



United Nations

FCCE/IDR.8/GBR-FCCE/TRR.5/GBR



Framework Convention on
Climate Change

Distr.: General
25 July 2023

English only

Report on the technical review of the eighth national communication and the technical review of the fifth biennial report of the United Kingdom of Great Britain and Northern Ireland

Parties included in Annex I to the Convention were requested by decision 6/CP.25 to submit their eighth national communication to the secretariat by no later than 31 December 2022. 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 eighth 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”.

Developed country Parties were requested by decision 6/CP.25 to submit their fifth biennial report to the secretariat by no later than 31 December 2022. This report presents the results of the technical review of the fifth biennial report of the United Kingdom, 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”.

The review of these submissions took place in London from 24 to 28 April 2023.



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Abbreviations and acronyms

AEA	annual emission allocation
AR	Assessment Report of the Intergovernmental Panel on Climate Change
BEIS	Department for Business, Energy and Industrial Strategy
BR	biennial report
CCRA	Climate Change Risk Assessment of the United Kingdom of Great Britain and Northern Ireland
CH ₄	methane
CO ₂	carbon dioxide
CO ₂ eq	carbon dioxide equivalent
COVID-19	coronavirus disease 2019
CTF	common tabular format
Defra	Department for Environment, Food and Rural Affairs
DESNZ	Department for Energy Security and Net Zero
ERT	expert review team
ESD	European Union effort-sharing decision
EU	European Union
EU ETS	European Union Emissions Trading System
F-gas	fluorinated gas
GBP	pound(s) sterling
GCF	Green Climate Fund
GDP	gross domestic product
GEF	Global Environment Facility
GHG	greenhouse gas
GWP	global warming potential
HFC	hydrofluorocarbon
ICAO	International Civil Aviation Organization
ICF	International Climate Finance commitment of the Government of the United Kingdom of Great Britain and Northern Ireland
IMO	International Maritime Organization
IPCC	Intergovernmental Panel on Climate Change
IPPU	industrial processes and product use
LULUCF	land use, land-use change and forestry
Met Office	Meteorological Office of the United Kingdom of Great Britain and Northern Ireland
N ₂ O	nitrous oxide
NA	not applicable
NC	national communication
NDC	nationally determined contribution
NERC	Natural Environment Research Council of the United Kingdom of Great Britain and Northern Ireland
NF ₃	nitrogen trifluoride
NIR	national inventory report
NMVO	non-methane volatile organic compound
NO	not occurring
non-Annex I Party	Party not included in Annex I to the Convention
NO _x	nitrogen oxides
ODA	official development assistance
OECD	Organisation for Economic Co-operation and Development

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”
SF ₆	sulfur hexafluoride
SO _x	sulfur oxides
TRR	technical review report
UK ETS	Emissions Trading Scheme of the United Kingdom of Great Britain and Northern Ireland
UNEP	United Nations Environment Programme
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 NC8 and BR5 of the United Kingdom of Great Britain and Northern Ireland. The review was organized 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 IV: UNFCCC guidelines for the technical review of biennial reports from Parties included in Annex I to the Convention” and “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.1).

2. In accordance with decision 13/CP.20, 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 24 to 28 April 2023 in London, United Kingdom, by the following team of nominated experts from the UNFCCC roster of experts: Tom Dauwe (Belgium), Niveta Jain (India), Thelma Krug (Brazil), Arthur Rolle (Bahamas), Adrian Schilt (Switzerland) and Anne Siemons (EU). Thelma Krug and Adrian Schilt were the lead reviewers. The review was coordinated by Federico Brocchieri and Ruta Bubniene (secretariat).

B. Summary

4. The ERT conducted a technical review of the information reported in the NC8 of the United Kingdom in accordance with the UNFCCC reporting guidelines on NCs,¹ 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 Protocol² and of the information reported in the BR5 of the United Kingdom in accordance with the UNFCCC reporting guidelines on BRs.³

1. Timeliness

5. The NC8 (version 1) was submitted on 5 August 2022, before the deadline of 31 December 2022 mandated by decision 6/CP.25. The NC8 was resubmitted (version 2) on 22 December 2022. A corrigendum to the NC8 was submitted on 16 May 2023 to address issues raised during the review. The corrigendum included changes and additions related to PaMs; GHG projections; the provision of financial, technological and capacity-building support to developing country Parties; education, training and public awareness; and supplementary information under the Kyoto Protocol. Detailed information on improvements related to the resubmission is provided in paragraph 11 below. Unless otherwise specified, the information and values from the latest submission are used in this report.

6. The BR5 (version 1) was submitted on 5 August 2022, before the deadline of 31 December 2022 mandated by decision 6/CP.25. The BR5 was resubmitted (version 2) on 22 December 2022. The CTF tables were also submitted on 22 December 2022. A corrigendum to the BR5 and revised CTF tables were submitted on 16 May 2023 to address issues raised during the review. The corrigendum and revised CTF tables included changes and additions related to the quantified economy-wide emission reduction target; estimates of emission reductions and removals and the use of units from market-based mechanisms and LULUCF; GHG projections; and the provision of financial, technological and capacity-building support

¹ Decision 6/CP.25, annex.

² Decision 15/CMP.1, annex, and decision 3/CMP.11, annex III.

³ Decision 2/CP.17, annex.

to developing country Parties. Detailed information on improvements related to the resubmission is provided in paragraph 11 below. Unless otherwise specified, the information and values from the latest submission are used in this report.

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

7. Issues and gaps identified by the ERT related to the information reported by the United Kingdom in its NC8 are presented in tables 1–2. The information reported, including the supplementary information under the Kyoto Protocol, mostly adheres to the UNFCCC reporting guidelines on NCs.

8. The United Kingdom made improvements to the reporting in its NC8 compared with that in its NC7, including by addressing some recommendations and encouragements from the previous review report. The ERT noted that the Party has improved:

(a) The completeness of the information reported on PaMs by providing a more extensive list that includes PaMs in the devolved administrations (Northern Ireland, Scotland and Wales) and an explanation as to why some PaMs have expired or are no longer in place;

(b) The completeness of the information reported on projections and the total effects of PaMs by providing projections for the WAM scenario and by reporting emission projections related to fuel sold to ships and aircraft engaged in international transport separately;

(c) The completeness of the information reported on financial, technological and capacity-building support by providing key lessons learned on activities related to technology transfer, as well as failure stories in technology transfer. The United Kingdom also enhanced the completeness of its reporting on support by providing the contributions it has made to the GEF for past four years of GEF funding, in accordance with the format of table 3 of the UNFCCC reporting guidelines on NCs.

Table 1
Assessment of completeness and transparency of mandatory information reported by the United Kingdom in its eighth national communication

<i>Section of NC</i>	<i>Completeness</i>	<i>Transparency</i>	<i>Reference to description of recommendations</i>
Executive summary	Complete	Transparent	
National circumstances relevant to GHG emissions and removals	Complete	Transparent	
GHG inventory	Complete	Transparent	
PaMs	Mostly complete	Mostly transparent	Issues 1, 4 and 5 in table I.1
Projections and the total effect of PaMs	Mostly complete	Transparent	Issue 4 in table I.2
Vulnerability assessment, climate change impacts and adaptation measures	Complete	Transparent	
Financial resources and transfer of technology	Mostly complete	Transparent	Issue 1 in table I.3
Research and systematic observation	Complete	Transparent	
Education, training and public awareness	Complete	Transparent	

Note: A list of findings pertaining to the completeness and transparency issues identified in this table is included in annex I. The assessment of completeness and transparency by the ERT in this table is based only on the “shall” reporting requirements.

Table 2

Assessment of completeness and transparency of mandatory supplementary information under the Kyoto Protocol reported by the United Kingdom in its eighth national communication

<i>Supplementary information under the Kyoto Protocol</i>	<i>Completeness</i>	<i>Transparency</i>	<i>Reference to description of finding(s)</i>
National system	Complete	Transparent	–
National registry	Complete	Transparent	–
Supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17	Complete	Transparent	–
PaMs in accordance with Article 2	Complete	Transparent	–
Domestic and regional programmes and/or arrangements and procedures	Complete	Transparent	–
Information under Article 10 ^a	Complete	Transparent	–
Financial resources	Complete	Transparent	–
Minimization of adverse impacts in accordance with Article 3, paragraph 14	Complete	Transparent	–

Note: A list of findings pertaining to the completeness and transparency issues identified in this table is included in annex I. The assessment of completeness and transparency by the ERT in this table is based only on the “shall” reporting requirements.

^a The assessment refers to information provided by the Party on the provisions contained in Article 4, paras. 3, 5 and 7, of the Convention, as reported under Article 10 of the Kyoto Protocol, which is relevant to Annex II Parties only. An assessment of the information on the other provisions of Article 10 of the Kyoto Protocol is provided under the relevant substantive headings under the Convention, for example research and systematic observation.

9. Issues and gaps identified by the ERT related to the reported information by the United Kingdom in its BR5 are presented in table 3. The information reported mostly adheres to the UNFCCC reporting guidelines on BRs.

10. The United Kingdom made improvements to the reporting in its BR5 compared with that in its BR4, including by addressing some recommendations and encouragements from the previous review report. The ERT noted that the Party has improved:

(a) The completeness of the information reported on mitigation actions and their effects by providing a more extensive list that includes mitigation actions in the devolved administrations (Northern Ireland, Scotland and Wales) and additional information on drivers of the sustainable transition, such as measures to support innovation in mitigation, green finance, and green jobs, skills and industries;

(b) The transparency of the information reported on its quantified economy-wide emission reduction target and related assumptions, conditions and methodologies by providing consistent information on other market-based mechanisms in the textual part of the BR5 and CTF table 2e(II);

(c) The transparency of the information reported on progress in achievement of quantified economy-wide emission reduction targets and relevant information by using “NA” in CTF table 4 to indicate that it does not plan to use units from market-based mechanisms;

(d) The transparency of the information reported on the provision of financial, technological and capacity-building support to developing country Parties by improving the consistency between the textual part of the BR5 and CTF tables 7 and 7(a) regarding the amounts of financial support provided by type of support.

Table 3

Summary of completeness and transparency of mandatory information reported by the United Kingdom in its fifth biennial report

<i>Section of BR</i>	<i>Completeness</i>	<i>Transparency</i>	<i>Reference to description of finding(s)</i>
GHG emissions and removals	Complete	Transparent	–

<i>Section of BR</i>	<i>Completeness</i>	<i>Transparency</i>	<i>Reference to description of finding(s)</i>
Quantified economy-wide emission reduction target and related assumptions, conditions and methodologies	Complete	Transparent	–
Progress in achievement of targets	Mostly complete	Mostly transparent	Issues 1, 3 and 4 in table II.1
Provision of support to developing country Parties	Mostly complete	Transparent	Issue 1 in table II.3

Note: A list of findings pertaining to the completeness and transparency issues identified in this table is included in annex II. The assessment of completeness and transparency by the ERT in this table is based only on the “shall” reporting requirements.

11. The corrigendum to the NC8 and BR5 and the revisions to the CTF tables made during the review through a resubmission improved:

(a) The information reported on the quantified economy-wide emission reduction target and related assumptions, conditions and methodologies by providing consistent information on gases and sectors covered in the textual part of the BR5 and CTF table 2(b);

(b) The information reported on PaMs by providing additional information on the cost of PaMs;

(c) The information reported on progress in achievement of quantified economy-wide emission reduction targets and relevant information by providing revised GHG emissions consistent with the target under the Convention in CTF table 4;

(d) The information reported on projections and the total effects of PaMs by providing additional information on the reasons for not providing a WOM scenario and on the reasoning behind not using the same sectoral categories to present projections on a sectoral basis as those used in the GHG inventory;

(e) The information reported on financial, technological and capacity-building support by providing clarification of how financial resources are determined as new and additional; information on how support is distinguished between mitigation and adaptation; additional information on the approach used for tracking the provision of support; a description of the underlying assumptions and methodologies used for preparing CTF tables 7(a) and 7(b); detailed information on the methodology or approach used to determine support provided as being climate-specific; information on contributions that separates and specifies those initially reported under “other” specialized United Nations agencies; information on strategies to support countries that are particularly vulnerable to the adverse effects of climate change; and information on private sector support leveraged and the related methodology;

(f) The information reported on education, training and public awareness by providing information on the monitoring, review and evaluation of the implementation of Article 6 of the Convention;

(g) The supplementary information related to the Kyoto Protocol reported by providing a description of steps taken to implement any decisions by ICAO and IMO and information on how support is distinguished between mitigation and adaptation.

II. Technical review of the information reported in the eighth national communication and fifth biennial report

A. National circumstances relevant to greenhouse gas emissions and removals

1. Technical assessment of the reported information

12. The NC8 contains key data on legislation, population trends, geography and land use, climate and climate change, economic developments, energy, transport, the buildings sector,

industry, trade, the services sector, agriculture, forestry, resource efficiency and wastewater. The United Kingdom provided information regarding the impacts of the COVID-19 pandemic on the economy overall and on the energy sector specifically. Between 2019 and 2020, transport emissions fell by nearly 20 per cent owing to prolonged lockdowns. Coal production decreased by 35 per cent to a record low of 1.7 Mt and surface mine production by 37 per cent to a record low of 1.6 Mt as a result of mine closures and falling demand for coal for electricity generation.

13. The United Kingdom combined its economic and industry profiles when reporting on its national circumstances. Although the UNFCCC reporting guidelines on NCs recognize that Parties may provide whatever information best describes their own national circumstances and historical trends, the ERT noted that providing separate economic and industry profiles and related information (as per para. 3(c) and (h) of the guidelines) would improve the comparability of Parties' NCs. The United Kingdom agreed with the assessment of the ERT.

2. Assessment of adherence to the reporting guidelines

14. The ERT assessed the information reported in the NC8 of the United Kingdom and recognized that the reporting is complete and transparent, and thus adheres 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.

B. Greenhouse gas inventory information⁴

1. Technical assessment of the reported information

15. The United Kingdom reported information in its BR5 and NC8 on its historical GHG emissions and inventory arrangements. Total GHG emissions⁵ excluding emissions and removals from LULUCF decreased by 49.3 per cent between 1990 and 2020, while total GHG emissions including net emissions or removals from LULUCF decreased by 49.8 per cent over the same period. Emissions peaked in 2012 and decreased thereafter. The changes in total emissions were driven mainly by the following factors: moving away from coal-fired electricity generation towards the use of natural gas and renewable sources; tightening the regulation of landfills; increasing the use of landfill CH₄ in gas flares and engines; and introducing abatement technology in adipic acid and nitric acid production. In 2020, the COVID-19 pandemic had a significant impact on total national GHG emissions (and in particular on transport and business emissions), which decreased by 9.8 per cent compared with the 2019 level.

16. The largest contribution to GHG emissions came from the energy sector. In 2020, this sector contributed 76.5 per cent of total net emissions (including LULUCF). Since 1990, emissions from the energy sector have declined by 48.1 per cent. In 2020, 97.9 per cent of the total sectoral emissions originated from fossil fuel combustion and the remaining 2.1 per cent comprised fugitive emissions from fuels. Most of the energy sector emissions (97.3 per cent) were CO₂, followed by 2.1 per cent CH₄ and 0.6 per cent N₂O. The CO₂ emissions resulted mainly from fossil fuel combustion in power generation (98.9 per cent), with energy industries contributing 25.2 per cent of these emissions, manufacturing industries and construction 13.4 per cent, transport 32.2 per cent, and other categories in the energy sector 29.1 per cent. CH₄ was the largest contributor to the total fugitive emissions from fuels, contributing 60.5 per cent, followed by CO₂ at 39.2 per cent. A large reduction in emissions (9.9 per cent) from the energy sector was observed in 2020 relative to 2019; this reduction is attributable to the effects of the COVID-19 pandemic, especially on travel. The second largest source of GHGs in the United Kingdom is the agriculture sector, which contributed 10.4 per cent of total national emissions in 2020. Emissions from this sector are mostly CH₄

⁴ GHG emission data in this section are based on the United Kingdom's 2023 annual submission, version 1, which has not yet been subject to review. All emission data in subsequent chapters are based on the United Kingdom's BR5 CTF tables unless otherwise noted.

⁵ In this report, the term "total GHG emissions" refers to the aggregated national GHG emissions expressed in terms of CO₂ eq excluding LULUCF, unless otherwise specified.

and N₂O, 65.7 per cent and 31.1 per cent respectively. Only a small amount of CO₂ is emitted. In 1990–2020, emissions from this sector declined by 16.3 per cent.

17. Total GHG emissions (including LULUCF) increased by 5.0 per cent in 2021 compared with the 2020 level, but they were 5.2 per cent lower compared with the (pre-pandemic) 2019 level. Emissions from the energy and agriculture sectors led to the increased emissions in 2021, increasing by 7.1 and 1.3 per cent respectively compared with the 2020 level. During the review, the United Kingdom explained that the increase in GHG emissions from the energy sector was mainly driven by the transport subsector, the emissions of which increased by 10.3 per cent in 2021 relative to 2020 but were 11.3 per cent lower in 2021 relative to 2019. The 2021 increase in emissions is associated with recovery from the COVID-19 pandemic, during which the transport subsector was severely impacted (see para. 16 above). Regarding the agriculture sector, the increase in emissions from 2020 to 2021 is mainly due to enteric fermentation and manure emissions. Compared with the 2019 level, agriculture sector emissions were 1.7 per cent lower in 2021.

18. Table 4 illustrates the emission trends by sector and by gas for the United Kingdom from its 2023 annual submission, which was made before the review week. The emissions reported in the 2022 annual submission are the same as those reported in CTF table 1.

Table 4

Greenhouse gas emissions by sector and by gas for the United Kingdom for 1990–2021

	<i>GHG emissions (kt CO₂ eq)</i>					<i>Change (%)</i>		<i>Share (%)</i>	
	<i>1990</i>	<i>2000</i>	<i>2010</i>	<i>2020</i>	<i>2021</i>	<i>1990–2020</i>	<i>2020–2021</i>	<i>1990</i>	<i>2021</i>
<i>Sector</i>									
1. Energy	602 894.42	553 790.53	498 931.87	312 897.26	334 967.71	–48.1	7.1	74.8	78.0
A1. Energy industries	239 598.39	201 115.61	194 655.34	76 950.98	80 081.49	–67.9	4.1	29.7	18.6
A2. Manufacturing industries and construction	75 612.31	74 675.62	51 539.09	40 655.71	43 633.45	–46.2	7.3	9.4	10.2
A3. Transport	122 935.49	130 141.90	122 438.22	97 999.74	108 117.74	–20.3	10.3	15.2	25.2
A4. and A5. Other	119 639.33	123 138.27	115 533.75	88 511.72	95 169.96	–26.0	7.5	14.8	22.2
B. Fugitive emissions from fuels	45 108.89	24 719.14	14 765.46	8 779.10	7 965.08	–80.5	–9.3	5.6	1.9
C. CO ₂ transport and storage	NO	NO	NO	NO	NO	–	–	–	–
2. IPPU	80 028.76	53 403.71	41 001.15	34 069.60	32 326.75	–57.4	–5.1	9.9	7.5
3. Agriculture	50 828.98	48 571.47	43 847.03	42 518.67	43 090.47	–16.3	1.3	6.3	10.0
4. LULUCF	11 152.48	6 326.71	1 757.36	1 258.96	1 164.27	–88.7	–7.5	NA	NA
5. Waste	72 549.67	68 153.86	31 944.54	19 479.55	19 104.54	–73.2	–1.9	9.0	4.4
6. Other ^a	NO	NO	NO	NO	NO	–	–	–	–
<i>Gas^b</i>									
CO ₂	603 666.16	570 546.48	513 843.49	327 164.21	348 409.72	–45.8	6.5	75.6	80.6
CH ₄	145 315.66	118 800.29	70 128.12	52 265.81	51 738.66	–64.0	–1.0	16.3	11.5
N ₂ O	42 524.97	25 227.35	19 313.67	17 437.86	17 906.35	–59.0	2.7	5.9	4.8
HFCs	12 068.46	6 964.33	11 503.33	11 525.46	10 819.71	–4.5	–6.1	1.8	3.0
PFCs	1 483.66	518.66	257.10	151.14	192.88	–89.8	27.6	0.2	0.0
SF ₆	1 242.83	1 861.93	678.54	420.27	421.82	–66.2	0.4	0.2	0.1
NF ₃	0.11	0.55	0.34	0.34	0.34	207.3	0.0	0.0	0.0
Total GHG emissions excluding LULUCF	806 301.84	723 919.58	615 724.59	408 965.08	429 489.47	–49.3	5.0	100.0	100.0
Total GHG emissions including LULUCF	817 454.32	730 246.29	617 481.95	410 224.04	430 653.74	–49.8	5.0	NA	NA

Source: GHG emission data: United Kingdom's 2023 annual submission, version 1.

^a Emissions and removals reported under the sector other (sector 6) are not included in total GHG emissions.

^b Emissions by gas without LULUCF. The Party did not report indirect CO₂ emissions.

19. At the time of submission of the NC8 and BR5, BEIS was the single national entity responsible for the institutional, legal and procedural arrangements for the national system and for the strategic development of the GHG inventory. In February 2023, following government-wide restructuring, the newly established DESNZ took on the responsibilities previously held by BEIS. The development of the inventory is driven by the National Inventory Steering Committee, through the inventory improvement programme. Improvements include changing methodologies to take into account new data sources; incorporating updated guidance from the IPCC; and considering the findings of research programmes sponsored by government departments, including BEIS, Defra and the Department for Transport, as well as those of the devolved administrations. Since the submission of the BR4 in 2019, the major change to the national inventory system has been the restructuring of the National Inventory Steering Committee from a single body into two: the Advisory Body and the Executive Body. The United Kingdom’s GHG inventory is compiled and maintained by a consortium led by Ricardo Energy and Environment under a contract with the Science and Innovation for Climate and Energy Directorate of DESNZ. Ricardo Energy and Environment is responsible for producing emission estimates for the energy, IPPU and waste sectors. Forestry emissions and removals are estimated by Forest Research and emissions for the remainder of the LULUCF sector by the Centre for Ecology and Hydrology; both organizations are partners in the consortium. Agriculture sector emissions are produced by Rothamsted Research under a contract with Defra.

2. Assessment of adherence to the reporting guidelines

20. The ERT assessed the information reported in the NC8 and BR5 of the United Kingdom and recognized that the reporting is complete and transparent, and thus adheres to the UNFCCC reporting guidelines on NCs and the UNFCCC reporting guidelines on BRs. 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

21. The United Kingdom provided in the NC8 a detailed 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 in conjunction with decisions 3/CMP.11 and 4/CMP.11. The description includes all the elements mandated by paragraph 30 of the annex to decision 15/CMP.1. The NC8 also contains a reference to the description of the national system provided in the NIR of the 2022 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 2022 annual submission of the United Kingdom, including the organization of biannual meetings between BEIS and the devolved administrations (Northern Ireland, Scotland and Wales) to facilitate discussion and agreement among inventory stakeholders at the national and subnational level. In its 2023 annual submission, the Party reported that DESNZ has replaced BEIS as the single national entity responsible for the national system. No changes to the operational aspects of the national system were made beyond the department under which they are delivered changing.

(b) Assessment of adherence to the reporting guidelines

22. The ERT assessed the information reported in the NC8 of the United Kingdom and recognized that the reporting is complete and transparent, and thus adheres to the reporting guidelines for supplementary information. 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

23. In its NC8 the United Kingdom provided information on how its national registry performs the functions in accordance with the annex to decision 13/CMP.1 in conjunction with decision 3/CMP.11 and the annex to decision 5/CMP.1 and complies with the requirements of the technical standards for data exchange between registry systems. The national registry is operated and maintained by the United Kingdom's Environment Agency, which is represented on the National Inventory Steering Committee. The ERT took note of the review of the changes to the national registry reflected in the report on the individual review of the 2022 annual submission of the United Kingdom.

24. In 2021, several changes were made to the national registry, some as a result of the United Kingdom's separation from the EU's Consolidated System of European Registries and disconnection from the international transaction log on 31 December 2020, to which it was reconnected on 14 June 2021. Other changes included the implementation of new registry software to accommodate both the new UK ETS and the existing national registry for the Kyoto Protocol. In addition, changes were made relating to the national registry's database structure and capacity, conformity with technical standards, discrepancy procedures, security, publicly available information, Internet address and data integrity measures. In the 2023 annual submission, the United Kingdom reported that no significant changes were made to its national registry over the previous year.

(b) Assessment of adherence to the reporting guidelines

25. The ERT assessed the information reported in the NC8 of the United Kingdom and recognized that the reporting is complete and transparent, and thus adheres to the reporting guidelines for supplementary information. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

C. Quantified economy-wide emission reduction target and related assumptions, conditions and methodologies

1. Technical assessment of the reported information

26. The United Kingdom reported information on its economy-wide emission reduction target in its BR5. For the United Kingdom the Convention entered into force on 21 March 1996. Under the Convention the United Kingdom committed to contributing to the achievement of the joint EU economy-wide emission reduction target of 20 per cent below the 1990 level by 2020. The United Kingdom left the EU in 2020; however, under the terms of the Withdrawal Agreement, it remains committed to contributing to the 2020 joint EU target under the Convention and the Kyoto Protocol.

27. The target for the EU and its member States is formalized in the EU 2020 climate and energy package. The legislative package regulates emissions of CO₂, CH₄, N₂O, HFCs, PFCs and SF₆ using GWP values from the AR4 to aggregate the GHG emissions of the EU until 2020. Emissions and removals from the LULUCF sector are not included in the quantified economy-wide emission reduction target under the Convention.

28. The EU-wide targets are primarily implemented through the EU ETS and ESD. The EU ETS covers mainly point emissions sources in the energy, industry and aviation sectors. An EU-wide emission cap was put in place for 2013–2020 for the EU ETS with the goal of reducing emissions by 21 per cent below the 2005 level by 2020. The ESD became operational in 2013 and covers sectors outside the EU ETS, including transport (excluding aviation and international maritime transport), residential and commercial buildings, agriculture and waste. The ESD is regulated through targets for each Member State that add up to a reduction at the EU level of 10 per cent below the 2005 level by 2020.

29. The EU generally allows its member States to use units from the Kyoto Protocol mechanisms for compliance purposes, subject to a number of restrictions in terms of origin and type of project and up to an established limit. Operators and airline operators can use

such units to fulfil their requirements under the EU ETS, and member States can use such units for their national ESD targets, within specific limitations. The United Kingdom reported that it does not plan to use units from market-based mechanisms.

30. The United Kingdom has a national target of reducing its emissions to 16 per cent below the 2005 level by 2020 for ESD sectors. This target has been translated into binding quantified AEAs for 2013–2020. The United Kingdom’s AEAs change following a path from 358,741.70 kt CO₂ eq in 2013 to 350,926.22 kt CO₂ eq in 2020.⁶

31. After leaving the EU, the United Kingdom revised its policy framework and legal instruments for pursuing its climate commitments. On 1 January 2021, the newly established UK ETS replaced the United Kingdom’s participation in the EU ETS. Furthermore, the United Kingdom no longer contributes to the ESD or the EU effort-sharing regulation; instead, it has committed to domestic targets that encompass the sum of emissions under the UK ETS and emissions from sectors not covered by it. For 2030, the United Kingdom aims to adjust the cap of the UK ETS in line with a pathway consistent with net zero emissions in 2050. In 2022, the Government conducted a public consultation with relevant stakeholders to collect feedback on adjusting the cap. The changes needed as a result of the consultation are planned to be implemented in 2024, sending a clear signal to businesses and giving them the confidence to invest in the transition to a greener economy. Sectors not covered by the UK ETS have sector-specific pathways for reducing GHG emissions but are not subject to individual legally binding targets. In its NDC, the United Kingdom committed to reducing its economy-wide emissions by 68 per cent compared with the 1990 level by 2030. At the national level, the pursuit of targets is based on the continuation of the well-established five-year carbon budget cycles (which place a cap on the total amount of GHGs that the United Kingdom can emit over a five-year period). The fifth carbon budget (2028–2032) equates to a reduction in GHG emissions of about 57 per cent by 2030 compared with the 1990 level. The ERT noted that the GHG emission reduction required by this budget is not, on its own, consistent with the 2030 target in the current NDC. During the review, the United Kingdom clarified that the fifth carbon budget was developed before the current NDC, with the NDC hence reflecting a higher level of ambition. Since the submission of the NC8 and BR5, the Government of the United Kingdom has published an updated Carbon Budget Delivery Plan, which quantifies additional policies and proposals that align with the 2030 NDC target. In addition, the Party indicated that the sixth carbon budget (2033–2037), adopted in 2021, further raises ambition by setting a target that equates to a reduction in GHG emissions of about 77 per cent by 2035 compared with the 1990 level.

32. In June 2019, the United Kingdom set a legally binding target to achieve net zero GHG emissions by 2050, and in October 2021 published its Net Zero Strategy as a road map with actions for making the country’s economy sustainable. With implementation plans such as Powering Up Britain (published in March 2023), the United Kingdom is continuing its efforts to set out how it will deliver net zero commitments while ensuring energy security and seizing economic opportunities.

33. The ERT noted that the United Kingdom aims to further increase the geographical scope of its reporting under the Paris Agreement by including all its Crown dependencies and oversea territories, to the extent possible.

2. Assessment of adherence to the reporting guidelines

34. The ERT assessed the information reported in the BR5 of the United Kingdom and recognized that the reporting is complete and transparent, and thus adheres to the UNFCCC reporting guidelines on BRs. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

⁶ According to the EU transaction log.

D. Information on policies and measures

1. Technical assessment of the reported information

35. The United Kingdom provided in its NC8 and BR5 information on its PaMs⁷ implemented, adopted and planned to fulfil its commitments under the Convention. The United Kingdom's set of PaMs is a more comprehensive list than that previously reported in the NC7 and BR4, substantially expanded across all sectors and with the inclusion of PaMs to be implemented by the devolved administrations (Northern Ireland, Scotland and Wales).

36. The United Kingdom reported on its policy context and legal and institutional arrangements in place for implementing its commitments and monitoring and evaluating the effectiveness of its PaMs. The United Kingdom also provided information on changes to its institutional, legal, administrative and procedural arrangements used for domestic compliance, monitoring, reporting, archiving of information and evaluation of progress towards its target. In the context of monitoring and evaluating the effectiveness of the United Kingdom's PaMs, two Cabinet committees were established in 2020: the Climate Action Strategy Committee, which was chaired by the Prime Minister and considered matters relating to the delivery of domestic and international climate strategy; and the Climate Action Implementation Committee, which was chaired by the COP 26 President and considered matters relating to the COP 26 legacy, net zero and the country's resilience to climate change impacts. The Government Priorities Delivery Committee, chaired by the Prime Minister, coordinates the delivery – driving progress and ensuring accountability – of the priority missions of the Prime Minister, one of which is the Net Zero Strategy.

37. The Government of the United Kingdom's climate policy programme is supported by action taken by the devolved administrations in Northern Ireland, Scotland and Wales. While the Government has overall responsibility for ensuring that a programme is put in place to deliver the country's NDC and its domestic carbon budgets, all the devolved administrations play a part in meeting these targets. The Government of the United Kingdom and the devolved administrations have established governance arrangements to ensure a harmonized, collaborative approach to addressing climate change.

38. The United Kingdom's assessment of the economic and social consequences of its response measures includes several initiatives. For example, in Northern Ireland, the Rural-Led Energy Transition aims at reducing or eliminating the risk of low-income households being left behind in the energy transition. In Scotland, the Climate Emergency Skills Action Plan sets out the Scottish Government's strategy to ensure that Scotland's workforce has the skills required to make the transition to net zero a just transition, fair and inclusive to all. The Scottish Government's 10-year Just Transition Fund is committed to accelerating the transition of the North East region, including Moray local government council area, in a way that is fair and leaves no one behind, recognizing the particular need to pivot the strengths of the region towards supporting and capitalizing on the opportunities presented by Scotland's ongoing transition to net zero. Wales recognizes that the changes driven by the need to decarbonize the economy will have different impacts on specific industries, parts of the workforce and socioeconomic groups and will depend on the pathways, policies and actions it chooses. At the national level, the Government of the United Kingdom established a Green Jobs Delivery Group in 2022, which includes representatives of industry and other key stakeholders, to support the development and delivery of the Government's plans relating to green jobs and skills.

39. In its reporting on PaMs, the United Kingdom provided the estimated emission reduction impacts for many of the PaMs for the whole United Kingdom and the PaMs specific to England, but not for any of the PaMs of the devolved administrations (Northern Ireland, Scotland and Wales). During the review, the Party clarified that nationwide PaMs are quantified consistently with the United Kingdom's *Updated energy and emissions projections 2019*. Although the PaMs developed by the devolved administrations were included in the NC8 for completeness, their quantification was not so as to retain alignment

⁷ The UNFCCC reporting guidelines on BRs use the term "mitigation actions", whereas the UNFCCC reporting guidelines on NCs use the term "policies and measures". The terms are used interchangeably in this report to refer to the relevant information in either the NC or BR.

between the PaMs and the emission projection scenarios. In addition to PaMs, the United Kingdom reported comprehensively on its sectoral action plans and strategies, such as the Net Zero Strategy, Powering Up Britain, the British Energy Security Strategy, the Industrial Decarbonisation Strategy and the Hydrogen Strategy, which together set out how the United Kingdom plans to achieve its climate goals.

40. The Party described the different methodologies used for estimating the impacts of its individual PaMs. The most challenging sectors for the quantification were the waste and agriculture sectors. The Party explained during the review that where estimated impacts were not provided, this was due to the methodology required to do so being too complex to develop. However, the Party noted it is possible to deduce the overall mitigation impact of existing and planned PaMs from projections (under the WEM and WAM scenarios) of GHG emissions for 2030 and 2040 (see tables 7 and 8). The United Kingdom estimated the impacts of some of its PaMs in groups. The Party explained during the review that impacts were estimated for groups of PaMs in cases when the impact of individual PaMs could not be estimated reliably owing to their interaction with other PaMs. Some indirect policy impacts, such as those driven by the Climate Change Levy and rail electrification, could not be robustly quantified independently from other policies.

41. When the United Kingdom was still part of the EU, its key overarching related cross-sectoral policy was the EU's 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 CO₂ emissions from cars and vans, the carbon capture and storage directive, and the general programmes for environmental conservation, namely the 7th Environment Action Programme and the clean air policy package.

42. With the withdrawal of the United Kingdom from the EU in 2020, EU regulatory frameworks in the country were almost completely discontinued. However, building on its Climate Change Act of 2008, the United Kingdom has maintained and implemented cross-cutting national policies to ensure its 2030 and 2050 targets can be met. In April 2021, the United Kingdom laid down legislation for its sixth carbon budget (2033–2037), which equates to a reduction in GHG emissions of approximately 77 per cent by 2035 compared with the 1990 level. The level was set in line with the latest available science, as recommended by the national Climate Change Committee. The United Kingdom has replaced or is in the process of replacing some of the EU regulatory frameworks with corresponding national legislative frameworks, such as the UK ETS (in lieu of the EU ETS) and the Environmental Land Management schemes (in lieu of the Common Agricultural Policy). EU regulatory frameworks setting targets for cross-cutting energy efficiency improvements and renewable energy deployment have not yet been replaced by similar national frameworks.

43. The United Kingdom introduced nation-level policies, as well as policies for England, Northern Ireland, Scotland and Wales, to achieve its targets under the ESD and domestic emission reduction targets. The Party highlighted its electricity supply and decarbonization policies, car fuel efficiency policies, F-gas regulation, minimum energy performance standards for new buildings and renewable transport fuel obligation as successful and significant policies in terms of their emission abatement. Particularly enabling PaMs identified by the United Kingdom are the new energy supply policies, the building regulations and the UK ETS.

44. The United Kingdom highlighted the domestic mitigation actions that are under development, such as those being revised to align with its more ambitious 2030 target, the carbon budgets and the Net Zero Strategy for 2050. Among the mitigation actions that provide a foundation for significant additional action are the planned PaMs to support heat pumps in the building sector (e.g. the market obligation for retrofitted heat pump deployment), hydrogen production (e.g. the hydrogen business model) and the Carbon Capture, Usage and Storage Innovation 2.0 programme – Dispatchable Power Agreement. Table 5 provides a summary of the reported information on the PaMs of the United Kingdom.

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

<i>Sector</i>	<i>Key PaMs</i>	<i>Estimated mitigation impact in 2020 (kt CO₂ eq)</i>	<i>Estimated mitigation impact in 2030 (kt CO₂ eq)</i>
Policy framework and cross-sectoral measures	UK ETS	NE	NE
	Carbon budgets	NE	NE
	Clean Growth Strategy	NE	NE
Energy			
Energy efficiency	Building regulations part L (2002 and 2005–2006)	10 014.02	5 116.93
	Building regulations part L (2010)	5 014.08	4 928.44
	Sustainable energy using products	4 009.79	2 820.94
Energy supply and renewable energy	Renewable Heat Incentive	3 758.91	4 205.83
	New energy supply policies (several, including the Contracts for Difference scheme for 2014–2020 and 2021–2035)	32 388.17	44 629.56
Transport	Car fuel efficiency policies	3 305.51	18 897.56
	Renewable Transport Fuel Obligation – 5 per cent by volume	2 986.24	3 133.83
	Renewable Transport Fuel Obligation – increase target to meet RED	2 899.08	3 742.52
IPPU	F-gas regulation (2015)	3 638.39	11 071.79
	Industrial Energy Transformation Fund	NE	NE
	Net Zero Hydrogen Fund	NE	NE
Agriculture	Agricultural Action Plan	1 174.00	1 840.67
	Nitrates Action Plan	NE	NE
	Sustainable Farming Scheme	NE	NE
LULUCF	Forestry policies (several, including the Forestry Act felling licence regulations and environmental impact assessment (forestry) regulations)	–211.89	114.70
Waste	Waste policies	0	793.89

Note: The estimated mitigation impacts are estimates of emissions of CO₂ eq avoided in a given year as a result of the implementation of mitigation actions.

45. The ERT noted some inconsistencies between the PaMs reported in the NC8 and those included in CTF table 3. The NC8, however, includes a comment indicating that the most up-to-date PaMs are those reported in CTF table 3, submitted in December 2022 with version 2 of the BR5. During the review, the Party further clarified that these inconsistencies arise from differences in the timing of the submissions of the NC8 and CTF tables: the NC8 (version 1) was submitted in August 2022, while the CTF tables were submitted for the first time in December 2022. Version 2 of the NC8 was submitted in December 2022, but the relevant PaMs table was not updated.

2. Assessment of adherence to the reporting guidelines

46. The ERT assessed the information reported in the NC8 and BR5 of the United Kingdom and identified issues relating to completeness and transparency, and thus adherence to the UNFCCC reporting guidelines on NCs and the UNFCCC reporting guidelines on BRs. The findings are described in tables I.1 and II.1.

3. Domestic and regional programmes and legislative arrangements and procedures related to the Kyoto Protocol

(a) Technical assessment of the reported information

47. In its NC8, the United Kingdom reported that the implementation of the Kyoto Protocol is underpinned by the Climate Change Act of 2008, which provides a long-term,

legally binding framework under which institutions reduce GHG emissions through the PaMs implemented by them. The overall responsibility for climate change policymaking lies with the Government of the United Kingdom, and a number of national institutions, as well as all the devolved administrations, are involved in policy implementation. The approach taken by each devolved administration may differ, drawing on the range of policies at their disposal. Ministers from England, Northern Ireland, Scotland and Wales meet bimonthly in the Interministerial Group for Net Zero, Energy and Climate Change to share updates on progress in delivering climate objectives and to collaborate in areas of shared interest.

48. The United Kingdom left the EU on 31 January 2020. Under the terms of the Withdrawal Agreement, the United Kingdom remains committed to its shared targets and reporting with the EU under the Convention and its Kyoto Protocol. 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 (see paras. 26–28 above).

49. The Party has arrangements and enforcement procedures to meet its commitments under the Kyoto Protocol, including procedures for addressing non-compliance. These include a comprehensive self-assessment system for monitoring and reporting to ensure compliance with emission reduction commitments. An independent scrutiny of progress is provided by the Climate Change Committee and by a government-wide Cabinet committee process to agree on targets and PaMs. Only those Crown dependencies and overseas territories to which the United Kingdom's commitments under the Convention extend were included in the BR5. During the review, in response to a question from the ERT, the Party clarified that all emission reduction commitments have been met so far, including those of the Crown dependencies and overseas territories, without the Government of the United Kingdom having to take any local action against domestic non-compliance, including by the Crown dependencies and overseas territories.

50. The United Kingdom has provisions in place to make information on legislative arrangements and administrative procedures related to compliance and enforcement publicly accessible on the BEIS website, the Clean Growth Strategy website, the general climate action website of the Government of the United Kingdom and many other websites. 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 climate strategies and PaMs.

51. The United Kingdom has national legislative arrangements and administrative procedures in place that seek to ensure that the implementation of activities under Article 3, paragraph 3, and any elected activities under Article 3, paragraph 4, of the Kyoto Protocol also contributes to the conservation of biodiversity and 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 EU rural development programmes. A strong regulatory framework continues to protect existing woodland from deforestation and degradation. The United Kingdom has developed the Woodland Carbon Code, and private finance for tree planting and management is being generated via the Code with the support of the Woodland Carbon Guarantee. The Government has also launched the England Woodland Creation Offer to fund woodland creation in England and will establish Woodland Creation Partnerships in key areas, bringing together the Government, non-governmental organizations and the private sector to develop bespoke offers to encourage woodland creation. The Forests for our Future programme was launched in 2020 with the objective of planting 9,000 ha of new woodland by 2030. In addition, the Nature for Climate Fund, launched in 2020, provides grants to support woodland creation and peatland restoration over a five-year period. Forests and woodlands currently act as carbon sinks and in 2019 captured about 4 per cent of domestic emissions. Since 2010, 123,000 ha of new woodland has been planted across the country. The England Trees Action Plan (2021–2024) is a commitment to increase tree planting from 13,290 ha in 2020–2021 to 30,000 ha each year by 2024. The Plan is supported by USD 500 million from the Nature for Climate Fund.

(b) Assessment of adherence to the reporting guidelines

52. The ERT assessed the information reported in the NC8 of the United Kingdom and recognized that the reporting is complete and transparent, and thus adheres to the reporting guidelines for supplementary information. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

4. Policies and measures in accordance with Article 2 and minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol

(a) Technical assessment of the reported information

53. In the NC8 the United Kingdom reported 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. In the NC8 the United Kingdom indicated its commitment to implementing actions aimed at minimizing the impacts of climate change, including any adverse impacts resulting from action taken to mitigate climate change, however, details were not included; the 2022 annual submission contains these details. The United Kingdom recognizes the role of both developed economies and emerging economies in helping the poorest and most vulnerable countries to curb emissions while developing and to protect themselves from the worst effects of climate change. The transition to a low-carbon world requires the provision of support to developing countries in their domestic efforts to mitigate and adapt to climate change and develop their own low-carbon economies. In this context, the United Kingdom has supported the Least Developed Countries Initiative for Effective Adaptation and Resilience since April 2020. The Initiative helps the poorest countries access and manage climate finance in order to address resilience and adaptation in a demand-driven process whereby needs are articulated at the local level and supported strategically through national and local budget prioritization. The United Kingdom's International Climate Fund will ensure that countries and communities are supported in adapting to, preparing for and coping with the damaging effects of climate change and climate-linked disasters.

54. The NC8 includes information on how the United Kingdom promotes and implements the decisions of ICAO and IMO to limit emissions from aviation and marine bunker fuels. Regarding aviation, the United Kingdom provided references to its State Action Plan under ICAO and its Jet Zero Strategy, as well as to some documents concerning the implementation of the Carbon Offsetting and Reduction Scheme for International Aviation. Regarding navigation, the Party provided a reference to its Clean Maritime Plan and stated that this national action plan will be updated in late 2023.

55. 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 2022 annual submission. The United Kingdom reported on updated initiatives to understand the impacts of climate change response measures, including research programmes and collaborations, the ICF, knowledge transfer initiatives, capacity-building and technology transfer projects on renewable technologies and energy efficiency, capacity-building projects on adaptation and energy market reforms. The United Kingdom has undertaken research to determine the extent of the impacts of response measures and uses this information to implement policies in a way that considers the impacts of response measures in all developing countries. Defra has funded research into embedded emissions and sustainable production and consumption, including the development of an embedded carbon emission indicator. Through the Global Centre on Biodiversity for Climate, the United Kingdom has provided up to GBP 40 million to support policy relevant research and development on biodiversity, climate and poverty. The ERT noted that the transparency of reporting would be improved if the United Kingdom included in the NC8 a cross reference to the information provided in the 2022 annual submission, as this would make the location of information on the minimization of the adverse impacts of climate change clearer.

(b) Assessment of adherence to the reporting guidelines

56. The ERT assessed the information reported in the NC8 of the United Kingdom and recognized that the reporting is complete and transparent, and thus adheres to the reporting guidelines for supplementary information. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

E. Estimates of emission reductions and removals and the use of units from market-based mechanisms and land use, land-use change and forestry and progress in achieving the quantified economy-wide emission reduction target**1. Technical assessment of the reported information**

57. The United Kingdom reported in its BR5 that it does not intend to use units from market-based mechanisms under the Kyoto Protocol and other market-based mechanisms under the Convention to meet its commitment under the ESD. It reported in CTF tables 4 and 4(b) that it did not use any units from market-based mechanisms in 2019 or 2020. Given that the contribution of LULUCF activities is not included in the joint EU target under the Convention, reporting thereon is not applicable to the United Kingdom. Table 6 illustrates the United Kingdom's ESD emissions and use of units from market-based mechanisms for achieving its ESD target.

Table 6

Summary of information on emissions covered by the European Union effort-sharing decision annual emission allocation and use of units from market-based mechanisms by the United Kingdom(kt CO₂ eq)

<i>Year</i>	<i>ESD emissions</i>	<i>AEA</i>	<i>Use of units from market-based mechanisms</i>	<i>AEAs transferred to (–) or from (+) other Parties</i>	<i>Annual AEA surplus/deficit</i>	<i>Cumulative AEA surplus/deficit</i>
2013	339 450.36	358 741.70	0	0	19 291.34	19 291.34
2014	324 444.71	354 221.31	0	0	29 776.60	49 067.94
2015	326 027.91	349 700.91	0	0	23 673.00	72 740.94
2016	333 899.78	345 180.52	0	0	11 280.75	84 021.69
2017	332 050.82	360 408.96	0	0	28 358.13	112 379.82
2018	329 880.41	357 248.04	0	0	27 367.64	139 747.46
2019	329 100.25	354 087.13	0	0	24 986.89	164 734.35
2020	296 124.00	350 926.22	0	0	54 802.23	219 536.58

Sources: The United Kingdom's BR5 and BR5 CTF table 4(b), information provided by the Party during the review and EU transaction log (AEAs).

Note: For a given year, a positive number (surplus) indicates that annual or cumulative ESD emissions were lower than the corresponding AEA or cumulative AEAs, while a negative number (deficit) indicates that annual or cumulative ESD emissions were higher than the corresponding AEA or cumulative AEAs.

2. Assessment of adherence to the reporting guidelines

58. The ERT assessed the information reported in the BR5 of the United Kingdom and recognized that the reporting is complete and transparent, and thus adheres to the UNFCCC reporting guidelines on BRs. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

3. Assessment of achievement of the quantified economy-wide emission reduction target

59. In assessing the Party's contribution towards achievement of the 2020 joint EU target on the basis of the information reported in its BR5 and provided during the review, the ERT noted that, under the EU 2020 climate and energy package, the United Kingdom committed to reducing its emissions under the ESD to 16 per cent below the 2005 level by 2020 (see para. 30 above). This target has been translated into binding quantified AEAs for 2013–2020. In 2020 the United Kingdom's ESD emissions were 15.6 per cent (54,802.23 kt CO₂ eq) below the AEA. The United Kingdom has a cumulative surplus of 216,724.35 kt CO₂ eq with

respect to its AEAs between 2013 and 2020. The ERT noted that the Party did not make use of units from market-based mechanisms during the reporting period (2019–2020).

60. According to the BR4 of the EU, the total GHG emissions excluding LULUCF of the EU and including the use of units from market-based mechanisms do not exceed the emission level corresponding to the target in 2020, and thus that the EU has achieved its joint target. Therefore, the ERT concluded that, on the basis of the information reported in the BR5 and provided during the review, the United Kingdom has met its 2020 commitment under the Convention through its contribution to achieving the joint EU target. The ERT noted that the Party's ESD emissions in 2020 do not exceed its AEA for 2020.

F. Projections

1. Projections overview, methodology and results

(a) Technical assessment of the reported information

61. The United Kingdom reported in its BR5 and NC8 updated projections for 2025, 2030, 2035 and 2040 relative to actual inventory data for 2020 under the WEM scenario. The WEM scenario reported by the United Kingdom includes PaMs implemented and adopted until 2019.

62. In addition to the WEM scenario, the United Kingdom reported the WAM scenario, which includes planned PaMs. The United Kingdom provided a definition of its scenarios, explaining that its WEM scenario includes policies such as building regulations and policies on renewable energy and fuel efficiency (transport subsector), while its WAM scenario includes policies that were classed as planned at the cut-off date of August 2019. The definitions indicate that the scenarios were prepared in accordance with the UNFCCC reporting guidelines on BRs. The United Kingdom did not report a WOM scenario, explaining in the corrigendum to the BR5 that it is unable to produce a robust WOM scenario because many of its PaMs were already in place when emission projections were first produced and there are certain PaMs, such as the UK ETS, for which no past counterfactual scenario can be reliably modelled.

63. 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 CO₂, CH₄, N₂O, PFCs, HFCs and SF₆ (treating PFCs and HFCs collectively in each case) as well as NF₃ for 2025, 2030, 2035 and 2040. The projections are also provided in an aggregated format for each sector and for a Party total using GWP values from the AR4. The United Kingdom reported on factors and activities affecting emissions for each sector.

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

64. The overall methodology used for the preparation of the projections is identical to that used for the preparation of the emission projections for the NC7. The United Kingdom provided information on changes since the submission of its NC7 in the assumptions, methodologies, models and approaches used for the projection scenarios. The updated scenarios now include additional implemented and adopted policies, improved modelling, and revised assumptions for fossil fuel prices and economic growth. At the same time, the impacts of some policies have been re-estimated and further improvements – for example to the measurement of historical emissions, projection methods, emission factors and activity data – have been taken into account in the scenarios.

65. To prepare its projections, the United Kingdom relied on key underlying assumptions relating to population, GDP growth, energy prices (crude oil, gas and coal), carbon prices (for electricity generation and within the EU ETS), number of households and exchange rates (pounds sterling to United States dollars and to euros). The assumptions were updated on the basis of the most recent economic developments known at the time of the preparation of the projections. The projections of these variables were established by various institutions, with the main sources being the United Kingdom's Office for Budget Responsibility and the Office for National Statistics supplemented by the projections of the International Monetary

Fund. BEIS provided the projections for fuel prices. Up until 2040, population is projected to increase at a rate of 0.3–0.5 per cent per year, GDP is projected to increase at a rate of 1.9–2.3 per cent per year, and the number of households is projected to increase at a rate of 0.5–0.7 per cent per year. Energy and carbon prices are projected to increase as well. The projections are based on a combination of models – including an energy demand model, a dynamic dispatch model and a price and bills model – that interact with one another. This approach ensures consistent results across sectors.

66. Sensitivity analyses were conducted by varying the most important assumptions, such as GDP growth and fossil fuel prices, within a range of 25 basis points above or below the reference scenario, while other key underlying assumptions (e.g. population) were varied within the range of variability observed in the past. The results indicate that by 2030, projected emissions may be between 53 and 58 per cent below the 1990 level (WAM scenario; reference scenario at 56 per cent below the 1990 level). For 2040, the respective figures are 53 and 60 per cent below the 1990 level. A higher GDP growth rate and lower fossil fuels prices are expected to lead to higher emissions and vice versa.

(c) Results of projections

67. The projected emission levels under different scenarios and information on the quantified economy-wide emission reduction target are presented in table 7 and figure 1.

Table 7

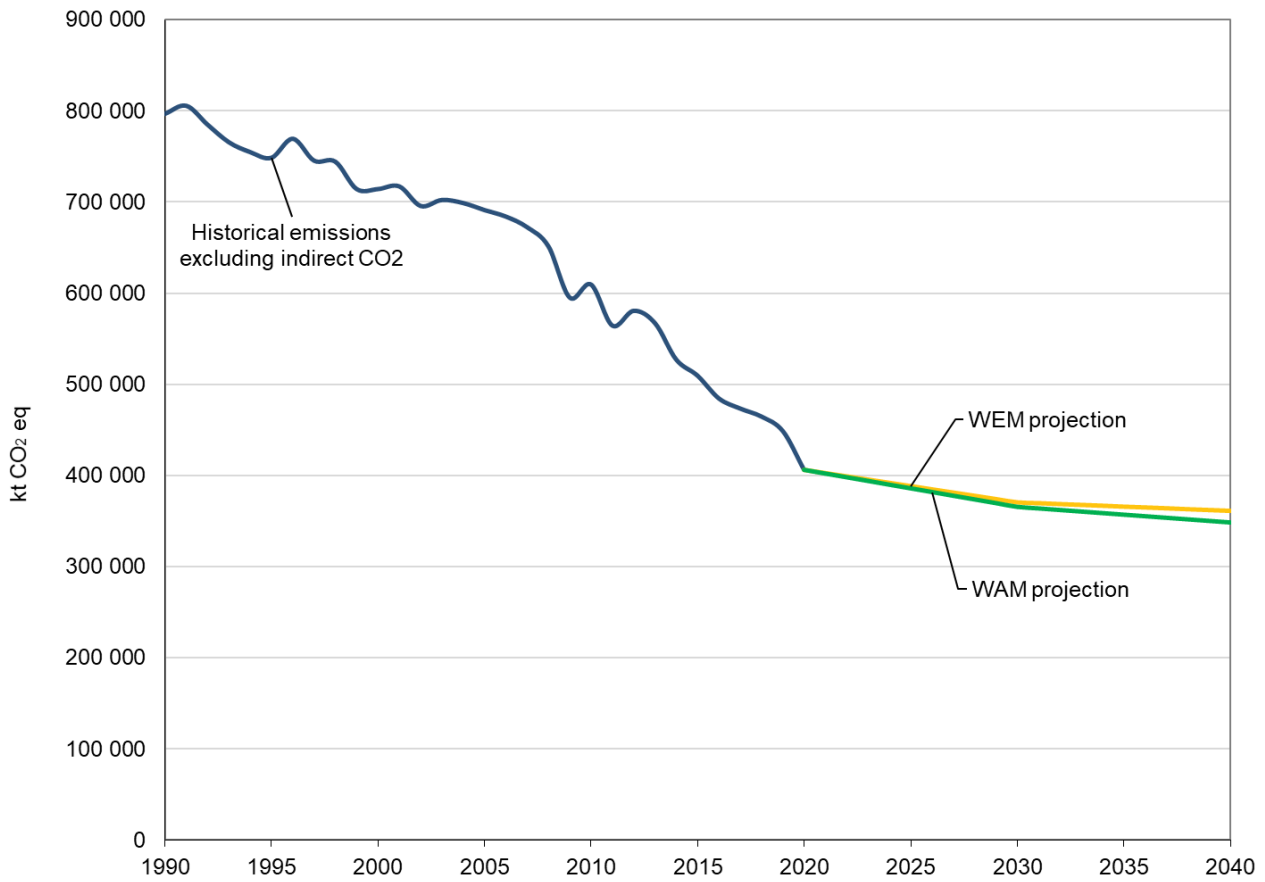
Summary of greenhouse gas emission projections for the United Kingdom

	<i>GHG emissions (kt CO₂ eq/year)</i>	<i>Change in relation to 1990 level (%)</i>	<i>Change in relation to 2020 level (%)</i>
Inventory data 1990	797 015.77	NA	NA
Inventory data 2020	405 754.88	NA	NA
WEM projections for 2030	370 773.26	–53.5	–8.6
WAM projections for 2030	365 699.40	–54.1	–9.9
WEM projections for 2040	361 552.00	–54.6	–10.9
WAM projections for 2040	348 741.00	–56.2	–14.1

Source: The United Kingdom's BR5 and BR5 CTF table 6.

Note: The projections are of GHG emissions excluding LULUCF and excluding indirect CO₂.

Figure 1
Greenhouse gas emission projections reported by the United Kingdom

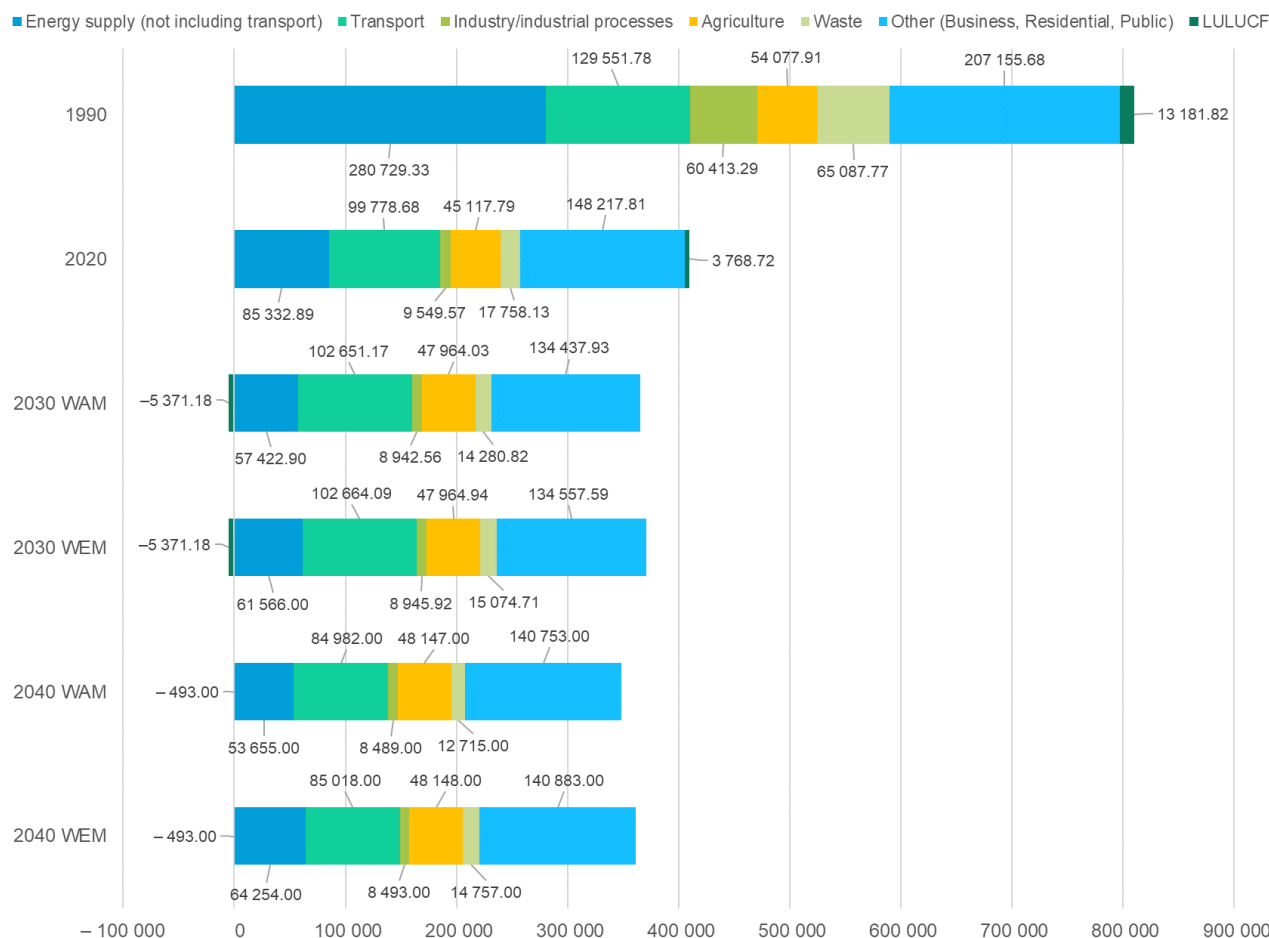


Source: The United Kingdom’s BR5 and BR5 CTF tables 1 and 6 (total GHG emissions excluding LULUCF).

68. The United Kingdom’s total GHG emissions excluding LULUCF are projected under the WEM scenario to decrease by 53.5 and 54.6 per cent respectively below the 1990 level in 2030 and 2040. When including LULUCF, total GHG emissions are projected under the WEM scenario to decrease by 54.9 and 55.4 per cent respectively below the 1990 level in 2030 and 2040. Under the WAM scenario, emissions excluding LULUCF in 2030 and 2040 are projected to be lower than those in 1990 by 54.1 and 56.2 per cent respectively.

69. The United Kingdom presented the WEM and WAM scenarios by sector for 2030 and 2040, as summarized in figure 2 and table 8.

Figure 2
Greenhouse gas emission projections for the United Kingdom presented by sector
 (kt CO₂ eq)



Source: The United Kingdom’s BR5 CTF table 6.

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

Sector	GHG emissions and removals (kt CO ₂ eq)					Change (%)			
	1990	2030		2040		1990–2030		1990–2040	
		WEM	WAM	WEM	WAM	WEM	WAM	WEM	WAM
Energy (not including transport)	280 729.33	61 566.00	57 422.90	64 254.00	53 655.00	-78.1	-79.5	-77.1	-80.9
Transport	129 551.78	102 664.09	102 651.17	85 018.00	84 982.00	-20.8	-20.8	-34.4	-34.4
Industry/industrial processes	60 413.29	8 945.92	8 942.56	8 493.00	8 489.00	-85.2	-85.2	-85.9	-85.9
Agriculture	54 077.91	47 964.94	47 964.03	48 148.00	48 147.00	-11.3	-11.3	-11.0	-11.0
LULUCF	13 181.82	-5 371.18	-5 371.18	-493.00	-493.00	-140.7	-140.7	-103.7	-103.7
Waste	65 087.77	15 074.71	14 280.82	14 757.00	12 715.00	-76.8	-78.1	-77.3	-80.5
Other (business, residential, public)	207 155.68	134 557.59	134 437.93	140 883.00	140 753.00	-35.0	-35.1	-32.0	-32.1
Total GHG emissions excluding LULUCF	797 015.77	370 773.26	365 699.40	361 553.00	348 741.00	-53.5	-54.1	-54.6	-56.2

Source: The United Kingdom’s BR5 CTF table 6.

70. According to the projections reported for 2030 under the WEM scenario, the most significant absolute emission reductions are expected to occur in the energy sector,

amounting to projected reductions of 78.1 per cent between 1990 and 2030. The pattern of projected emissions reported for 2040 under the same scenario remains about the same, but emissions in the residential, public and energy sectors are projected to slightly increase between 2030 and 2040, while emissions in the transport sector are projected to continue to decrease. The main reasons for the projected increase in emissions in the residential and public sectors are the projected growth in population and increase in the number of households – these drivers of increasing emissions can no longer be offset by the impacts of existing energy and emission reduction measures. The continued projected decline in emissions from the transport sector is attributable to the impact of PaMs to increase vehicle efficiency and to promote biofuels and electric vehicles.

71. The United Kingdom presented the WEM and WAM scenarios by gas for 2030 and 2040, as summarized in table 9.

Table 9

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

Gas ^a	GHG emissions and removals (kt CO ₂ eq)					Change (%)			
	1990	2030		2040		1990–2030		1990–2040	
		WEM	WAM	WEM	WAM	WEM	WAM	WEM	WAM
CO ₂	602 652.08	303 180.60	298 905.08	297 143.00	286 379.00	-49.7	-50.4	-50.7	-52.5
CH ₄	129 824.71	44 123.49	43 327.50	43 264.00	41 220.00	-66.0	-66.6	-66.7	-68.2
N ₂ O	47 288.89	18 503.59	18 501.24	18 224.00	18 221.00	-60.9	-60.9	-61.5	-61.5
HFCs	14 400.73	4 077.76	4 077.76	1 990.00	1 990.00	-71.7	-71.7	-86.2	-86.2
PFCs	1 648.64	371.47	371.47	371.00	371.00	-77.5	-77.5	-77.5	-77.5
SF ₆	1 200.60	515.99	515.99	559.00	559.00	-57.0	-57.0	-53.4	-53.4
NF ₃	0.12	0.36	0.36	0.00	0.00	200.0	200.0	0.0	0.0
Total GHG emissions excluding LULUCF	797 015.77	370 773.26	365 699.40	361 552.00	348 741.00	-53.5	-54.1	-54.6	-56.2

Source: The United Kingdom’s BR5 CTF table 6.

^a The United Kingdom did not include indirect CO₂ emissions in its projections.

72. Marginal differences exist between the WEM and WAM scenarios. As the projections were prepared before the COVID-19 pandemic, both the short-term impacts and the possible long-term impacts on future energy demand and related emissions were not taken into account in the NC8. During the review, the United Kingdom clarified that these impacts will be considered in upcoming analyses and addressed in future submissions. Furthermore, as the cut-off point for the inclusion of PaMs in the WEM scenario was August 2019, PaMs that will be implemented in the framework of the United Kingdom’s Net Zero Strategy and plans such as Powering Up Britain are not yet represented in the projections.

(d) Assessment of adherence to the reporting guidelines

73. The ERT assessed the information reported in the NC8 and BR5 of the United Kingdom and identified issues relating to completeness and transparency, and thus adherence to the UNFCCC reporting guidelines on NCs and the UNFCCC reporting guidelines on BRs. The findings are described in tables I.2 and II.2.

2. Assessment of the total effect of policies and measures

(a) Technical assessment of the reported information

74. In its NC8 the United Kingdom presented the estimated and expected total effect of implemented and adopted PaMs. Information is presented in terms of total GHG emissions avoided or sequestered (on a CO₂ eq basis) in 2025, 2030, 2035 and 2040. GHG emissions avoided or sequestered by gas were not reported. The United Kingdom also presented relevant information on factors and activities for each sector.

75. The United Kingdom reported that the total estimated effect of its implemented and adopted PaMs is about 99, 103, 126 and 146 Mt CO₂ eq in 2025, 2030, 2035 and 2040 respectively. Information by sector was not reported.

(b) Assessment of adherence to the reporting guidelines

76. The ERT assessed the information reported in the NC8 of the United Kingdom and identified an issue relating to completeness, and thus adherence to the UNFCCC reporting guidelines on NCs. The finding is described in table I.2.

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

(a) Technical assessment of the reported information

77. In the NC8 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, although it did not elaborate on supplementarity as such. In the NC8 the United Kingdom stated that it does not plan to use market-based mechanisms to meet its Kyoto Protocol 2020 target.

(b) Assessment of adherence to the reporting guidelines

78. The ERT assessed the information reported in the NC8 of the United Kingdom and recognized that the reporting is complete and transparent, and thus adheres to the reporting guidelines for supplementary information. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

G. Provision of financial, technological and capacity-building support to developing country Parties

1. Technical assessment of the reported information

(a) Approach and methodologies used to track support provided to non-Annex I Parties

79. In its NC8 and BR5 the United Kingdom reported information on its provision of financial, technological and capacity-building support to non-Annex I Parties.

80. The United Kingdom has provided support that it considers to be “new and additional”. The Party reported in its NC8 and BR5 that its support is new and additional to previously reported contributions and more than its historical ODA support. The ICF is the delivery vehicle for all the country’s climate finance programmes and falls under the United Kingdom’s broader ODA framework. While the United Kingdom continues to provide support to developing countries through ODA, the amount allocated for the ICF is earmarked as such or ring-fenced from non-climate ODA.

81. The United Kingdom reported on the support that it has provided to non-Annex I Parties, distinguishing between support for mitigation and adaptation activities and identifying the capacity-building elements of such support. The Party explained that support for mitigation and adaptation is identified through an internal analysis to determine whether a programme has explicit objectives (and expected results) related to climate change and if it does, whether the objectives focus on adaptation and mitigation and whether they are a primary or a subordinate objective. The analysis is done using the OECD Development Assistance Committee definitions and the OECD handbook on the application of the Rio markers, which includes a list of activities that are eligible for climate finance. The main difference of the approach for identifying support for mitigation or adaptation applied by the United Kingdom to the OECD Rio markers is that the specific amount of funding for a programme that is accounted for as support for mitigation or adaptation is determined on the basis of a bottom-up approach instead of using a fixed percentage share in the case of mitigation or adaptation being a significant but not the primary objective of a programme. The United Kingdom identifies the capacity-building elements of its activities through its extensive

network of officials in developing countries and develops its programmes in close cooperation with developing country Parties so that they align with the needs identified by each.

82. The United Kingdom's national approach to tracking the provision of support, including information on indicators, delivery mechanisms used and allocation channels tracked, is based on a monitoring and evaluation framework that draws on 11 key performance indicators for tracking achievements in adaptation, mitigation, nature, transformational change and mobilized finance. The NC8 and BR5 contain a link to a Government website with further information on indicator methodologies and the results of applying these indicators to ICF provided by the United Kingdom. The Party reported additional information in the corrigendum on how the key performance indicators are applied. Each programme funded under the ICF is expected to report on its progress using at least one of the key performance indicators. Each programme also has a monitoring framework that includes programme-specific results indicators according to which performance of the programme is measured annually. The United Kingdom also provided a link to the DevTracker website, where all annual reviews of its programmes and the logframes that form the results frameworks for the programmes are published. Changes to its approach since the previous report include the publication of all 11 performance indicators against which performance of ICF is measured (compared with 6 key performance indicators in the BR4).

83. The United Kingdom's methodology and underlying assumptions used for collecting and reporting information on financial support were reported in part in its NC8 and BR5 and in the documentation box accompanying CTF table 7. The key performance indicators of the overarching monitoring and evaluation framework and the programme-specific results indicators under the monitoring framework for each programme form the basis for monitoring and reporting information on financial support. The United Kingdom calculates climate finance at the programme level on a case-by-case basis. The Party does not use the Rio markers for its reporting under the UNFCCC but its internal analysis uses the OECD Development Assistance Committee definitions and the OECD handbook on the application of the Rio markers.

84. Regarding multilateral contributions, the United Kingdom reported that it counts 100 per cent of its contributions to the GCF as climate finance and explained during the review that the climate-specific share of its contributions to the GEF is determined in cooperation with the implementing agency involved. The Party's other multilateral contributions are assessed as 100 per cent climate-specific because they have clear climate change objectives. The United Kingdom does not include any share of its core contributions to multilateral development banks as climate finance so as to avoid double counting. International climate finance is monitored through a government-wide management board that meets on a monthly basis as well as by department-specific governance processes.

85. The United Kingdom reported that it uses one of the 11 key performance indicators of its monitoring and evaluation framework to track private finance mobilized for climate change purposes and provided a link to a website with further information on the methodology for applying this indicator.

(b) Financial resources

86. The United Kingdom reported in its NC8 and BR5 information on its provision of financial support to non-Annex I Parties as required under the Convention, including on financial support committed and disbursed, allocation channels and annual contributions. The ICF focuses on four key themes: (1) clean energy, (2) nature for climate and people, (3) adaptation and resilience, and (4) sustainable cities, infrastructure and support. The ICF portfolio is managed by three departments: BEIS, Defra and the Foreign, Commonwealth and Development Office. In delivering climate finance, the United Kingdom aims for a balance between adaptation and mitigation. Its 2019 Green Finance Strategy states that all of the United Kingdom's ODA should be aligned with the Paris Agreement. The Party reported that in order to assist countries that are particularly vulnerable to the adverse effects of climate change, it promotes country-led adaptation planning and implementation, and invests in climate-resilient infrastructure.

87. The United Kingdom described how it seeks to ensure that the resources it provides to non-Annex I Parties effectively address their adaptation and mitigation needs. Its climate

finance programmes are developed in partnership with developing countries. British in-country teams partner with government officials in developing countries to support them in developing strategies across various themes, including adapting to climate change, NDCs and reversing biodiversity loss, and to ensure that the United Kingdom’s project portfolio supports the delivery of those strategies. Furthermore, detailed country development diagnostics are conducted to better inform decision-making. Programmes are designed and delivered in consultation with local communities and in partnership with key institutions and local and national governments. Through its overseas networks, the United Kingdom also provides tailored expert technical assistance.

88. The United Kingdom draws on the UNFCCC Standing Committee on Finance report on the determination of the needs of developing country Parties⁸ to inform future project pipeline development (from 2021 onward). It also strives to improve access to climate finance by spending it through British teams based in developing countries, the NDC Partnership and the Taskforce on Access to Climate Finance launched at COP 26. The NC8 and BR5 indicates that between 2011 and 2021, ICF investments supported 88 million people in coping with the effects of climate change and reduced or avoided 980 Mt CO₂ eq GHG emissions. Table 10 summarizes the information reported by the United Kingdom on its provision of financial support.

Table 10

Summary of information on provision of financial support by the United Kingdom in 2019–2020

(Millions of United States dollars)

<i>Allocation channel of public financial support</i>	<i>Disbursement in 2019–2020</i>
ODA (committed)	28 464.09
Climate-specific contributions through multilateral channels, including:	927.26
GEF	79.70
Special Climate Change Fund	0.00
Adaptation Fund	0.00
GCF	576.92
Trust Fund for Supplementary Activities	0.00
Other multinational climate change funds	263.38
Financial institutions, including regional development banks	0.01
United Nations bodies	7.25
Climate-specific contributions through bilateral, regional and other channels	2 287.73

Sources: The United Kingdom’s BR5 CTF tables and Query Wizard for International Development Statistics, available at <http://stats.oecd.org/qwids/>.

89. The United Kingdom’s climate-specific public financial support⁹ totalled USD 3,215 million in 2019–2020, representing an increase of 18 per cent since the BR4 (2017–2018).¹⁰ With regard to future financial pledges aimed at enhancing the implementation of the Convention by developing countries, the United Kingdom has committed to providing GBP 11.6 billion for 2021–2026 as climate finance. The United Kingdom reports its multilateral and bilateral contributions of climate finance as commitments. These commitments include funding agreements via promissory notes that specify the value and year of the commitment, payments that are made under grant agreements counted in the year when these payments are made, payments made to private finance vehicles targeting downstream investments, and climate-specific commitments to multilateral institutions.

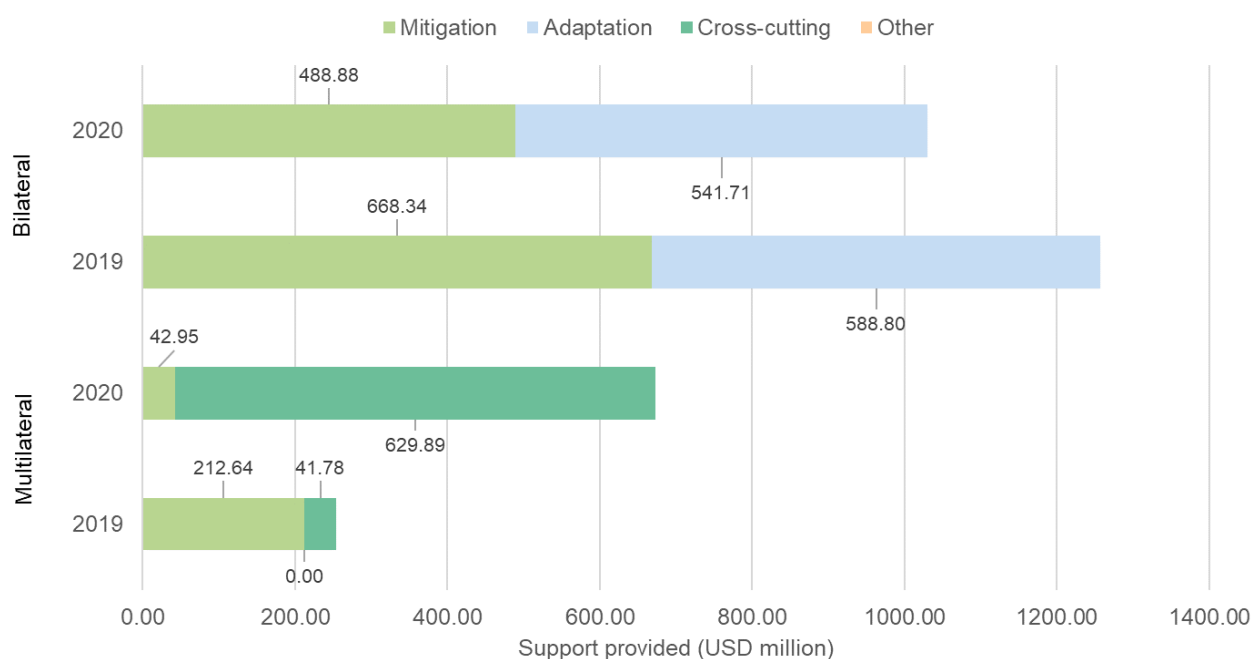
⁸ Standing Committee on Finance. 2021. *First report on the determination of the needs of developing country Parties related to implementing the Convention and the Paris Agreement*. Bonn: UNFCCC. Available at <https://unfccc.int/topics/climate-finance/workstreams/determination-of-the-needs-of-developing-country-parties/first-report-on-the-determination-of-the-needs-of-developing-country-parties-related-to-implementing>.

⁹ For the remainder of this chapter, the term “financial support” means climate-specific financial support, unless otherwise noted.

¹⁰ Comparisons with data from previous years have been calculated directly without adjusting for inflation.

90. The United Kingdom contributed through multilateral channels USD 927.26 million in 2019–2020. The contributions were made to specialized multilateral climate change funds or to other funds but were assessed as 100 per cent climate-specific contributions, including contributions to the African Development Bank, the Clean Technology Fund, the Food and Agriculture Organization of the United Nations, the GCF, the GEF, the Global Green Growth Institute and the United Nations Convention to Combat Desertification, as well as to specific UNEP programmes and to the UNFCCC. The United Kingdom’s contribution to the GEF increased by 39 per cent from 2017–2018 (USD 57.47 million) to 2019–2020 (USD 79.70 million). Overall, multilateral climate finance committed by the United Kingdom increased by 90 per cent between 2017–2018 and 2019–2020. Variations between years are partly related to inter-annual fluctuations in multilateral contributions, as commitments are often made for several years but reported in the year when the commitment is made, or to the timing of approval of individual bilateral projects. The Party reported that multilateral contributions to the GCF and the GEF in 2019 and 2020, which were reported under the cross-cutting channel in the NC8 and BR5 CTF tables 7 and 7(a), were assessed as 50 per cent adaptation and 50 per cent mitigation, amounting to USD 39.85 each for the GEF and 288.46 each for the GCF. The Party further explained that core contributions made to multilateral development banks and United Nations organizations are not included as climate finance to avoid double counting. The United Kingdom reported contributions to the IPCC and both voluntary and mandatory contributions to the UNFCCC as bilateral support. Information on financial support from the public sector provided through multilateral and bilateral channels and the allocation of that support by target area is presented in figure 3 and table 11.

Figure 3
Provision of support by the United Kingdom in 2019–2020



Sources: The United Kingdom’s BR5 CTF tables 7, 7(a) and 7(b).

Table 11
Summary of information on channels of financial support reported by the United Kingdom
(Millions of United States dollars)

Allocation channel of public financial support	Amount disbursed in 2019–2020	Amount disbursed in 2017–2018	Change (%) ^a	Share of total (2019–2020) (%)
Detailed information by type of channel				
Multilateral channels ^b				
Mitigation	255.59	0.00	–	27.6
Adaptation	0	0.00	–	–
Cross-cutting	671.67	488.44	37.5	72.4

<i>Allocation channel of public financial support</i>	<i>Amount disbursed in 2019–2020</i>	<i>Amount disbursed in 2017–2018</i>	<i>Change (%)^a</i>	<i>Share of total (2019–2020) (%)</i>
Other	0.00	0.00	–	–
Total multilateral	927.29	488.44	90.0	100.0
Bilateral channels				
Mitigation	1 157.22	1 132.75	2.2	50.6
Adaptation	1 130.51	1 093.60	3.4	49.4
Cross-cutting	0.00	4.89	–100.0	–
Other	0.00	0.00	–	–
Total bilateral	2 287.73	2 231.24	2.5	100.0
Total multilateral and bilateral	3 214.99	2 719.68	18.2	100.0

Source: The United Kingdom’s BR5 CTF tables 7, 7(a) and 7(b). TRR4 of the United Kingdom for 2017–2018 data.

^a Note that variances in contribution amounts from year to year can occur that are not reflective of trends, owing to factors such as the biennial or triennial contribution cycles of some multilateral funds, the timing of approvals for individual bilateral projects or changes in exchange rates.

^b The multilateral contributions to the GCF and GEF, which are reported by the United Kingdom as cross-cutting in the NC8 and BR CTF tables 7 and 7(a) for 2020, have been scored by the United Kingdom as 50 per cent on adaptation and 50 per cent on mitigation.

91. The Party reported detailed information on the total financial support provided through bilateral and regional channels (USD 2,287.73 million) in 2019–2020. During the reporting period, the United Kingdom placed a particular focus on recipient countries in sub-Saharan Africa (for support aimed at enhancing adaptation and resilience) and in the Amazon and the Congo Basin, as well as Indonesia (for support for the forestry sector).

92. The NC8 and the BR5 provide information on the types, sectors and instruments of support provided. The information reported shows that in 2019–2020 the average shares of bilateral and regional financial support allocated to mitigation and adaptation projects were 51 and 49 per cent respectively, reflecting the United Kingdom’s commitment to aim for a balance between adaptation and mitigation activities. The Party also provided information on the sectors to which bilateral contributions were allocated in CTF table 7(b). In line with the four key themes of the ICF (see para. 87 above), significant amounts of bilateral finance went to supporting the energy transition in developing countries. For example, GBP 19.5 million was provided to the Asian Development Bank’s Clean Energy Fund between 2015 and 2020. The Fund supports renewable energy and energy efficiency projects in developing countries in the Asia-Pacific region. The United Kingdom also provided information on the financial instruments used for providing assistance to developing countries. The ERT noted that all but five bilateral contributions were provided in the form of grants in 2019–2020. Overall, grants accounted for 91 per cent of the financial support provided.

93. During the review, the United Kingdom provided examples of support programmes that address any economic and social consequences of response measures in recipient countries, including the Accelerating Coal Transition programme of Climate Investment Funds; a Just Transition Toolbox for coal regions developed through Climate Investment Funds; and a research project under the ICF, the Economics of Energy Innovation and System Transition, which is aimed at developing new economic modelling approaches to support policymaking in a context of non-marginal change. The United Kingdom explained that it is taking a holistic approach to development in each recipient country, embedding any climate finance programmes in its wider development approach.

94. The United Kingdom reported that public ICF aims to leverage and mobilize private finance by reducing the barriers to its deployment so as to drive low-carbon growth and economic transition in developing countries. The Party reported that it places a focus on transformational change through targeted public investment in innovative projects or technologies with the potential to be scaled up and replicated by the private sector. The United Kingdom also reported that it mobilized GBP 5.2 billion private finance for climate change purposes between April 2011 and March 2022 and that the private support leveraged can be found on its DevTracker website. The United Kingdom reported examples of PaMs that promote the scaling up of private investment in mitigation and adaptation activities in developing countries in its NC8 and BR5.

95. An example of a project supported by the United Kingdom that aims to mobilize private climate finance is the Global Energy Transfer Feed-in Tariff programme ('GET FiT Uganda'), to which the Party has contributed GBP 53.3 million in grants since 2013–2014. The finance is supporting small-scale on-grid renewable energy generation projects in Uganda and building the capacity of Ugandan institutions to attract private investment in the renewable energy sector. During the review, the Party provided further examples of the support it provided to specific programmes that leveraged private climate finance. While the mobilization of private climate finance has focused on the energy sector in the past, more recently, programmes have emerged that seek to mobilize private finance for other sectors. For example, the Lowering Emissions by Accelerating Forest finance ('LEAF') Coalition is mobilizing public and private finance for tropical forest protection. The United Kingdom has committed GBP 200 million for results-based finance and technical assistance to the Coalition.

96. Another example of the United Kingdom's support is the Market Accelerator for Green Construction Program, a GBP 103 million bilateral programme funded by the United Kingdom and implemented by the International Finance Corporation to drive the financing and construction of energy-efficient buildings in emerging economies. The programme ran from 2018–2019 to 2020–2021 and provided concessional finance to sustainable building projects where the perceived financial risk was high and deployed technical assistance to incentivize local intermediaries to leverage large volumes of private capital into low-carbon projects. It also built capacity at the national level by increasing knowledge in and ambition for green building projects. The United Kingdom also committed GBP 8.29 million in 2019 to a programme for building community and household resilience to emergencies and disasters in Pakistan.

(c) Technology development and transfer

97. The United Kingdom reported on its measures and activities related to technology transfer, access and deployment benefiting developing countries, including activities undertaken by the public and private sector. Examples of support provided for the deployment and enhancement of the endogenous capacities and technologies of non-Annex I Parties include the United Kingdom's commitment to spend GBP 1 billion on ODA-funded research, development and demonstration for innovative clean energy technologies and business models for developing countries from 2021 through the Ayrton Fund. Support through the Ayrton Fund will partly be channelled through existing programmes such as the Clean Energy Innovation Facility, the aim of which is to accelerate the commercialization of promising innovative clean technologies – including sustainable cooling, industrial decarbonization, energy storage and smart energy – in key hard-to-abate sectors. The Facility was launched in 2019, capitalized with GBP 50 million. So far, support has been delivered to countries including Bangladesh, Colombia, Ethiopia, India, Kazakhstan, Kenya, Liberia, Malawi, Mexico, Mozambique, Namibia, Nigeria, Somalia, South Africa, the United Republic of Tanzania and Viet Nam.

98. The United Kingdom focused the provision of its technology transfer support on enhancing access to renewable energy, for example through the Transforming Energy Access platform, to which the United Kingdom committed GBP 10.98 million in 2019 to support energy access, especially in Africa and South Asia. In addition, the United Kingdom provided support to research activities with a focus on adaptation, such as activities to better understand climate variability and change in East Asia through digitization and the development of techniques, software and tools to improve gridded data sets. In Kenya and Uganda, the United Kingdom supported the development of improved data in order to better predict floods and droughts so that farmers are better able to adjust their farming and livestock practices to reduce losses.

99. Since its last NC and BR, the United Kingdom has implemented additional measures and activities to enhance technology transfer, including under the Energy Sector Management Assistance Program, the Clean Energy Innovation Facility and the Energy Catalyst programme.

100. The United Kingdom also described success and failure stories in relation to technology transfer. Key lessons learned include (1) close cooperation with recipient

countries must be ensured from the start of a project, (2) a project needs to be designed in a flexible way in order to adapt to the needs of recipient countries, (3) effective stakeholder engagement must be ensured throughout a project, which needs to be designed in a context-specific way, (4) an enabling environment supports the success of a project and (5) a framework for monitoring and evaluation ensures that progress is measured and that the results of a project can be tracked and assessed. In providing support for pollution abatement and remediation activities through the provision of air quality monitoring equipment under the World Bank Pollution Management and Environmental Health Program, for example, it became clear that the target countries already had suitable equipment. The design of the programme was not flexible enough to allow for alternative activities to be supported so funds had to be redirected to other programmes. As a result of this lesson, the United Kingdom’s collection of information about the status quo at the business case stage has become more robust.

(d) Capacity-building

101. The United Kingdom reported on its capacity-building support for mitigation, adaptation and technology that responds to the existing and emerging needs identified by non-Annex I Parties. It described individual measures and activities related to capacity-building support in textual and tabular format. The reported activities targeted capacity-building for implementing NDCs, transforming the energy sector (including through better energy modelling and planning), improving decision-making on infrastructure, improving nature-related financial disclosure, conducting research and planning on adaptation, managing disaster risk and engaging in international climate negotiations. Generally, the United Kingdom develops its climate finance programmes in partnership with recipient countries to ensure that needs for support, including capacity-building, are addressed. This is done through its network of government officials in recipient countries and in consultation with local communities, key institutions, and local and national governments.

102. The United Kingdom has supported climate-related capacity development activities relating to adaptation, mitigation, climate financing and technology transfer. Since the BR4, the focus of support has remained stable. The United Kingdom’s support has responded to the existing and emerging capacity-building needs of non-Annex I Parties by following the principles of national ownership, stakeholder participation, country-driven demand, impact assessment and monitoring, and cooperation between donors and across programmes.

103. An example of the United Kingdom’s support is the Partnering for Accelerated Climate Transitions programme, the aim of which is to support low-carbon development and clean growth transition. Under the programme, country-specific needs for capacity-building are addressed in order to close the gap between NDC targets and their implementation. The programme works bilaterally in close partnership with 16 recipient countries in sub-Saharan Africa, Asia and Latin America to deliver demand-led, flexible support in line with country priorities, focusing on green finance, clean energy, sustainable transport, sustainable livelihoods, forests and land use, and climate policy and regulation. Several projects targeting electromobility have been implemented under the programme, such as supporting electric vehicle readiness in Johannesburg, accelerating electric bus adoption in several Colombian cities and developing an action plan for electrification of two-wheelers in Jakarta. As at March 2021, projects under the programme had mobilized or invested a total of USD 869.6 million for reducing GHG emissions. Further, over 30,000 individuals had been trained through the programme on, for example, the Paris Agreement’s enhanced transparency framework; environmental, social and governance investment; and reporting in line with the Task Force on Climate-related Financial Disclosures. The United Kingdom is also one of the largest donors to the NDC Partnership, which supports developing countries in implementing their NDC commitments. Key to the Partnership is coordination and cooperation among different donors at the country level as well as the demand-driven nature of its provision of capacity-building to recipient countries.

2. Assessment of adherence to the reporting guidelines

104. The ERT assessed the information reported in the NC8 and BR5 of the United Kingdom and identified issues relating to completeness and transparency, and thus adherence

to the UNFCCC reporting guidelines on NCs and the UNFCCC reporting guidelines on BRs. The findings are described in tables I.3 and II.3.

3. Reporting on finance, capacity-building and technology transfer information related to the Kyoto Protocol

(a) Technical assessment of the reported information

105. In its NC8 the United Kingdom reported its activities, actions and programmes undertaken in fulfilment of its commitments under Article 10 of the Kyoto Protocol. 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 (see chap. II.G.1(c–d) above).

106. The United Kingdom provided information on its implementation of Article 11 of the Kyoto Protocol, including how its support addresses the needs of recipient countries (see chap. II.G.1(b) above). The Party described how its contributions are “new and additional” (see para. 81 above).

107. The United Kingdom reported on its financial contributions to the Adaptation Fund, which consisted of a pledge of GBP 15 million at COP 26 in 2021. No new commitments were made to the Fund in 2019 or 2020.

(b) Assessment of adherence to the reporting guidelines

108. The ERT assessed the information reported in the NC8 of the United Kingdom and recognized that the reporting is complete and transparent, and thus adheres to the reporting guidelines for supplementary information. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

H. Vulnerability assessment, climate change impacts and adaptation measures

1. Technical assessment of the reported information

109. In its NC8 the United Kingdom provided 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. The United Kingdom provided a description of climate change vulnerability and impacts on agriculture and food security, biodiversity and natural ecosystems, coastal zones, forests, human health and water resources and highlighted the adaptation response actions taken and planned at different levels of government. The ERT identified actions aimed at improving adaptation and resilience in prison services and education facilities as being of particular interest, because of their innovative nature.

110. The United Kingdom has addressed adaptation matters through the adoption of the National Adaptation Programme, which sets out the actions that the Government and others will take to adapt to the challenges of climate change in the country over a five-year period. The second National Adaptation Programme runs from 2018 to 2023 and covers the natural environment, infrastructure, people and the built environment, business and industry, and local government. The third CCRA, published in January 2022, provides further direction to government agencies on enhancing preparedness for climate change. It sets out 61 priority climate risks and opportunities for the United Kingdom as a whole, cutting across multiple sectors of the economy and adaptation actions identified. During the review, the Party explained that each risk identified in the CCRA is assigned to a ministry to be addressed.

111. The United Kingdom provided updates on the development of its third National Adaptation Programme and fourth CCRA and on a range of actions across government that are relevant to domestic adaptation. For assessing climate change impacts, vulnerability and adaptation measures, the United Kingdom uses the UK Climate Projections. Version 18 (‘UKCP18’) provides future climate projections for land and marine regions as well as

observed (past) climate data. A geographic information system model provides an assessment of the vulnerability of priority habitats to climate change based on the principles of adaptation for biodiversity. The model identifies why areas are vulnerable and which possible interventions can have the biggest impact in increasing resilience to the changing climate.

112. Table 12 summarizes the information on vulnerability and adaptation to climate change presented in the NC8 of the United Kingdom.

Table 12
Summary of information on vulnerability and adaptation to climate change reported by the United Kingdom

<i>Vulnerable area</i>	<i>Examples/comments/adaptation measures reported</i>
Agriculture and food security	<p>Vulnerability: Drought and extreme events, causing strain on the agriculture sector through decreased water availability, reduced livestock productivity and reproduction rates, shifted growing seasons and disrupted agricultural yields.</p> <p>Adaptation: The United Kingdom supports Genetic Improvement Networks, a research platform for genetically improving major domestic crops to increase their resilience to climate change and associated pest and disease risks. The Government funds four such Networks, which focus on oilseed rape, vegetables, wheat and pulses. The United Kingdom will set out further policies impacting the food system in its forthcoming food strategy, which will support the development of a food system that is sustainable and resilient, provides affordable food that supports people in living healthy lives, and protects animal health and welfare.</p>
Biodiversity and natural ecosystems	<p>Vulnerability: Reduced soil quality and water availability; increased flooding; and increased incidence of pests and diseases.</p> <p>Adaptation: The 25 Year Environment Plan encompasses the goal of enhanced biosecurity and includes details on managing and reducing the impacts of existing plant and animal diseases, as well as reducing the risk of new ones, and tackling invasive and non-invasive species. Land management policies such as the forthcoming Environmental Land Management schemes and the Nature Recovery Network have the potential to be beneficial in terms of helping existing species in England adapt to climate change. The United Kingdom will further scale up its actions in restoring ecosystems, establishing nature-based solutions, and building the resilience of species and habitats to climate change.</p>
Coastal zones	<p>Vulnerability: Increased heavy rainfall and fluvial and surface flooding; and rising sea level and erosion along coastlines.</p> <p>Adaptation: The United Kingdom, through its Environment Agency, is working with coastal authorities on a GBP 1 million refresh of shoreline management plans to ensure that they are up to date, use the best evidence in their recommendations and focus attention on priority areas for investment and adaptation. The Environment Agency is working to produce a new national assessment of flood risk by 2024. The Government will also review the effectiveness of its existing planning policy for coastal change management areas. The Government is working with infrastructure operators to improve the resilience of locally important assets at risk of flooding and to ensure households, communities and businesses are better prepared to manage flood risk and it will publish a road map to accelerate the uptake of property flood resilience measures.</p>
Forests	<p>Vulnerability: Increased frequency of extreme fire weather and drought, causing a decline in forest productivity and an increase in tree mortality.</p> <p>Adaptation: The United Kingdom plans to reduce the increased threat of fire and drought to peatland landscapes by restoring peatland, supporting Lantra18-accredited Vegetation Fire training modules, and using wildfire management plans to mitigate and adapt to risk at both the site and the landscape level, working in partnership across Defra and with landowners. Forestry England will develop a forest resilience strategy that includes specific and measurable actions and targets and a forest resilience indicator to monitor the resilience status and condition of the nation’s forests.</p>
Human health	<p>Vulnerability: Overheating in homes and public buildings.</p> <p>Adaptation: The United Kingdom plans to update building regulations and implement other policy measures to address overheating through passive cooling measures such as shading, reflective surfaces and green cover. The United Kingdom Health Security Agency has developed the Adverse Weather and Health Plan, the aim of which is to mainstream adaptation activities (e.g. exploring steps that can be taken to improve the</p>

Vulnerable area	Examples/comments/adaptation measures reported
Water resources	<p>resilience of health and care settings to hot weather) and to raise awareness of actions that can be taken by the public and the health and care workforce to protect themselves and vulnerable people in a heatwave. The Climate Services for a Net Zero Resilient World research programme will help the United Kingdom adapt and become more resilient to the impacts of climate change, including overheating, and will also engage local authorities in developing local climate action plans by equipping them with information on how to help households cope with extreme temperatures and assisting them in identifying low-cost, low-carbon measures.</p> <p>Vulnerability: Water shortages, drought and competing demands for water for public supply, industry, agriculture and the environment.</p> <p>Adaptation: The United Kingdom in 2016 published <i>Creating a great place for living: Enabling resilience in the water sector</i>, a road map that sets out how to secure the long-term resilience of the water sector. The road map 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 owing to climate change.</p>

113. The United Kingdom provided a detailed description of international adaptation activities, including those assessed under the third CCRA. The United Kingdom also provided information on bilateral cooperation with developing countries on adaptation, such as the Adaptation Research Alliance, which it launched with the support of Colombia, India, Kenya and South Africa to increase the resilience of vulnerable communities on the front line of climate change. The Party reported on major collaborative projects with international partners, such as the Climate Science for Service Partnership programme (partnerships with Brazil, China and South Africa, among others) and the Future Climate for Africa programme. Through the Collaborative Adaptation Research Initiative in Africa and Asia programme, the United Kingdom has focused on societal barriers to resilience and adaptation in climate change hotspots in Africa and Asia. The Party also supports countries in Africa on adaptation by improving understanding of timescales of climate variability and change across sub-Saharan Africa and confidence in predictions. The Asia Regional Resilience to a Changing Climate programme, delivered by the Met Office and the World Bank, is increasing the resilience of vulnerable groups and of economic growth to current and future climate and environmental impacts in Afghanistan, Bangladesh, Nepal and Pakistan.

2. Assessment of adherence to the reporting guidelines

114. The ERT assessed the information reported in the NC8 of the United Kingdom and identified an issue relating to completeness, and thus adherence to the UNFCCC reporting guidelines on NCs. The finding is described in table I.4.

I. Research and systematic observation

1. Technical assessment of the reported information

115. In its NC8 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 Global Climate Observing System, led by the United Kingdom’s Met Office and involving a wide range of national organizations; and the IPCC (both through Government funding and the contributions of the national research community). The United Kingdom’s climate and earth system models, Hadley Centre Global Environment Model 3–Global Coupled 3.1 (‘HadGEM3–GC3.1’) and United Kingdom Earth System Model 1.0 (‘UKESM1.0’) made a significant contribution to the sixth Coupled Model Intercomparison Project by providing data for 14 individual Model Intercomparison Projects. The United Kingdom has played a leading role internationally in earth system model development, for example through the EU project Coordinated Research in Earth Systems and Climate: Experiments, Knowledge, Dissemination and Outreach (‘CRESCENDO’).

116. 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. Specifically, the United Kingdom reported that there is an ongoing discussion at the national level of potential barriers to the international exchange of climate data and the provision of these data to international data centres. Data generated through NERC-funded research is made available through the NERC network of data centres under the Environmental Data Service. The Party reported that the data policy of NERC requires NERC-funded scientists to make their data openly available within two years of collection and deposit the data in a NERC data centre for long-term preservation. The United Kingdom has a policy of seeking some cost recovery from public investments; therefore, some detailed observational data concerning the country are freely available only under conditions that restrict their use to supporting openly published research.

117. The United Kingdom has implemented 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 Party reported that it is funding several major research initiatives to improve understanding of key climate processes and refine their representation in climate models. Climate modelling in the United Kingdom is led by the Met Office Hadley Centre Climate Programme, which is funded by BEIS and Defra. Research conducted by the Party includes that on the cryosphere, the Arctic climate, the Southern Ocean, the North Atlantic system and atmospheric dynamics. The United Kingdom partners with the British Antarctic Survey (under NERC), University of Aberdeen, University of Cambridge, University of Leeds and University of Southampton on paleoclimate studies using the Hadley Centre Coupled Model version 3 model ('HadCM3'), an atmosphere-ocean-ice model.

118. The United Kingdom's Net Zero Research and Innovation Framework sets out the critical research and innovation challenges across the country for the next 5–10 years. The Party listed the following as priority areas of study and research: lower carbon energy system and economy; GHG removal through the Direct Air Capture and Greenhouse Gas Removal Innovation Programme; air pollution and urban environmental control through the Clean Air programme of United Kingdom Research and Innovation, funded by the Strategic Priorities Fund; reduction in industrial energy use through the Industrial Strategy Challenge Fund's Industrial Decarbonisation Challenge; carbon capture, usage and storage through the BEIS Energy Entrepreneurs Fund, the United Kingdom's participation in the third international call of the Accelerating CCS Technologies 3 initiative, and the GBP 20 million Carbon Capture, Usage and Storage Innovation 2.0 programme; bioenergy through the Biotechnology and Biological Sciences Research Council and the Engineering and Physical Sciences Research Council together with industry, academia and other stakeholders; and marine renewable energy mix towards 2050 through the Engineering and Physical Sciences Research Council.

119. The United Kingdom reported significant funding for science and innovation: approximately GBP 3 billion was invested in research, development and demonstration of low-carbon technologies in energy, transport, agriculture and waste between 2015 and 2021. The United Kingdom has committed over GBP 2.5 billion to the electric vehicle transition, of which over GBP 1.6 billion is to support charging infrastructure. The Party provided information on programmes funded by the United Kingdom that provide climate information services for domestic policy areas, such as the Climate Services for a Net Zero Resilient World programme.

120. The United Kingdom has been key in enabling the launch of the Adaptation Research Alliance, the aim of which is to foster understanding of climate variability and change across sub-Saharan Africa over timescales adequate to support adaptation and confidence in predictions. The alliance comprises over 140 organizations across 30 countries, more than half of which are based in the global South.

121. 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. The Met Office makes a considerable effort to undertake comprehensive quality control of its Global Climate Observing System stations; it does this by running checks on the data held in its climate database, making intercomparisons when equipment is

changed, and employing dedicated teams to inspect land and marine observing sites to ensure the consistency of exposure in accordance with the World Meteorological Organization guide to instruments and methods of observation. Metadata (details of local conditions, instruments and exposure) are recorded using software developed in-house and archived. The Met Office is committed to the principles of free and unrestricted exchange of essential data, as defined in Resolution 40 of the World Meteorological Organization.

122. The United Kingdom Space Agency cooperates on international programmes such as MicroCarb and the European Space Agency-led TRUTHS, a satellite monitoring system for CO₂ sources and sinks across the whole earth. The United Kingdom is an active member of the Group on Earth Observations Climate Change Working Group; under this group, representatives of the United Kingdom Government, academia and the private sector have come together to contribute to the development of a climate change programme for the Group on Earth Observations.

123. The NC8 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. The Government of the United Kingdom (the Foreign, Commonwealth and Development Office in particular) supports research programmes that increase capacity in this area and advance knowledge of the practical application of climate science in the developing country context. The Foreign, Commonwealth and Development Office and NERC have invested in a GBP 20 million Future Climate for Africa programme. The programme has improved the understanding of what drives Africa's climate and how it will change, as well as of climate change impacts and adaptation options. The Weather and Climate Information Services for Africa programme has delivered transformational change in the quality, accessibility and use of weather and climate information at all levels of decision-making for sustainable development in Africa. The Transforming Energy Access programme created over 74,000 sustainable jobs in clean energy and supported over 700 African graduates and trainees with placements in energy access businesses. The Climate Adaptation and Resilience programme will generate new knowledge, practical tools and approaches to support those most vulnerable to the impacts of climate change and related natural hazards, such as floods, droughts and heatwaves, and will deliver the commitment made at COP 26.

2. Assessment of adherence to the reporting guidelines

124. The ERT assessed the information reported in the NC8 of the United Kingdom and recognized that the reporting is complete and transparent, and thus adheres 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.

J. Education, training and public awareness

1. Technical assessment of the reported information

125. In its NC8 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 non-governmental organizations; and its participation in international activities. Significant changes since the NC7 include the provision of information on the Party's international activities and on its Public Sector Decarbonisation Scheme and other public awareness-raising campaigns.

126. In its NC8, the United Kingdom outlined its strategy to engage children of various ages in climate change education, including through the Early Years Foundation Stage framework, which ensures that all children develop an understanding of the natural environment. As they progress through primary and secondary school, children continue on their learning path through the science, geography and citizenship taught within the national

curriculum. During the review, the Party elaborated on its climate education plan to help children from kindergarten and up to 9 years of age connect to nature through theatre, art and music. Furthermore, existing General Certificate of Secondary Education programmes, such as design and technology, food preparation and nutrition, and economics, address environmental and sustainability issues, and master’s degrees in climate change have been introduced.

127. In 2021, the Department for Education played a key role in raising the profile of education in high-level climate change discussions by convening the first ever education and environment ministers at COP 26. The Department has been working closely with the United Nations Educational, Scientific and Cultural Organization to build on this momentum by supporting the launch and development of the Greening Education Partnership, which seeks to get every learner climate-ready. Furthermore, since COP 26, the Department for Education has hosted or supported several key events to promote education as a key tool for tackling climate change at the Education World Forum, UNEP@50, the United Nations Transforming Education Summit and COP 27, among others. In 2022, the Department published its Sustainability and Climate Change Strategy for England, for the education and children’s services systems, which sets out a vision for the national education sector to become world-leading in sustainability and climate change by 2030.

128. The United Kingdom also reported on its public awareness-raising campaign to reduce household bills and promote low-cost actions. Non-governmental actions were demonstrated in Northern Ireland, where 78 parks and open spaces services received a Green Flag Award from Keep Northern Ireland Beautiful, an environmental charity that runs the scheme. As part of its Net Zero Strategy, the United Kingdom has set out clear principles for public engagement around climate change and for supporting citizens to make green choices. Ahead of COP 26, the United Kingdom launched the Together for Our Planet campaign, which used storytelling, high-impact visuals and partnerships to demonstrate to the public the positive impact of tackling climate change. In December 2020, the United Kingdom launched the MacKay Carbon Calculator, a simple, user-friendly model of the United Kingdom’s energy system. Its purpose is to engage the public by helping them explore the full range of options for reducing GHG emissions by 2050.

2. Assessment of adherence to the reporting guidelines

129. The ERT assessed the information reported in the NC8 of the United Kingdom and identified an issue relating to transparency, and thus adherence to the UNFCCC reporting guidelines on NCs. The finding is described in table I.5.

III. Conclusions and recommendations

130. The ERT conducted a technical review of the information reported in the NC8 of the United Kingdom in accordance with the UNFCCC reporting guidelines on NCs. The ERT concluded that the reported information mostly adheres to the UNFCCC reporting guidelines on NCs and that the NC8 provides an overview of the national climate policy of the United Kingdom.

131. The information provided in the NC8 includes most of the elements of the supplementary information under Article 7, paragraph 2, of the Kyoto Protocol. The United Kingdom reported on the national system, the national registry, supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17 of the Kyoto Protocol, PaMs in accordance with Article 2 of the Kyoto Protocol, domestic and regional programmes and/or legislative arrangements and enforcement and administrative procedures, information under Article 10 of the Kyoto Protocol, and financial resources provided to developing country Parties. 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 2022 annual submission.

132. The ERT conducted a technical review of the information reported in the BR5 and BR5 CTF tables of the United Kingdom in accordance with the UNFCCC reporting guidelines on BRs. The ERT concluded that the reported information mostly adheres to the

UNFCCC reporting guidelines on BRs and that the BR5 and its CTF tables provide an overview of emissions and removals related to the Party's quantified economy-wide emission reduction target; assumptions, conditions and methodologies related to the attainment of the target; the progress of the United Kingdom towards achieving its target; and the Party's provision of support to developing country Parties.

133. In its NC8 the United Kingdom reported on its key national circumstances related to GHG emissions and removals, including on legislation, population trends, geography and land use, climate and climate change, economic developments, energy, transport, the buildings sector, industry, trade, the services sector, agriculture, forestry, resource efficiency and wastewater.

134. The United Kingdom's total GHG emissions excluding LULUCF covered by its quantified economy-wide emission reduction target were estimated to be 49.3 per cent below its 1990 level. Emissions peaked in 2012 and decreased thereafter. The changes in total emissions were driven mainly by factors such as moving away from coal-fired electricity generation towards the use of natural gas and renewable sources; tightening the regulation of landfills; increasing the use of landfill CH₄ in gas flares and engines; and introducing abatement technology in adipic acid and nitric acid production for the agriculture sector. In 2020, the COVID-19 pandemic had a significant impact on GHG emissions in the United Kingdom, with the reduction of 9.8 per cent compared with the 2019 level being largely attributable to decreases in road transportation and coal production. As a result of economic recovery from the pandemic, GHG emissions rebounded in 2021, showing an increase of 5.0 per cent compared with the 2020 level; however, 2021 GHG emissions were 5.2 per cent lower than the 2019 level.

135. As reported in the BR5, under the Convention the United Kingdom committed to contributing to the achievement of the joint EU quantified economy-wide target of a 20 per cent reduction in emissions below the 1990 level by 2020. The target covers all sectors and CO₂, CH₄, N₂O, HFCs, PFCs and SF₆, expressed using GWP values from the AR4. Emissions and removals from the LULUCF sector are not included. Under the ESD the United Kingdom has a target of reducing its emissions by 16 per cent below the 2005 level by 2020.

136. The ERT noted that the total GHG emissions of the EU excluding LULUCF and including the use of units from market-based mechanisms do not exceed the emission level corresponding to the target in 2020, and thus that the EU has achieved its joint target. The ERT therefore concluded that the United Kingdom has met its 2020 commitment under the Convention through its contribution to achieving the joint target of the EU. The ERT noted that the United Kingdom met its 2020 ESD target because its ESD emissions in 2020 do not exceed its AEA for 2020.

137. In addition to its 2020 target, the United Kingdom also reported on its longer-term targets for 2030 and 2050. Specifically, under its NDC, the United Kingdom has committed to reducing its economy-wide emissions by 68 per cent compared with the 1990 level by 2030. The Party aims to achieve this target through its carbon budgets, which currently equate to GHG emission reductions of 57 per cent by 2030 (but are being revised to align with the NDC target, which is more ambitious) and 77 per cent by 2035 compared with the 1990 level. In addition, through its Net Zero Strategy, the United Kingdom has set a legally binding goal to achieve net zero emissions by 2050.

138. The GHG emissions projections provided by the United Kingdom in its NC8 and BR5 correspond to the WEM and WAM scenarios. Under the WEM scenario, emissions in 2030 are projected to be 53.5 per cent below the 1990 level and 8.6 per cent below the 2020 level. Under the WAM scenario, emissions in 2030 are projected to be 54.1 per cent below the 1990 level and 9.9 per cent below the 2020 level.

139. The United Kingdom's main policy framework relating to energy and climate change is the Climate Change Act of 2008, which defines the mechanism for monitoring progress in achieving domestic targets through carbon budgets. The Party described the mitigation actions that it has implemented to achieve its 2020 targets, which include national and EU actions to address energy supply and energy efficiency, as well as broader GHG mitigation policies such as the EU ETS, the EU directive on energy performance of buildings and the F-gas regulation. Mitigation actions for 2020 onward to enable the Party to achieve its

medium- and long-term GHG emission reduction targets include the continuation of existing PaMs in the energy, buildings, transport and industrial processes sectors, such as the Contracts for Difference scheme, the Net Zero Hydrogen Fund and the F-gas regulation. The United Kingdom has developed a comprehensive list of national cross-cutting and sectoral strategies and action plans to achieve its emission reduction targets, for example the Hydrogen Strategy and Powering Up Britain. Furthermore, the United Kingdom has planned additional mitigation actions that provide a foundation for additional emission savings, such as support for heat pumps in the building sector (e.g. the market obligation for retrofitted heat pump deployment).

140. The United Kingdom continued to provide climate financing to developing countries, channelling it through its ICF portfolio. Its 2019 Green Finance Strategy states that all of the United Kingdom's ODA should be aligned with the Paris Agreement. The United Kingdom increased its contributions in 2019–2020 by 18 per cent since the previous biennium (2017–2018) reported in the BR4 and its public financial support in 2019–2020 totalled USD 3,215 million. For those years, adaptation constituted 35 per cent of total support and about half of bilateral support. Significant amounts of bilateral finance support the energy transition in developing countries. An example is the Clean Energy Innovation Facility, the aim of which is to accelerate the commercialization of promising innovative clean technologies – including sustainable cooling, industrial decarbonization, energy storage and smart energy – in key hard-to-abate sectors in developing countries.

141. The United Kingdom continued to provide support for technology development and transfer and capacity-building. Priority for technological support was given to projects and programmes on enhancing access to renewable energy, for example through the Transforming Energy Access platform, to which the United Kingdom committed GBP 10.98 million in 2019 to support energy access, especially in Africa and South Asia. Since the BR4, the focus has remained the same. Priority for capacity-building support was given to projects and programmes that support recipient countries in implementing NDCs, transforming the energy sector (including through better energy modelling and planning), improving decision-making on infrastructure, improving nature-related financial disclosure, conducting research and planning on adaptation, managing disaster risk and engaging in international climate negotiations. Since the BR4, the focus has remained the same.

142. In its NC8 the United Kingdom provided 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. The United Kingdom reported on climate change vulnerability and adaptation measures for agriculture and food security, biodiversity and natural ecosystems, coastal zones, forests, human health and water resources. The Party also reported on international adaptation activities and information on bilateral cooperation with developing countries on adaptation.

143. In its NC8 the United Kingdom provided information on its activities relating to research and systematic observation. The Party reported on Earth systems, on funding for science and innovation, and on national plans, programmes and support for ground- and space-based climate observing systems, including satellite and non-satellite climate observation. The Foreign, Commonwealth and Development Office has facilitated and demonstrated the application of low-carbon technologies to support clean energy access in developing countries.

144. In its NC8 the United Kingdom provided information on its actions relating to education, training and public awareness at the domestic and international level. Examples of initiatives with significant impact are the Net Zero Strategy, which sets out clear principles for engaging the public in climate change, and the Sustainability and Climate Change Strategy for England, which presents a vision for the national education sector to become world-leading in sustainability and climate change by 2030. The United Kingdom aims to engage children of various ages in climate change education and to ensure all children develop an understanding of the natural environment. Noteworthy public awareness-raising initiatives are the MacKay Carbon Calculator, a user-friendly model of the United Kingdom's energy system that allows the public to explore the full range of options for reducing GHG emissions by 2050, and the Green Flag Award scheme run by the environmental charity Keep Northern Ireland Beautiful.

145. 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 in its next NC:

- (a) To improve the completeness of its reporting by:
 - (i) Providing, for all PaMs, all related information required including the GHG(s) affected (see issue 5 in table I.1);
 - (ii) Providing the total effect of PaMs by gas (see issue 4 in table I.2);
 - (iii) Providing information on its provision of support to developing countries for addressing any economic and social consequences of response measures (see issue 1 in table I.3);
- (b) To improve the transparency of its reporting by:
 - (i) Providing the geographical scope of all its PaMs (see issue 1 in table I.1);
 - (ii) Providing consistent information in the NC and CTF tables on the start year of implementation and the status of implementation (in relation to the selected cut-off date) for all PaMs, and providing the rationale for reporting the estimated impact of some PaMs as “0” and for using the notation key “NE” (see issue 4 in table I.1).

146. In the course of the review of the United Kingdom’s BR5, the ERT noted the following findings relating to adherence to the UNFCCC reporting guidelines on BRs:

- (a) Issues with the completeness of its reporting relating to:
 - (i) The provision, for each mitigation action, of all related information required including GHG(s) affected (see issue 3 in table II.1);
 - (ii) The provision of information on provision of support to developing countries for addressing any economic and social consequences of response measures (see issue 1 in table II.3);
- (b) Issues with the transparency of its reporting relating to:
 - (i) The provision of information on the geographical scope of all its mitigation actions (see issue 1 in table II.1);
 - (ii) The provision of information on the start year of implementation and the status of implementation (in relation to the selected cut-off date) for all mitigation actions, and the provision of the rationale for reporting the estimated impact of some mitigation actions as “0” and for using the notation key “NE” (see issue 4 in table II.1).

Annex I

Assessment of adherence to the reporting guidelines for the eighth national communication of the United Kingdom of Great Britain and Northern Ireland

Tables I.1–I.5 summarize the ERT assessment of adherence to the UNFCCC reporting guidelines on NCs for the United Kingdom of Great Britain and Northern Ireland’s NC8.

Table I.1

Findings on policies and measures from the review of the eighth national communication of the United Kingdom

No.	<i>Reporting requirement, issue type and assessment</i>	<i>Description of the finding with recommendation or encouragement</i>
1	Reporting requirement specified in paragraph 9 Issue type: transparency Assessment: recommendation	<p>For several PaMs reported in its NC8, the United Kingdom did not specify geographical coverage, that is, where they are or will be implemented (i.e. England, Northern Ireland, Scotland, Wales, Crown dependencies or overseas territories). (The United Kingdom reports emissions on behalf of the Crown dependencies and of the overseas territories that are covered by the United Kingdom’s ratification of the Convention. The territorial scope of the United Kingdom’s NDC was expanded to include the Crown dependencies and overseas territories in its NDC updated in September 2022.) Thus, it was not clear to the ERT if such PaMs would contribute to meeting the Party’s 2020 target under the Convention.</p> <p>During the review, the Party explained that it intends to address gaps in reporting on the geographical coverage of PaMs in future submissions.</p> <p>The ERT recommends that the United Kingdom enhance the transparency of its reporting by including in its next NC the geographical scope of all its PaMs.</p>
2	Reporting requirement specified in paragraph 14 Issue type: transparency Assessment: encouragement	<p>The United Kingdom did not organize its reporting on PaMs in its NC8 according to the sectors set out in the UNFCCC reporting guidelines on NCs, that is, energy, transport, industry/IPPU, agriculture, forestry/LULUCF, waste management/waste, other sectors and cross-cutting.</p> <p>During the review, the Party explained that PaMs are organized in the NC8 according to how the responsibilities for delivering emission reductions in key sectors are spread across government departments, resulting in a different sectoral approach from that of the GHG inventory. The Party indicated that it will consider how to address this issue for future submissions.</p> <p>The ERT encourages the United Kingdom to enhance the transparency of its reporting by including in its next NC an explanation of the rationale behind its approach to organizing the reporting of its PaMs or, to the extent appropriate, make an effort to organize the reporting of PaMs by the sectors listed in the UNFCCC reporting guidelines on NCs.</p>
3	Reporting requirement specified in paragraph 18 Issue type: transparency Assessment: encouragement	<p>The United Kingdom did not include a comprehensive description of the institutional arrangements for the monitoring of PaMs and how progress with PaMs to mitigate GHG emissions is monitored and evaluated over time. Information on institutional arrangements was reported only for Scotland and Wales (not for the other regions, the Crown dependencies and the overseas territories) and only for a few PaMs.</p> <p>During the review, the Party explained that it will aim to provide more extensive information on institutional arrangements for the monitoring of PaMs and how progress with PaMs to mitigate GHG emissions is monitored and evaluated over time in future submissions.</p> <p>The ERT encourages the United Kingdom to include in its next NC comprehensive information on the way in which progress with PaMs to mitigate GHG emissions is monitored and evaluated over time and on the institutional arrangements for the monitoring of GHG mitigation policy, ensuring that this information covers all PaMs across the country.</p>
4	Reporting requirement specified in paragraph 19	<p>In its CTF table 3, referenced in the NC8, the United Kingdom reported:</p> <p>(a) The estimated impact of some of its PaMs (e.g. the Carbon Reduction Commitment Energy Efficiency Scheme, Carbon Trust measures, and small and medium-sized</p>

No.	Reporting requirement, issue type and assessment	Description of the finding with recommendation or encouragement
	<p>Issue type: transparency</p> <p>Assessment: recommendation</p>	<p>enterprise loans) as “0” for 2030, 2035 and 2040. The ERT could not find an explanation for reporting this value in the text of the NC8/BR5 or in a footnote to CTF table 3;</p> <p>(b) The estimated impact of several PaMs and groups of PaMs, including all PaMs of devolved administrations, as “NE”, without providing an explanation as to why the impact could not be estimated;</p> <p>(c) The status of implementation and start year of implementation for some of the reported PaMs inconsistently compared with the NC8. For example, the Contracts for Difference scheme (2021–2035) is reported in CTF table 3 as planned, although the start year reported is 2021 (in the past), and the policy amendments to heat networks metering and billing regulations measure is reported as planned, although the start year reported is 2020.</p> <p>During the review, the Party clarified that PaMs with “0” reported as the estimated impact have expired recently (e.g. the Carbon Reduction Commitment Energy Efficiency Scheme, which officially ended in 2023 with the final compliance year 2018–2019); however, they still influence historical and projected emissions. Accordingly, the Party decided to continue reporting them with an estimated impact of “0” in CTF table 3. The United Kingdom also explained that it could not quantify some impacts owing to the complexity of the methodologies used for estimating emission reductions for the particular PaMs. The Party added that it will include more details on the use of notation keys for missing estimated impacts of PaMs in footnotes both in the body of the report and in the CTF tables, as appropriate, to improve the transparency of its future submissions. In addition, the United Kingdom explained that PaMs announced before the cut-off date of August 2019 were included in the WAM scenario projections of the <i>Updated energy and emissions projections 2019</i>, while PaMs announced after the cut-off date were included in CTF table 3 as planned PaMs. In CTF table 3, indicators are used to denote which PaMs are included in the WAM scenario but not the WEM scenario and which are included in both scenarios. The Party also explained that four PaMs and associated indicators are missing and that this will be corrected in future submissions of CTF tables. These are the Blanket Bog Restoration Strategy (a project of Natural England), the Natural Environment White Paper (specifically, the targets on horticultural peat), the Peatland Area Designations programme and the Peatland Code.</p> <p>The ERT reiterates the recommendation for the United Kingdom to improve the transparency of its reporting by providing an adequate explanation or justification for reporting the estimated impact of some PaMs as “0” through a custom footnote to CTF table 3 or in the textual part of its NC. The ERT further recommends that the United Kingdom improve the transparency of its reporting by providing an adequate explanation as to why the estimated impact of PaMs reported as “NE” could not be estimated and by reporting the start year of implementation and the status of implementation (in relation to the selected cut-off date) consistently for all PaMs.</p>
5	<p>Reporting requirement specified in paragraph 19</p> <p>Issue type: completeness</p> <p>Assessment: recommendation</p>	<p>The United Kingdom did not report the GHG(s) affected for any of the PaMs implemented in Wales.</p> <p>During the review, the Party explained that the Environment (Wales) Act of 2016, which governs the Welsh approach to climate change, does not report the GHGs affected by each individual policy or measure; however, the Welsh Government intends to address this issue by working with policy officials and the Government of the United Kingdom.</p> <p>The ERT recommends that the United Kingdom improve the completeness of its reporting by including in its next NC, for all PaMs, all related information required including the GHG(s) affected.</p>

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 and transparent, and thus adheres to the UNFCCC reporting guidelines on NCs.

Table I.2

Findings on projections including aggregate effects of policies and measures reported in the eighth national communication of the United Kingdom

No.	<i>Reporting requirement, issue type and assessment</i>	<i>Description of the finding with recommendation or encouragement</i>
1	Reporting requirement specified in paragraph 32 Issue type: completeness Assessment: encouragement	<p>In its NC8 the United Kingdom did not report projected emissions of the precursor gases carbon monoxide, NO_x and NMVOCs, as well as SO_x.</p> <p>During the review, the Party explained that it publishes projections of SO_x, NO_x and NMVOCs as part of its air quality reporting in the National Atmospheric Emissions Inventory and its international commitments under the United Nations Economic Commission for Europe Convention on Long-range Transboundary Air Pollution. It aims to include this information in future submissions as part of the UNFCCC process as well.</p> <p>The ERT reiterates the encouragement for the United Kingdom to improve the completeness of its reporting by including in its next NC projections of indirect GHGs, such as carbon monoxide, NO_x and NMVOCs, as well as SO_x.</p>
2	Reporting requirement specified in paragraph 35 Issue type: completeness Assessment: encouragement	<p>For the WEM scenario, the United Kingdom included in its BR5 a diagram illustrating projections of total emissions and LULUCF, and in its NC8 a diagram illustrating overall emission projections by gas. However, the ERT noted that the diagrams do not completely cover the information called for in paragraphs 31–34 of the UNFCCC reporting guidelines on NCs because diagrams for, for example, sectors, precursor gases and international transport are missing. Moreover, diagrams illustrating the WAM scenario are also missing.</p> <p>During the review, the Party acknowledged the usefulness of further visualization of GHG projections and indicated the possibility of producing additional diagrams.</p> <p>The ERT encourages the United Kingdom to improve the completeness of its reporting by including in its next NC diagrams illustrating all the information called for in paragraphs 31–34 of the UNFCCC reporting guidelines on NCs for both the WEM and the WAM scenarios.</p>
3	Reporting requirement specified in paragraph 36 Issue type: completeness Assessment: encouragement	<p>The United Kingdom did not report information on the total expected effect of planned PaMs in its NC8.</p> <p>During the review, the Party explained that some information could be gained by summing, in CTF table 3, the mitigation impacts for those planned PaMs for which the mitigation impact is included under the WAM scenario but not under the WEM scenario (those PaMs are marked by “†”). The United Kingdom stated that it intends to report the total expected effect of planned PaMs for 2025, 2030, 2035 and 2040 in future submissions.</p> <p>The ERT encourages the United Kingdom to improve the completeness of its reporting by including in its next NC the total expected effect of planned PaMs.</p>
4	Reporting requirement specified in paragraph 37 Issue type: completeness Assessment: recommendation	<p>While the United Kingdom reported the total effect of PaMs in accordance with the WEM definition, it did not include the total effect of PaMs by gas in its NC8.</p> <p>During the review, the Party acknowledged the challenge of reporting this information and explained that PaMs that primarily reduce non-CO₂ emissions are usually reported as part of a group. The United Kingdom communicated its intention to include the total effect of PaMs by gas in future submissions.</p> <p>The ERT recommends that the United Kingdom improve the completeness of its reporting by including in its next NC the total effect of PaMs by gas.</p>
5	Reporting requirement specified in paragraph 40 Issue type: transparency Assessment: encouragement	<p>The brief overview provided by the United Kingdom in the corrigendum on models and/or approaches used to project GHG emissions does not fully cover all the information called for in paragraph 40 of the UNFCCC reporting guidelines on NCs. For some of the models or approaches used, the United Kingdom did not report on the type and characteristics, the original purpose, the strengths and weaknesses, or how the model or approach accounts for any overlap or synergies that may exist between different PaMs.</p> <p>During the review, the Party explained that a full overview of the modelling approach, including the methodology for projections of CO₂ emissions and combustion-derived</p>

No.	Reporting requirement, issue type and assessment	Description of the finding with recommendation or encouragement
6	Reporting requirement specified in paragraph 44 Issue type: transparency Assessment: encouragement	<p>non-CO₂ emissions, was published in 2019 in the <i>Updated energy and emissions projections 2018</i>.</p> <p>The ERT encourages the United Kingdom to improve the transparency of its reporting by including in its next NC a brief overview (e.g. by expanding the current table provided in the corrigendum) of each model and approach used covering all the information called for in paragraph 40 of the UNFCCC reporting guidelines on NCs.</p> <p>The United Kingdom reported on key underlying assumptions and values of variables such as GDP growth, population growth and international fuel prices in CTF table 5. However, it did not report numerical data for all historical years for all underlying assumptions; it reported “NO” for carbon prices (for 1990, 1995 and 2000) and GDP growth rate (for 1990) and “NE” for natural gas price (for 1990 and 1995). While the United Kingdom explained in a footnote to CTF table 5 that the EU ETS carbon price did not apply before the conception of the respective mechanisms in 2005, no explanation was provided for the use of notation keys in other cases.</p> <p>During the review, the Party explained that under its national reporting, only growth in GDP from calendar year 1991 onward is included in its emission projections. Further, the Party explained that values for the natural gas price in 1990 and 1995 were not included in the projections, as a wholesale market, in its current form, did not exist yet in the country (a liberalized gas market arrived in the mid-1990s).</p> <p>The ERT reiterates the encouragement for the United Kingdom to improve the transparency of its reporting by including in its next NC numerical data for all key variables and assumptions used in the projections for all historical years or, if that is not possible, provide the reasons for not reporting numerical data (e.g. in a footnote).</p>

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 and transparent, and thus adheres to the UNFCCC reporting guidelines on NCs.

Table I.3

Findings on financial, technological and capacity-building support from the review of the eighth 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 52 Issue type: completeness Assessment: recommendation	<p>The United Kingdom did not report on its provision of support to mitigate any economic and social consequences of response measures in non-Annex I Parties in its NC8.</p> <p>During the review, the Party provided examples of support programmes that address any economic and social consequences of response measures in recipient countries, including the Accelerating Coal Transition programme of Climate Investment Funds; a Just Transition Toolbox for coal regions developed through Climate Investment Funds; and a research project under the ICF, the Economics of Energy Innovation and System Transition, which is aimed at developing new economic modelling approaches to support policymaking in the context of non-marginal change. The United Kingdom explained that it is taking a holistic approach to development in each recipient country, embedding any climate finance programmes in its wider development approach.</p> <p>The ERT recommends that the United Kingdom enhance the completeness of its reporting by including in its next NC information on its provision of support to developing countries for addressing any economic and social consequences of response measures.</p>

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 and transparent, and thus adheres to the UNFCCC reporting guidelines on NCs.

Table I.4

Findings on vulnerability assessment, climate change impacts and adaptation measures from the review of the eighth national communication of the United Kingdom

No.	<i>Reporting requirement, issue type and assessment</i>	<i>Description of the finding with recommendation or encouragement</i>
1	Reporting requirement specified in paragraph 47 Issue type: completeness Assessment: encouragement	<p>The United Kingdom did not report information on progress and outcomes of adaptation action, specifically, on outcomes and the effectiveness of already implemented adaptation measures. In the corrigendum, the Party indicated that the Government reports on adaptation action using feedback provided by the Climate Change Committee in its biennial progress reports on the National Adaptation Programme. As part of the development of the third National Adaptation Programme, risk-owning government departments have been tasked with identifying potential adaptation indicators (new and existing), the review of which is expected to feed into the Climate Change Committee’s first progress review of the third National Adaptation Programme in 2025. This process will support the Government’s understanding and monitoring of responses to climate risks and provide a more accurate representation of adaptation progress, facilitating a more granular, higher frequency measurement of adaptation progress for individual risks or sectors.</p> <p>During the review, the Party had challenges in providing further details related to the specific outcomes or effectiveness of already implemented adaptation measures, despite having provided additional information on its approach and plans for monitoring adaptation action.</p> <p>The ERT encourages the United Kingdom to improve the completeness of its reporting by including in its next NC information on the progress and outcomes of adaptation action, for instance by including updated information on progress and, where possible, outcomes and the effectiveness of already implemented adaptation measures.</p>

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 and transparent, and thus adheres to the UNFCCC reporting guidelines on NCs.

Table I.5

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

No.	<i>Reporting requirement, issue type and assessment</i>	<i>Description of the finding with recommendation or encouragement</i>
1	Reporting requirement specified in paragraph 68 Issue type: transparency Assessment: encouragement	<p>The United Kingdom did not report comprehensive information addressing the extent of public participation in the preparation or domestic review of its NCs in its NC8. In the corrigendum, the Party reported that the Government has a robust approach to engaging the public on all policy matters through consultation processes (e.g. by funding several public workshops and deliberative dialogues to understand the public’s views and let these shape policies on climate change and the environment), which are used to inform the policy decisions communicated in its NC. However, the ERT could not determine the extent of public participation specifically related to the preparation phase of the NC or in its domestic review process.</p> <p>During the review, the Party had challenges in providing further details specifically regarding the extent of public participation in the preparation or domestic review of its NCs, despite having provided extensive information regarding its overall approach to public engagement.</p> <p>The ERT encourages the United Kingdom to improve the transparency of its reporting by including in its next NC information addressing the extent of public participation specifically in the preparation and domestic review of its NCs, for instance by specifying the modalities of public participation in the drafting phase or public engagement in the subsequent phase of domestic review.</p>

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 and transparent, and thus adheres to the UNFCCC reporting guidelines on NCs.

Annex II

Assessment of adherence to the reporting guidelines for the fifth biennial report of the United Kingdom of Great Britain and Northern Ireland

The BR5 of the United Kingdom of Great Britain and Northern Ireland is the final BR under the measurement, reporting and verification system established under the Convention.¹ Nevertheless, ERTs continue to provide recommendations and encouragements to the Parties on completeness, transparency and adherence to the UNFCCC reporting guidelines on BRs. Parties may find these recommendations and encouragements relevant, as appropriate, when preparing their initial biennial transparency report under the enhanced transparency framework of the Paris Agreement. Tables II.1–II.3 summarize the ERT assessment of adherence to the UNFCCC reporting guidelines on BRs for the United Kingdom’s BR5.

Table II.1

Findings on mitigation actions and their effects from the review of the fifth biennial report of the United Kingdom

No.	Reporting requirement and issue type	Description of the finding with recommendation or encouragement
1	Reporting requirement specified in paragraph 6 Issue type: transparency Assessment: recommendation	For several mitigation actions reported in the BR5 and CTF table 3, the United Kingdom did not specify geographical coverage, that is, where they are or will be implemented (i.e. England, Northern Ireland, Scotland, Wales, Crown dependencies or overseas territories). (The United Kingdom reports emissions on behalf of the Crown dependencies and of the overseas territories that are covered by the United Kingdom’s ratification of the Convention. The territorial scope of the United Kingdom’s NDC was expanded to include the Crown dependencies and overseas territories in its NDC updated in September 2022.) Thus, it was not clear to the ERT if such mitigation actions would contribute to meeting the Party’s 2020 target under the Convention. During the review, the Party explained that it intends to address gaps in reporting on the geographical coverage of mitigation actions in future submissions. The ERT recommends that the United Kingdom enhance the transparency of its reporting by including the geographical scope of all its mitigation actions.
2	Reporting requirement specified in paragraph 6 Issue type: transparency Assessment: encouragement	The United Kingdom did not organize its reporting on mitigation actions in its BR5 according to the sectors set out in the UNFCCC reporting guidelines on BRs, that is, energy, IPPU, agriculture, LULUCF, waste and other sectors. During the review, the Party explained that mitigation actions are organized in the BR5 according to how the responsibilities for delivering emission reductions in key sectors are spread across government departments, resulting in a different sectoral approach from that of the GHG inventory. The Party indicated that it will consider how to address this issue for future submissions. The ERT encourages the United Kingdom to enhance the transparency of its reporting by including in the BR an explanation of the rationale behind its approach to organizing the reporting of its mitigation actions or, to the extent appropriate, make an effort to organize the reporting of mitigation actions by the sectors listed in the UNFCCC reporting guidelines on BRs.
3	Reporting requirement specified in CTF table 3	The United Kingdom did not report the GHG(s) affected for any of the mitigation actions implemented in Wales. During the review, the Party explained that the Environment (Wales) Act of 2016, which governs the Welsh approach to climate change, does not report the GHGs affected by

¹ The COP, by decision 1/CP.24, decided that the final biennial reports shall be those submitted to the secretariat no later than 31 December 2022 and reaffirmed that, for Parties to the Paris Agreement, following the submission of the final biennial report, the modalities, procedures and guidelines contained in the annex to decision 18/CMA.1 will supersede the measurement, reporting and verification system established under decision 1/CP.16, paras. 40–47 and 60–64, and decision 2/CP.17, paras. 12–62.

No.	Reporting requirement and issue type	Description of the finding with recommendation or encouragement
	Issue type: completeness Assessment: recommendation	each individual policy or measure; however, the Welsh Government intends to address this issue by working with policy officials and the Government of the United Kingdom. The ERT recommends that the United Kingdom improve the completeness of its reporting by including in its BR, for all mitigation actions, all related information required including the GHG(s) affected.
4	Reporting requirement specified in CTF table 3 Issue type: transparency Assessment: recommendation	<p>In its CTF table 3, referenced in the NC8, the United Kingdom reported:</p> <p>(a) The estimated impact of some of its mitigation actions (e.g. the Carbon Reduction Commitment Energy Efficiency Scheme, Carbon Trust measures, and small and medium-sized enterprise loans) as “0” for 2030, 2035 and 2040. The ERT could not find an explanation for reporting this value in the text of the NC8/BR5 or in a footnote to CTF table 3;</p> <p>(b) The estimated impact of several mitigation actions and groups of mitigation actions, including all mitigation actions of devolved administrations, as “NE”, without providing an explanation as to why the impact could not be estimated;</p> <p>(c) The status of implementation and start year of implementation for some of the reported mitigation actions inconsistently compared with the NC8. For example, the Contracts for Difference scheme (2021–2035) is reported in CTF table 3 as planned, although the start year reported is 2021 (in the past), and the policy amendments to heat networks metering and billing regulations measure is reported as planned, although the start year reported is 2020.</p> <p>During the review, the Party clarified that mitigation actions with “0” reported as the estimated impact have expired recently (e.g. the Carbon Reduction Commitment Energy Efficiency Scheme, which officially ended in 2023 with the final compliance year 2018–2019); however, they still influence historical and projected emissions. Accordingly, the Party decided to continue reporting them with an estimated impact of “0” in CTF table 3. The United Kingdom also explained that it could not quantify some impacts owing to the complexity of the methodologies used for estimating emission reductions for the particular mitigation actions. The Party added that it will include more details on the use of notation keys for missing estimated impacts of mitigation actions in footnotes both in the body of the report and in the CTF tables, as appropriate, to improve the transparency of its future submissions. In addition, the United Kingdom explained that mitigation actions announced before the cut-off date of August 2019 were included in the WAM scenario projections of the <i>Updated energy and emissions projections 2019</i>, while mitigation actions announced after the cut-off date were included in CTF table 3 as planned mitigation actions. In CTF table 3, indicators are used to denote which mitigation actions are included in the WAM scenario but not the WEM scenario and which are included in both scenarios. The Party also explained that four mitigation actions and associated indicators are missing and that this will be corrected in future submissions of CTF tables. These are the Blanket Bog Restoration Strategy (a project of Natural England), the Natural Environment White Paper (specifically, the targets on horticultural peat), the Peatland Area Designations programme and the Peatland Code.</p> <p>The ERT reiterates the recommendation for the United Kingdom to improve the transparency of its reporting by providing an adequate explanation or justification for reporting the estimated impact of some mitigation actions as “0” through a custom footnote to CTF table 3 or in the textual part of its BR. The ERT further recommends that the United Kingdom improve the transparency of its reporting by providing an adequate explanation as to why the estimated impact of mitigation actions reported as “NE” could not be estimated and by reporting the start year of implementation and the status of implementation (in relation to the selected cut-off date) consistently for all mitigation actions.</p>
5	Reporting requirement specified in CTF table 3 Issue type: completeness Assessment: encouragement	<p>In CTF table 3 the United Kingdom did not report information on the cost of mitigation actions and the relevant timescale, as indicated in footnote (e) to the table.</p> <p>During the review, the Party explained that, since March 2021, the Government committed GBP 30 billion of domestic investment at Autumn Budget and Spending Review 2021, GBP 6 billion for energy efficiency for 2025–2028 at Autumn Statement 2022, and up to GBP 20 billion for carbon capture, usage and storage at Spring Budget 2023. The Party added that its policies helped to encourage around GBP 50 billion in public and private investment in low-carbon sectors in 2021 and 2022, and that over 80,000 jobs have been supported by policies introduced since November 2020. The</p>

No.	Reporting requirement and issue type	Description of the finding with recommendation or encouragement
		<p>Party expects that policies will leverage around GBP 100 billion of private investment up until 2030, and that its ambitions will support up to 480,000 jobs in 2030.</p> <p>The ERT reiterates the encouragement for the United Kingdom to improve the transparency of its reporting by including information on the cost of its mitigation actions and the relevant timescale.</p>

Note: Item listed under reporting requirement refers to the relevant paragraph of the UNFCCC reporting guidelines on BRs or to the CTF table number from the “Common tabular format for ‘UNFCCC biennial reporting guidelines for developed country Parties’”. The reporting on the requirements not included in this table is considered to be complete and transparent, and thus adheres to the UNFCCC reporting guidelines on BRs.

Table II.2

Findings on projections reported in the fifth biennial report of the United Kingdom

No.	Reporting requirement and issue type	Description of the finding with recommendation or encouragement
1	<p>Reporting requirement^a specified in paragraph 32</p> <p>Issue type: completeness</p> <p>Assessment: encouragement</p>	<p>In its BR5 the United Kingdom did not report projected emissions of the precursor gases carbon monoxide, NO_x and NMVOCs, as well as SO_x.</p> <p>During the review, the Party explained that it publishes projections of SO_x, NO_x and NMVOCs as part of its air quality reporting in the National Atmospheric Emissions Inventory and its international commitments under the United Nations Economic Commission for Europe Convention on Long-range Transboundary Air Pollution. It aims to include this information in future submissions as part of the UNFCCC process.</p> <p>The ERT reiterates the encouragement for the United Kingdom to improve the completeness of its reporting by including in its BR projections of indirect GHGs, such as carbon monoxide, NO_x and NMVOCs, as well as SO_x.</p>
2	<p>Reporting requirement^a specified in paragraph 35</p> <p>Issue type: completeness</p> <p>Assessment: encouragement</p>	<p>For the WEM scenario, the United Kingdom included in its BR5 a diagram illustrating projections of total emissions and LULUCF, and in its NC8 a diagram illustrating overall emission projections by gas. However, the ERT noted that the diagrams do not completely cover the information called for in paragraphs 31–34 of the UNFCCC reporting guidelines on NCs because diagrams for, for example, sectors, precursor gases and international transport are missing. Moreover, diagrams illustrating the WAM scenario are also missing.</p> <p>During the review, the Party acknowledged the usefulness of further visualization of GHG projections and indicated the possibility of producing additional diagrams.</p> <p>The ERT encourages the United Kingdom to improve the completeness of its reporting by including in its BR diagrams illustrating all the information called for in paragraphs 31–34 of the UNFCCC reporting guidelines on NCs for both the WEM and the WAM scenarios.</p>
3	<p>Reporting requirement^a specified in paragraph 40</p> <p>Issue type: transparency</p> <p>Assessment: encouragement</p>	<p>The brief overview provided by the United Kingdom in the corrigendum on models and/or approaches used to project GHG emissions does not fully cover all the information called for in paragraph 40 of the UNFCCC reporting guidelines on NCs. For some of the models or approaches used, the United Kingdom did not report on the type and characteristics, the original purpose, the strengths and weaknesses, or how the model or approach accounts for any overlap or synergies that may exist between different PaMs.</p> <p>During the review, the Party explained that a full overview of the modelling approach, including the methodology for projections of CO₂ emissions and combustion-derived non-CO₂ emissions, was published in 2019 in the <i>Updated energy and emissions projections 2018</i>.</p> <p>The ERT encourages the United Kingdom to improve the transparency of its reporting by including in its BR a brief overview (e.g. by expanding the current table provided in the corrigendum) of each model and approach used covering all the information called for in paragraph 40 of the UNFCCC reporting guidelines on NCs.</p>
4	<p>Reporting requirement^a specified in paragraph 44</p>	<p>The United Kingdom reported on key underlying assumptions and values of variables such as GDP growth, population growth and international fuel prices in CTF table 5. However, it did not report numerical data for all historical years for all underlying assumptions; it reported “NO” for carbon prices (for 1990, 1995 and 2000) and GDP growth rate (for 1990) and “NE” for natural gas price (for 1990 and 1995). While the</p>

<i>No.</i> <i>Reporting requirement and issue type</i>	<i>Description of the finding with recommendation or encouragement</i>
Issue type: transparency Assessment: encouragement	<p>United Kingdom explained in a footnote to CTF table 5 that the EU ETS carbon price did not apply before the conception of the respective mechanisms in 2005, no explanation was provided for the use of notation keys in other cases.</p> <p>During the review, the Party explained that under its national reporting, only growth in GDP from calendar year 1991 onward is included in its emission projections. Further, the Party explained that values for the natural gas price in 1990 and 1995 were not included in the projections, as a wholesale market, in its current form, did not exist yet in the country (a liberalized gas market arrived in the mid-1990s).</p> <p>The ERT reiterates the encouragement for the United Kingdom to improve the transparency of its reporting by including in its BR numerical data for all key variables and assumptions used in the projections for all historical years or, if that is not possible, provide the reasons for not reporting numerical data (e.g. in a footnote).</p>

Note: The reporting on the requirements not included in this table is considered to be complete and transparent, and thus adheres to the UNFCCC reporting guidelines on NCs and on BRs.

^a Item listed under reporting requirement refers to the relevant paragraph of the UNFCCC reporting guidelines on NCs, as per para. 11 of the UNFCCC reporting guidelines on BRs.

Table II.3

Findings on provision of financial, technological and capacity-building support to developing country Parties from the review of the fifth biennial report of the United Kingdom

<i>No.</i> <i>Reporting requirement and issue type</i>	<i>Description of the finding with recommendation or encouragement</i>
1 Reporting requirement specified in paragraph 17 Issue type: completeness Assessment: recommendation	<p>The United Kingdom did not report on its provision of support to mitigate any economic and social consequences of response measures in non-Annex I Parties in its BR5.</p> <p>During the review, the Party provided examples of support programmes that address any economic and social consequences of response measures in recipient countries, including the Accelerating Coal Transition programme of Climate Investment Funds; a Just Transition Toolbox for coal regions developed through Climate Investment Funds; and a research project under the ICF, the Economics of Energy Innovation and System Transition, which is aimed at developing new economic modelling approaches to support policymaking in the context of non-marginal change. The United Kingdom explained that it is taking a holistic approach to development in each recipient country, embedding any climate finance programmes in its wider development approach.</p> <p>The ERT recommends that the United Kingdom enhance the completeness of its reporting by including in its BR information on its provision of support to developing countries for addressing any economic and social consequences of response measures.</p>

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

Annex III

Documents and information used during the review

A. Reference documents

2022 GHG inventory submission of the United Kingdom. Available at <https://unfccc.int/ghg-inventories-annex-i-parties/2022>.

2023 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-2023>.

BR4 of the United Kingdom. Available at <https://unfccc.int/BR4>.

BR5 CTF tables of the United Kingdom. Available at <https://unfccc.int/BR5>.

BR5 of the EU. Available at <https://unfccc.int/BR5>.

BR5 of the United Kingdom. Available at <https://unfccc.int/BR5>.

“Common tabular format for ‘UNFCCC biennial reporting guidelines for developed country Parties’”. Annex to decision 19/CP.18. Available at <https://unfccc.int/resource/docs/2012/cop18/eng/08a03.pdf>.

“Compilation of economy-wide emission reduction targets to be implemented by Parties included in Annex I to the Convention”. FCCC/SBSTA/2014/INF.6. Available at <http://unfccc.int/resource/docs/2014/sbsta/eng/inf06.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/2019/13/Add.1. Available at <https://unfccc.int/documents/210471>.

“Guidelines for the preparation of the information required under Article 7 of the Kyoto Protocol”. Annex to 15/CMP.1. Available at <https://unfccc.int/documents/4253>.

“Guidelines for the preparation of the information required under Article 7 of the Kyoto Protocol”. Annex III to decision 3/CMP.11. Available at <https://unfccc.int/documents/9101>.

“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>.

National energy and climate plan of the United Kingdom. Available at <https://www.gov.uk/government/publications/uk-national-energy-and-climate-plan-necp>.

NC8 of the EU. Available at <https://unfccc.int/NC8>.

NC8 of the United Kingdom. Available at <https://unfccc.int/NC8>.

Report on the technical review of the BR4 of the United Kingdom. FCCC/TRR.4/GBR. Available at <https://unfccc.int/documents/278988>

“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 Stephanie Fuller (DESNZ), including additional material. The following references were provided by the United Kingdom and may not conform to UNFCCC editorial style as some have been reproduced as received:

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