition to low-carbon technologies through cost-effective investments; and the World Bank's Climate Technology Programme to assist local entrepreneurs develop innovative technology and business solutions to domestic energy, resource and environmental challenges. They also have launched the Climate Finance Accelerator, a catalytic intervention designed to address the demand for turning countries' nationally determined contributions into finance plans with pipelines of investment-grade projects. The United Kingdom notes the priority to provide the evidence base for the effectiveness of its investments, and the use of its Monitoring, Evaluation and Learning programme to support the generation and use of evidence and knowledge from across the portfolio.

(b) Assessment of adherence to the reporting guidelines

98. The ERT assessed the information reported in the NC7 of the United Kingdom and identified an issue relating to completeness and adherence to the UNFCCC reporting guidelines on NCs. The finding is described in table 14.

Table 14
Findings on technology development and transfer, including information under Article 10 of the Kyoto Protocol, from the review of the seventh national communication of the United Kingdom

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
1	Reporting requirement specified in paragraph 55	Parties shall, where feasible, report activities related to technology transfer including success and failure stories. The United Kingdom did not report on any failure stories related to technology transfer.
	Issue type: completeness	During the review, the United Kingdom provided the ERT with numerous lessons learned from previous projects.
	Assessment: recommendation	The ERT recommends that the United Kingdom report, where feasible, on activities related to technology transfer including failure stories.

Note: Paragraph number listed under reporting requirement refers to the relevant paragraph of the UNFCCC reporting guidelines on NCs. The reporting on the requirements not included in this table is considered to be complete, transparent and adhering to the UNFCCC reporting guidelines on NCs.

E. Vulnerability assessment, climate change impacts and adaptation measures

1. Technical assessment of the reported information

99. In the NC7 the United Kingdom provided the required information on the expected impacts of climate change in the country; the adaptation policies covering regional, sectoral and cross-sectoral vulnerabilities and considerations; and an outline of the action taken to implement Article 4, paragraph 1(b) and (e), of the Convention with regard to adaptation. Page 220–222 of the NC7 provides information on support provided to developing countries in adapting to climate change. The United Kingdom provided a description of climate change vulnerability and impacts on a number of sectors including infrastructure; health, public water supply, agriculture, energy generation and industry, natural capital including terrestrial,

coastal, marine and freshwater ecosystems, soils and biodiversity; domestic and international food production and trade; new and emerging pests and diseases, and invasive non-native species, affecting people, plants and animals.

100. Impetus has been given to addressing adaptation matters with the publication of the country's second Climate Change Risk Assessment (2017) and two statutory assessments of progress (2015 and 2017) on the first National Adaptation Programme, which provided further direction to government agencies on enhancing preparedness for climate change. To enhance adaptation to the impacts of water shortages, the Government of the United Kingdom issued guidance to water companies that their next round of water resource management plans should take a long-term, strategic approach to protecting and enhancing resilient water supplies. Water companies are required to embed climate change impacts as well as population and economic growth in their long-term plans, so as to ensure that they are fully able to meet future water demand/supply balances. Government is also working closely with BEIS, the National Grid, Energy UK and the Environment Agency to identify any risks to security of the electricity supply during extreme droughts, and to ensure any future investment in thermal generation capacity is informed as far as possible by water availability risks over the long-term. Energy companies also report on their action to adapt to climate change under the Climate Change Act 2008. In Scotland, Scottish Water has statutory duties under the Scottish Water Resources Act 2013 to develop renewable energy using its assets.

101. The United Kingdom has a proven system in place for monitoring international disease threats to human and animal health. Public Health England undertakes invasive mosquito surveillance with 30 seaports and airports and at key goods importers and motorway service stations leading away from ports of entry in south-east England. Horizon-scanning is also carried out for new invasive non-native species likely to pose a significant risk if they arrive in the United Kingdom. The Housing and Planning Act 2016 introduces a new requirement for the Secretary of State to carry out a review of planning legislation and planning policies for sustainable drainage in relation to the development of land in England. The Government of the United Kingdom is also commissioning research into how overheating risks can be identified and mitigated, firstly focusing on new housing developments in England. The Government of the United Kingdom and its devolved administrations publish a Climate Change Risk Assessment at the level of the United Kingdom every five years to assess the risks for the United Kingdom from the current and predicted impacts of climate change. The first risk assessment was published in 2012. The second was presented to Parliament in January 2017, and will feed into the development of the next United Kingdom National Adaption Programme, expected in 2018. The second Climate Change Risk Assessment was presented to the Scottish Parliament in January 2017, and it will be used as an input to the development of the next Scottish Climate Change Adaptation Programme, expected in 2019. Table 15 summarizes the information on vulnerability and adaptation to climate change presented in the NC7 of the United Kingdom.

Table 15
Summary of information on vulnerability and adaptation to climate change reported by the United Kingdom

Vulnerable area	*Examples/comments/adaptation measures reported*
Natural capital, including terrestrial, coastal, marine and freshwater ecosystems, soils and biodiversity	*Vulnerability*: Reduced soil quality and water availability; increase in flooding and pests and diseases. *Adaptation*: Various policies are already in place to address climate risks to natural capital including National Adaptation Programme (2013), the Scottish Climate Change Adaptation Programme (2014), the National Pollinator Strategy (DEFRA, 2014) and the 25 Year Environment Plan. The Government of the United Kingdom has also taken efforts in restoring Sites of Special Scientific Interest to 'favourable' or 'recovering' condition, in making land available for the creation of priority habitat and in establishing Marine Protected Areas.
Flooding and coastal change risks to communities, businesses and infrastructure	*Vulnerability*: increase in heavy rainfall, fluvial and surface flooding; rising sea levels and erosion along coastline. *Adaptation*: Government published the Peter Bonfield's Property Flood Resilience Action Plan (2016) which explores barriers to the use of flood

Vulnerable area	*Examples/comments/adaptation measures reported*
	resilience measures. Government is also working with infrastructure operators to improve the resilience of locally important assets at risk of flooding.
Health, well-being and productivity from high temperatures	*Vulnerability*: Overheating in homes and public buildings. *Adaptation*: Public Health England publishes the Heatwave Plan for England to manage risks to public health. In May 2016, Public Health England also published a new poster and leaflet to support the public to stay safe in hot weather, and a checklist for identifying and managing high indoor temperatures in homes. A checklist specifically for care home staff is under development.
Public water supply, and for agriculture, energy generation and industry	*Vulnerability*: Water shortages and drought and competing demands for water for public supply, industry, agriculture and the environment. *Adaptation*: The Government of the United Kingdom in 2016 published "Creating a great place for living: Enabling resilience in the water sector", a roadmap which sets out how to secure the long-term resilience of the water sector. The roadmap covers a wide range of areas, including the long-term challenge to the public water supply and other water users from the greater extremes in weather that are expected.
Domestic and international food production and trade	*Vulnerability*: Increased food prices. *Adaptation*: The Government of the United Kingdom recognises that food security is built on access to a wide variety of markets, including through a rules-based world trading system operating alongside food production in the United Kingdom. The Government has already carried out research into the risks to food supply from extreme weather events, including the potential impacts of tidal flooding on supply chains through seaports and the energy dependency of food chains.
New and emerging pests and diseases, and invasive non-native species, affecting people, plants and animals	*Vulnerability*: Emerging pests and diseases, and invasive non-native species. *Adaptation*: The United Kingdom Plant Health Risk Register, accessible through the new United Kingdom Plant Health Information Portal, compares risks posed by different plant pests and pathogens and prioritises actions. Collaborative horizon-scanning and information-sharing activities are carried with international organisations, such as the European and Mediterranean Plant Protection Organisation, to provide early warning of new pest threats.

Sources: (1) Vulnerability: United Kingdom climate change risk assessment (2017); (2) Adaptation: national adaptation programme (2013).

102. The United Kingdom provided a detailed description of international adaptation activities (NC7 pages 220–222), including the GBP 26 million Climate High-Level Investment Programme in Ethiopia which supported more than 1.4 million people to cope with the effects of climate change; a GBP 10.1 million project implemented in Madagascar, involving fisheries management and improvement and mangrove livelihood diversification, which is expected to protect around 20,000 hectares of mangrove forests and benefit over 100,000 people; and a project on Weather and Climate Information and Services for Africa (WISER), which aims to enhance the resilience of poor people and of economic development in Africa to weather and climate shocks, by improving the quality and use of weather and climate forecasts and other information services. The United Kingdom also provided information on bilateral cooperation with developing countries on adaptation, such as the Forest Governance, Markets and Climate programme, which aims to reduce the illegal trade in forest resources by addressing forest sector governance and market failures that permit illegal forest practices.

2. Assessment of adherence to the reporting guidelines

103. The ERT assessed the information reported in the NC7 of the United Kingdom and recognized that the reporting is complete, transparent and adhering to the UNFCCC reporting

guidelines on NCs. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

F. Research and systematic observation

1. Technical assessment of the reported information

104. The United Kingdom provided information on its general policy and funding relating to research and systematic observation and both domestic and international activities, including contributions to the World Climate Programme, the International Geosphere–Biosphere Programme, the Global Climate Observing System, and the IPCC. The United Kingdom also provided information on the identification of opportunities for and barriers to free and open international exchange of data and information and on action taken to overcome such barriers.

105. The United Kingdom has implemented and planned international and domestic policies and programmes on climate change research, systematic observation and climate modelling that aim to advance capabilities to predict and observe the physical, chemical, biological and human components of the Earth's system over space and time. The United Kingdom is funding two major research programmes on a global temperature rise of 1.5°C to contribute to the body of evidence to be assessed by the IPCC in its Special Report on Global Warming of 1.5°C. There is continued support by the United Kingdom for the IPCC, through government funding and through the contributions of the United Kingdom's world-leading research community. Major collaborative projects with international partners, such as the Climate Science for Service Partnership China and the Ganga Delta – Bay of Bengal Interactions programme with India. Significant investment in the United Kingdom in funding for science and innovation: GBP 2.5 billion of public funding is expected to be invested in research, development and demonstration of low-carbon energy, transport, agriculture and waste between 2015 and 2021.

106. In terms of activities related to systematic observation, the United Kingdom reported on national plans, programmes and support for ground- and space-based climate observing systems, including satellite and non-satellite climate observation. The United Kingdom also reported on challenges related to the maintenance of a consistent and comprehensive observation system. There is continued work under the world-leading Met Office Hadley Centre Climate Programme, with the work plan for 2018–2021 now in place and under way. This programme will help the United Kingdom meet the needs of the post-Paris science agenda. The United Kingdom is also involved in the Sentinel programme, which has included provision of the satellite platform for the Sentinel-5 Precursor mission. This was successfully launched in October 2017, bridging the data gap between Envisat and Sentinel-5 providing measurements of greenhouse gas concentration in the atmosphere. In addition, work with European partners on the development of MicroCarb, a satellite monitoring system for CO_2 sources and sinks across the Earth, has begun. There has been continued development on measuring emissions from tall towers by the United Kingdom Deriving Emissions linked to Climate Change Network. This provides top-down verification of the United Kingdom's emission inventory.

107. The NC7 reflects actions taken to support capacity-building and the establishment and maintenance of observation systems and related data and monitoring systems in developing countries. The United Kingdom provided funding for scientists from developing countries working on global climate change research. Since the NC6, the United Kingdom has continued to develop the 2050s Global calculators, as well as supporting 10 countries in developing their own calculators. All 10 calculators have now been launched, along with the Global calculator. The Global Calculator is an open-source model of the world's energy, land and food systems that allows you to design your own version of the future up to 2050 and see the implications for the climate. It is a free and interactive tool that helps people understand the links between their lifestyles and the energy they use, and the consequences for the climate. It is aimed at anyone interested in exploring what a low-carbon world could look like in 2050. The Calculator shows that it is possible to prevent dangerous climate change and ensure people's living standards continue to improve if we act now.

2. Assessment of adherence to the reporting guidelines

108. The ERT assessed the information reported in the NC7 of the United Kingdom and recognized that the reporting is complete, transparent and adhering to the UNFCCC reporting guidelines on NCs. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

G. Education, training and public awareness

1. Technical assessment of the reported information

109. In the NC7 the United Kingdom provided information on its actions relating to education, training and public awareness at the domestic and international level. The Party provided information on the general policy on education, training and public awareness, primary, secondary and higher education, public information campaigns, training programmes, education materials, resource or information centres, the involvement of the public and its participation in international activities. Climate Change, and broader sustainability issues, feature in the educational curricula of the nations of the United Kingdom. The national curriculum is a set of subjects and standards used by primary and secondary schools. The national curriculum of England is followed by local authority maintained schools while academies and private schools do not have to follow it but may use it as a benchmark.

110. Scotland is implementing a Curriculum for Excellence, which consists of a broad framework in which educators are empowered to design and deliver learning and teaching experiences across curriculum areas. This broad framework provides educators with the flexibility to incorporate climate change across all curriculum areas which is done under the theme of Learning for Sustainability. The Government also launched a Clean Growth Strategy which included a dedicated Green Great Britain Week to focus on climate and air quality issues across the United Kingdom. The first ever Green Britain Week was celebrated from 15 to 19 October 2018, marking the 10-year anniversary of passage of the Climate Change Act 2008.

111. The United Kingdom has continued to develop the 2050s Global calculators, as well as supporting 10 countries in developing their own calculators which have now been launched, along with the Global calculator. The 2050 Calculator is a simple, user-friendly model of the United Kingdom's energy system, launched in 2010. It allows a wide variety of people to explore the full range of options for reducing GHG emissions to the year 2050. The United Kingdom also continued to undertake public awareness campaigns through its Met Office and the devolved administrations. The Met Office communicates climate change to the public through several channels such as social media, public talks, webpages, public enquiries, briefings, infographics, animations and reports. The Scottish Government supports engagement on climate change in the public sector through the Scottish Climate Week and the Greener Together campaign. The Greener Together campaign which has been running since 2012 promotes 10 key behaviours to help households to reduce emissions and uses television, outdoor and digital social advertising supported by a website and helpline.

2. Assessment of adherence to the reporting guidelines

112. The ERT assessed the information reported in the NC7 of the United Kingdom and identified an issue relating to completeness and adherence to the UNFCCC reporting guidelines on NCs. The finding is described in table 16.

Table 16
Findings on education, training and public awareness from the review of the seventh national communication of the United Kingdom

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
1	Reporting requirement specified in paragraph 65 Issue type: completeness Assessment: encouragement	The United Kingdom did not report the extent of public participation in the preparation and/or review of the NC7. During the review, no additional information was provided by the Party. The ERT encourages the Party to improve completeness of information by including in the next NC, the extent of public participation in the preparation and/ or review of the NC.

Note: Paragraph number listed under reporting requirement refers to the relevant paragraph of the UNFCCC reporting guidelines on NCs. The reporting on the requirements not included in this table is considered to be complete, transparent and adhering to the UNFCCC reporting guidelines on NCs.

III. Conclusions and recommendations

113. The ERT conducted a technical review of the information reported in the NC7 of the United Kingdom in accordance with the UNFCCC reporting guidelines on NCs. The ERT concludes that the reported information mostly adheres to the UNFCCC reporting guidelines on NCs and that the NC7 provides an overview of the national climate policy of the United Kingdom.

114. The information provided in the NC7 includes most elements of the supplementary information under Article 7 of the Kyoto Protocol, with the exception of information on information under Article 10 of the Kyoto Protocol, financial resources, and supplementary information under Article 7, paragraph 1, of the Kyoto Protocol on the minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol was provided by the United Kingdom in its 2017 and 2018 annual submission.

115. The United Kingdom's total GHG emissions excluding LULUCF covered by its quantified economy-wide emission reduction target were estimated to be 39.2 per cent below its 1990 level, whereas total GHG emissions including LULUCF were 40.9 per cent below its 1990 level in 2016. Emission decreases were driven by the energy sector – particularly from power stations (IPCC category 1A1a) due to a significant switching from coal use to other, less carbon intensive fuels and renewables.

116. The United Kingdom's main policy framework relating to energy and climate change goals include the Climate Change Act (2008). It sets up a national legally binding framework for the reduction of GHG emissions by at least 80 per cent below the 1990 level by 2050 and provides the framework for domestic action to reduce GHG emissions by at least 34 per cent below the 1990 level by 2020. The main instrument used for ensuring the targets are met is the carbon budget (which sets a limit on the quantity of GHG emissions that the United Kingdom can emit over a five-year period). Other key legislation supporting the United Kingdom's climate change goals includes the EU directives on ETS, EE, EPB, RES, LCP, and the United Kingdom's Clean Growth Strategy (issued in 2017). The mitigation actions with the most significant mitigation impact are the new energy supply policies (about 36,170.12 kt CO_2 eq in 2020), the Building Regulations Part L, expected to deliver about 10,140.43 kt CO_2 eq in 2020 and Renewable Transport Fuel Obligation, expected to deliver about 5,817.91 kt CO_2 eq in 2020. The devolved administrations in Scotland and Wales have passed their own legislation relating to emission reduction.

117. The GHG emission projections provided by the United Kingdom include those under the WEM scenario. In the scenario, emissions are projected to be 47, per cent below the 1990 level by 2020. On the basis of the reported information, the ERT concludes that the United Kingdom expects to meet its 2020 target under the WEM scenario. According to the projections under the WEM scenario, the projected level of emissions under the WEM

scenario is 17.9 per cent below the AEAs for 2020. On the basis of the reported information, the ERT concludes that the United Kingdom expects to meet its target for non-ETS sectors.

118. The projections indicate that the United Kingdom can meet its Kyoto Protocol target for the second commitment period and that GHG emissions are not expected to exceed the Kyoto Protocol target even by 2020. In addition to its Kyoto Protocol target, United Kingdom committed itself to achieving a domestic target of a 34 per cent reduction in emissions below the 1990 level by 2020. The projections indicate that United Kingdom expects to meet its domestic target.

119. The United Kingdom is not planning to make use of the Kyoto Protocol mechanisms to meet its Kyoto Protocol target. The United Kingdom is overachieving its reduction target and does not use flexible mechanisms, thus the information on how the use of the mechanisms under Articles 6, 12 and 17 of the Kyoto Protocol is supplemental to domestic action, is not applicable. During the review, the United Kingdom confirmed that it does not plan to use the market-based mechanisms to meet its Kyoto Protocol target. The United Kingdom has outperformed its first carbon budget (2008 to 2012) by one per cent and projects that it will outperform against its second and third budgets, covering the years 2013 to 2022 by about four per cent and six per cent respectively. In doing so, the United Kingdom also expects to over-achieve its international commitments under the Kyoto Protocol.

120. The United Kingdom continued to provide climate financing to developing countries in line with its climate finance programmes such as ICF. It has increased its commitment to ICF from GBP 3.87 billion (equivalent to USD 5.22 billion) between 2011/2012 and 2015/2016, reported in NC6, to GBP 5.8 billion (equivalent to USD 7.83 billion) between 2016/2017 and 2020/2021 reported in NC7, and its public financial support in 2015 and 2016 totalled USD 1,915 million and 1,417 million per year, respectively. For those years, the United Kingdom's support provided for mitigation action was on par with its support provided for adaptation, and the United Kingdom has reported its intention to provide support equally between mitigation and adaptation. The biggest share of financial support went to projects in the energy sector and cross-cutting projects The United Kingdom reported numerous bilateral projects to support technology transfer and capacity-building, helping developing countries mitigate and adapt to the impacts of climate change, reduce deforestation, and pursue clean economic growth. The United Kingdom states it is committed to providing support which is transparent, transformative, and in line with the needs and priorities of developing countries. Finally, the United Kingdom stated its priority to unlock the potential of the private sector, noting that ICF funding has mobilized GBP 500 million in private finance to date.

121. The United Kingdom has implemented adaptation policies covering regional, sectoral and cross-sectoral vulnerabilities and considerations; and the action taken to implement Article 4, paragraph 1(b) and (e), of the Convention with regard to adaptation. The United Kingdom has published the country's second Climate Change Risk Assessment in 2017 and two statutory assessments of progress in 2015 and 2017 on the first National Adaptation Programme. To enhance adaptation to the impacts of water shortages, the Government of the United Kingdom issued guidance to water companies that their next round of water resource management plans should take a long-term, strategic approach to protecting and enhancing resilient water supplies. The Government is also working closely with the National Grid, Energy UK and the Environment Agency to identify any risks to security of the electricity supply during extreme droughts.

122. The United Kingdom has implemented and planned international and domestic policies and programmes on climate change research, systematic observation and climate modelling. There is continued support by the United Kingdom for the IPCC, through government funding and through the contributions of the United Kingdom's world-leading research community. The United Kingdom has implemented major collaborative projects with international partners, such as the Climate Science for Service Partnership China and the Ganga Delta – Bay of Bengal Interactions programme with India. In terms of systematic observation, the United Kingdom continued work under the world-leading Met Office Hadley Centre Climate Programme, with the work plan for 2018–2021 now in place.

123. Climate change and broader sustainability issues feature in the educational curricula of the nations of the United Kingdom. The United Kingdom also continued to undertake public awareness campaigns through its Met Office and the devolved administrations. The Scottish Government supports engagement on climate change in the public sector through the Scottish Climate Week and the Greener Together campaign. The Government also launched a Clean Growth Strategy, which included a dedicated Green Great Britain Week to focus on climate and air quality issues across the United Kingdom. The first ever Green Great Britain Week was celebrated from 15 to 19 October 2018, marking the 10-year anniversary of passage of the Climate Change Act 2008.

124. In the course of the review, the ERT formulated the following recommendations for the United Kingdom to improve its adherence to the UNFCCC reporting guidelines on NCs and its reporting of supplementary information under the Kyoto Protocol:[7]

(a) To improve the completeness of its reporting by:

(i) Providing information on at least the past three years of its GEF funding (see issue 2 in table 13);

(ii) Providing information, where feasible, on activities related to technology transfer including failure stories (see issue 1 in table 14);

(b) To improve the transparency of its reporting by:

(i) Providing the estimated impact of the PaMs for each individual PaM and year or providing clear explanations as to why this may not be possible (see issue 1 in table 6);

(ii) Providing information on how the Party determines that financial resources are "new and additional" (see issue 1 in table 13);

(iii) Providing relevant references to the chapter in the NIR and the NC, on how the Party strives to implement PaMs under Article 2 of the Kyoto Protocol in such a way as to minimize adverse effects, including the adverse effects of climate change and effects on international trade and social, environmental and economic impacts on other Parties, especially developing country Parties (see issue 4 in table 6).

[7] The recommendations are given in full in the relevant sections of this report.

Annex

Documents and information used during the review

A. Reference documents

2017 GHG inventory submission of the United Kingdom. Available at https://unfccc.int/process/transparency-and-reporting/reporting-and-review-under-the-convention/greenhouse-gas-inventories-annex-i-parties/submissions/national-inventory-submissions-2017.

2018 GHG inventory submission of the United Kingdom. Available at https://unfccc.int/process-and-meetings/transparency-and-reporting/reporting-and-review-under-the-convention/greenhouse-gas-inventories-annex-i-parties/national-inventory-submissions-2018.

BR3 of the United Kingdom. Available at http://unfccc.int/files/national_reports/biennial_reports_and_iar/submitted_biennial_reports/application/pdf/19603845_united_kingdom-nc7-br3-1-gbr_nc7_and_br3_with_annexes_(1).pdf.

BR3 CTF tables of the United Kingdom. Available at https://unfccc.int/process-and-meetings/transparency-and-reporting/reporting-and-review-under-the-convention/national-communications-and-biennial-reports-annex-i-parties/third-biennial-reports-annex-i.

"Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual greenhouse gas inventories". Annex to decision 24/CP.19. Available at http://unfccc.int/resource/docs/2013/cop19/eng/10a03.pdf.

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

"Guidelines for the preparation of the information required under Article 7 of the Kyoto Protocol". Annex to decision 15/CMP.1. Available at http://unfccc.int/resource/docs/2005/cmp1/eng/08a02.pdf.

"Guidelines for the preparation of the information required under Article 7 of the Kyoto Protocol". Annex III to decision 3/CMP.11. Available at http://unfccc.int/resource/docs/2015/cmp11/eng/08a01.pdf.

"Guidelines for review under Article 8 of the Kyoto Protocol". Annex to decision 22/CMP.1. Available at http://unfccc.int/resource/docs/2005/cmp1/eng/08a03.pdf.

"Guidelines for the technical review of information reported under the Convention related to greenhouse gas inventories, biennial reports and national communications by Parties included in Annex I to the Convention". Annex to decision 13/CP.20. Available at http://unfccc.int/resource/docs/2014/cop20/eng/10a03.pdf.

NC7 of the United Kingdom. Available at http://unfccc.int/files/national_reports/annex_i_natcom/submitted_natcom/application/pdf/19603845_united_kingdom-nc7-br3-1-gbr_nc7_and_br3_with_annexes_(1).pdf.

Report on the individual review of the annual submission of the United Kingdom of Great Britain and Northern Ireland submitted in 2016. FCCC/ARR/2016/GBR. Available at https://unfccc.int/documents/65111.

Report on the review of the report to facilitate the calculation of the assigned amount for the second commitment period of the Kyoto Protocol of the United Kingdom of Great Britain and Northern Ireland. FCCC/IRR/2016/GBR. Available at https://unfccc.int/sites/default/files/resource/docs/2017/irr/gbr.pdf?download.

Report of the technical review of the second biennial report of the United Kingdom of Great Britain and Northern Ireland. FCCC/TRR.2/GBR. Available at https://unfccc.int/documents/9306#beg.

Report on the technical review of the sixth national communication of the United Kingdom of Great Britain and Northern Ireland. FCCC/IDR.6/GBR. Available at https://unfccc.int/documents/8659#beg.

Revisions to the guidelines for review under Article 8 of the Kyoto Protocol. Annex I to decision 4/CMP.11. Available at http://unfccc.int/resource/docs/2015/cmp11/eng/08a01.pdf.

"UNFCCC biennial reporting guidelines for developed country Parties". Annex I to decision 2/CP.17. Available at http://unfccc.int/resource/docs/2011/cop17/eng/09a01.pdf.

B. Additional information provided by the Party

Responses to questions during the review were received from Ms. Alison Oliver (BEIS), including additional material. The following documents[1] were provided by the United Kingdom:

United Kingdom. 2017. *Update Energy and emissions projection.* London: Department for Business. Energy & Industrial Strategy. Available at https://www.gov.uk/government/publications/updated-energy-and-emissions-projections-2017

United Kingdom. 2018. *Spread sheet for background calculation of total effects of PaMs ("Total effects of policies and measures - NC7 Table 12.xls").*

[1] Reproduced as received from the Party.