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Report on the technical review of the eighth national communication and the technical review of the fifth biennial report of 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 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 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".

The review of these submissions took place in Dublin, Ireland, from 24 to 28 April 2023.

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Contents

Abbreviations and acronyms

AEA	annual emission allocation
AR	Assessment Report of the Intergovernmental Panel on Climate Change
BR	biennial report
CH_4	methane
CO	carbon monoxide
CO_2	carbon dioxide
CO_2 eq	carbon dioxide equivalent
CORSIA	Carbon Offsetting and Reduction Scheme for International Aviation
COVID-19	coronavirus disease 2019
CTF	common tabular format
EPA	Environmental Protection Agency of Ireland
ERT	expert review team
ESD	European Union effort-sharing decision
ESR	European Union effort-sharing regulation
EU	European Union
EU ETS	European Union Emissions Trading System
GDP	gross domestic product
GHG	greenhouse gas
GWP	global warming potential
HFC	hydrofluorocarbon
I3E	Ireland Environment, Energy and Economy (model)
ICAO	International Civil Aviation Organization
IMO	International Maritime Organization
IPPU	industrial processes and product use
LDC	least developed country
LEG	Least Developed Countries Expert Group
LULUCF	land use, land-use change and forestry
N_2O	nitrous oxide
NA	not applicable
NAP	national adaptation plan
NC	national communication
NDC	nationally determined contribution
NE	not estimated
NF_3	nitrogen trifluoride
NIR	national inventory report
NMVOC	non-methane volatile organic compound
NO	not occurring
non-Annex I Party	Party not included in Annex I to the Convention
non-EU ETS sector	sector not covered by the European Union Emissions Trading System
NO_X	nitrogen oxides
OECD	Organisation for Economic Co-operation and Development
PaMs	policies and measures
PFC	perfluorocarbon
SDG	Sustainable Development Goal
SF_6	sulfur hexafluoride
SO_X	sulfur oxides

UNDP	United Nations Development 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 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 Ireland, which provided comments that were considered and incorporated with revisions into this final version of the report.

3. The review was conducted from 24 to 28 April 2023 in Dublin, Ireland, by the following team of nominated experts from the UNFCCC roster of experts: Naoki Matsuo (Japan), Tshiamo Mosuwe (South Africa), Hansrajie Sukhdeo (Guyana), Caroline Tagwireyi (Zimbabwe), Marian Van Pelt (United States of America) and Aitor Zulueta (Spain). Caroline Tagwireyi and Marian Van Pelt were the lead reviewers. The review was coordinated by Jamie Howland and Andrea Nuesse (secretariat).

B. Summary

4. The ERT conducted a technical review of the information reported in the NC8 of Ireland 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 Protocol[2] and of the information reported in the BR5 of Ireland in accordance with the UNFCCC reporting guidelines on BRs.[3]

1. Timeliness

5. The NC8 was submitted on 20 February 2023, after the deadline of 31 December 2022 mandated by decision 6/CP.25. The NC8 was resubmitted on 11 May 2023 to address issues raised during the review. The resubmission included changes and additions to the chapters on PaMs; projections; financial resources, technology transfer and capacity-building; research and systematic observation; and education, training and public awareness. Detailed information on improvements related to the resubmission is provided in paragraph 13 below. Unless otherwise specified, the information and values from the latest submission are used in this report.

6. Ireland did not inform the secretariat about its difficulties with making a timely NC8 submission. In accordance with decision 13/CP.20, a Party should inform the secretariat thereof by the due date of the submission in order to facilitate the arrangement of the review process. The ERT noted with great concern the delay in the submission and recommended that Ireland make its next submission on time.

7. The BR5 was submitted on 20 February 2023, after the deadline of 31 December 2022 mandated by decision 6/CP.25. The CTF tables were also submitted on 20 February 2023. The CTF tables and BR5 were resubmitted on 11 May 2023 to address issues raised during the review. The resubmission included additions to the chapters on the quantified economy-

[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.

wide emission reduction target and the provision of financial, technological and capacity-building support and to CTF tables 2(a–f), 5, 7 and 7(a–b). Detailed information on improvements related to the resubmission is provided in paragraph 13 below. Unless otherwise specified, the information and values from the latest submission are used in this report.

8. Ireland did not inform the secretariat about its difficulties with making a timely BR5 submission. In accordance with decision 13/CP.20, a Party should inform the secretariat thereof by the due date of the submission in order to facilitate the arrangement of the review process. The ERT noted with great concern the delay in the submission.

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

9. Issues and gaps identified by the ERT related to the information reported by Ireland 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. The ERT concludes that the issues of a mandatory nature related to supplementary information under the Kyoto Protocol do not influence the Party's ability to fulfil its commitments for the second commitment period of the Kyoto Protocol.

10. Ireland 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 reporting planned, adopted and implemented PaMs at the national, regional and local level;

(b) The completeness of the information reported on the progress of PaMs in mitigating GHG emissions by including information on how progress is monitored and evaluated over time and on the associated institutional arrangements;

(c) The transparency of the information reported on projections and the total effects of PaMs for the LULUCF sector by providing additional explanations in the description of the strengths and weaknesses of the modelling tool;

(d) The completeness of the information reported on projections by including a figure illustrating the trends in historical and projected GHG emissions for the WEM and WAM scenarios by sector and by gas as well as sector-level emission reductions;

(e) The completeness of the information reported on financial, technological and capacity-building support by indicating what "new and additional" resources it has provided and how it has determined such resources as being new and additional; reporting success and failure stories of its technology transfer activities; and explaining how the capacity-building support it provided responded to the existing and emerging capacity-building needs identified by non-Annex I Parties by referring to projects that it has funded that address this requirement;

(f) The transparency of the information reported on financial, technological and capacity-building support by indicating the exact amounts of climate-specific funding channelled through multilateral and bilateral channels; reporting on the development and enhancement of endogenous capacities and technologies by providing information on projects for which technologies were developed within the country receiving support, including on assistance received from in-country and external experts; and clearly distinguishing between activities undertaken by the public sector and those undertaken by the private sector;

(g) The completeness of the information reported on research and systematic observation by identifying barriers to free and open international exchange of data and information and action taken to overcome such barriers;

(h) The completeness of the supplementary information related to the Kyoto Protocol reported by providing information on the steps it has taken to promote and/or implement decisions by ICAO and IMO to limit or reduce emissions of GHGs from aviation and marine bunker fuels; domestic legislative arrangements and enforcement and administrative procedures it has in place to meet its commitments under the Kyoto Protocol;

and steps that it has taken to promote, facilitate and finance the transfer of technology to developing countries.

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

Section of NC	*Completeness*	*Transparency*	*Reference to description of recommendations*
Executive summary	Complete	Transparent	
National circumstances relevant to GHG emissions and removals	Complete	Transparent	
GHG inventory	Complete	Transparent	
PaMs	Mostly complete	Transparent	Issue 3 in table I.1
Projections and the total effect of PaMs	Complete	Transparent	
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 recommendations 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 Ireland in its eighth national communication

Supplementary information under the Kyoto Protocol	*Completeness*	*Transparency*	*Reference to description of finding(s)*
National system	Complete	Mostly transparent	Issue 1 in table I.4
National registry	Complete	Mostly transparent	Issue 2 in table I.4
Supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17	Complete	Transparent	
PaMs in accordance with Article 2	Mostly complete	Transparent	Issue 3 in table I.4
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 recommendations 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 Parties included in Annex II to the Convention 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.

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

12. Ireland 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 projections by including a description of the strengths and weaknesses of the modelling tool;

(b) The completeness of the information reported on the provision of financial, technological and capacity-building support to developing country Parties by describing how the capacity-building support it provided responded to the existing and emerging needs identified by non-Annex I Parties by referring to the projects that have been funded that address this requirement;

(c) The transparency of the information reported on the provision of financial, technological and capacity-building support to developing country Parties, namely that on the development and enhancement of endogenous capacities and technologies, by providing information on funded projects for which technologies were developed within the country receiving support, including on assistance received from in-country and external experts.

Table 3
Summary of completeness and transparency of mandatory information reported by Ireland in its fifth biennial report

Section of BR	*Completeness*	*Transparency*	*Reference to description of finding(s)*
GHG emissions and removals	Complete	Transparent	
Quantified economy-wide emission reduction target and related assumptions, conditions and methodologies	Complete	Transparent	
Progress in achievement of targets	Mostly complete	Mostly transparent	Issue 1 in table II.1
			Issue 1 in table II.2
			Issue 3 in table II.3
Provision of support to developing country Parties	Mostly complete	Transparent	Issue 1 in table II.4

Note: A list of recommendations 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.

13. The NC8, BR5 and CTF table resubmissions made during the review improved:

(a) The information reported on its quantified economy-wide emission reduction target and related assumptions, conditions and methodologies by providing additional information on the 2030 targets, including the updated EU economy-wide target and Ireland's revised target of reducing GHG emissions in the sectors covered by the ESR by 42 per cent relative to the 2005 level;

(b) The information reported on PaMs by adding background material on Ireland's National Energy and Climate Plan and information on legislation on renewable fuels in the transport sector;

(c) The information reported on projections and the total effects of PaMs by reporting more precise values for the WEM and WAM scenarios in NC8 tables 2(a), 2(b), 4(a) and 4(b), as well as by updating the historical emissions and projections for the WEM and WAM scenarios in NC8 tables 5.4, 5.5 and 5.6 and the estimated CO_2 eq savings in table 5.9;

(d) The information reported on financial, technological and capacity-building support by adding values in United States dollars to NC8 tables 6(a–b), 7(a–b) and 8(a), providing information on the currency exchange rate applied in CTF table 7 and including

information on an updated coefficient for Rio marker 1 disbursements applied to identify the respective climate finance portion of project funding;

(e) The information reported on research and systematic observation by identifying barriers to free and open exchange of data and action taken to overcome such barriers;

(f) The information reported on education, training and public awareness by including a section on Ireland's Climate Youth Delegate Programme.

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

14. 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. Ireland's population and economy are growing. The population increased by 35 per cent from 1990 to 2016 and another nearly 8 per cent from 2016 until 2022, and first exceeded 5 million in 2022. The population is highly concentrated in the Dublin region and highly dispersed (less dense) throughout the remainder of the country. Ireland has a trade-dependent economy that experienced a strong period of growth from 1995 to 2007. A sharp drop during the global financial crisis was followed by modest growth until the start of the COVID-19 pandemic. The pandemic had a dual impact on the Irish economy: overall GDP growth of 6 per cent in 2020 resulting from the highly productive economic activity of multinational corporations was coupled with an unprecedented contraction in the domestic economy. The dual nature of the economy in Ireland also has an influence on energy consumption, since multinational corporations deliver high economic growth and, other than data centres, consume relatively small amounts of energy.

15. Renewable energy represents a growing share of the energy supply in Ireland, while the consumption of oil, coal and peat has declined. Natural gas use has increased. Since 2005, Ireland has reduced its overall final use of fossil fuels by 20 per cent. The COVID-19 pandemic strongly affected the use of oil in transport; oil consumption fell by 17 per cent in 2020 owing to the imposition of public health measures, rebounding somewhat in 2021 as those measures were eased.

16. From 1990 to 2020, agriculture was the second largest contributor to Ireland's annual GHG emissions. The agrifood sector is particularly important to the Irish economy and accounts for 7 per cent of employment in the country and 10–14 per cent of employment outside Dublin. Agricultural product industries, such as beef, dairy and food processing, have strong output multipliers relative to other sectors of Ireland's economy.

17. Ireland described in its NC8 and BR5 its recent climate legislation, namely the Climate Action and Low Carbon Development (Amendment) Act 2021 (hereafter, Climate Act 2021), which significantly strengthens the statutory framework for the governance of the response to the climate challenge that had been set out in the Climate Action and Low Carbon Development Act 2015 (hereafter, Climate Act 2015). The Climate Act 2021 sets a binding target to reduce emissions by 51 per cent by 2030 relative to the 2018 level and achieve net zero emissions by 2050. This framework requires the delivery of successive climate action plans and national long-term climate action strategies, and institutional arrangements to support progress towards Ireland's GHG emission reduction targets.

2. Assessment of adherence to the reporting guidelines

18. The ERT assessed the information reported in the NC8 of Ireland 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 information[4]

1. Technical assessment of the reported information

19. Ireland reported information in its BR5 and NC8 on its historical GHG emissions and inventory arrangements. Total GHG emissions[5] excluding emissions and removals from LULUCF increased by 6.1 and 11.6 per cent between 1990 and 2020 and 1990 and 2021 respectively, whereas total GHG emissions including net emissions or removals from LULUCF increased by 7.2 and 12.6 per cent over the same periods. Emissions peaked in 2001 following steady growth from 1990, plateaued until 2008, and then experienced a sharp decline from 2008 to 2011. Emissions were almost stable thereafter, rising to a slightly higher level during 2016–2018. After dropping in the first year of the COVID-19 pandemic (2020), emissions rebounded by 5.2 per cent without LULUCF and 5.1 per cent with LULUCF in 2021 (compared with the 2020 level). The changes in total emissions were driven by a number of factors, such as an increase in GDP; a fuel shift in electricity generation from coal and peat to natural gas and renewables; growth in energy-related CO_2 emissions from the transport sector; an increase in the cattle population, leading to greater CH_4 emissions from enteric fermentation and ultimately to agriculture sector emissions contributing more than a third of total GHG emissions; and the effects of the COVID-19 pandemic in 2020. The ERT notes that figure 3.1 in the NC8, which shows the development in total emissions over time, could include all years as data points (as was done in a version of the figure presented to the ERT during the review), rather than showing five-year intervals from 1990 to 2010 so that the trend in emissions can be more accurately identified.

20. Table 4 illustrates the emission trends by sector and by gas for Ireland. The emissions reported in the 2023 annual submission differ from the data reported in CTF table 1 owing to recalculations arising from the GWPs applied: Ireland reported in its BR5 and NC8 historical GHG emissions up until 2020 that are based on GWPs from the AR4. Emissions in the 2023 annual submission are based on GWPs from the AR5.

Table 4
Greenhouse gas emissions by sector and by gas for Ireland for 1990–2021

	GHG emissions (kt CO_2 eq)					*Change (%)*		*Share (%)*	
	1990	*2000*	*2010*	*2020*	*2021*	*1990–2020*	*2020–2021*	*1990*	*2021*
Sector									
1. Energy	31 067.59	42 479.43	40 455.36	33 122.21	34 970.15	6.6	5.6	55.8	56.3
A1. Energy industries	11 216.00	16 109.09	13 363.77	8 635.01	10 170.20	–23.0	17.8	20.2	16.4
A2. Manufacturing industries and construction	4 065.48	5 413.60	4 198.78	4 512.36	4 624.47	11.0	2.5	7.3	7.4
A3. Transport	5 143.32	10 772.36	11 522.10	10 300.71	10 989.43	100.3	6.7	9.2	17.7
A4. and A5. Other	10 524.24	10 091.23	11 273.32	9 571.77	9 084.41	–9.1	–5.1	18.9	14.6
B. Fugitive emissions from fuels	118.54	93.15	97.39	102.36	101.64	–13.7	–0.7	0.2	0.2
C. CO_2 transport and storage	NO	NO	NO	NO	NO	–	–	–	–
2. IPPU	3 197.40	4 406.82	2 584.61	2 828.02	3 242.83	–11.6	14.7	5.7	5.2

[4] GHG emission data in this section are based on Ireland's 2023 annual submission, version 2, which has not yet been subject to review. All emission data in subsequent chapters are based on Ireland'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 CO_2 eq excluding LULUCF, unless otherwise specified.

	GHG emissions (kt CO_2 eq)					*Change (%)*		*Share (%)*	
	1990	*2000*	*2010*	*2020*	*2021*	*1990–2020*	*2020–2021*	*1990*	*2021*
3. Agriculture	19 668.61	21 182.75	19 427.95	22 133.28	22 953.53	12.5	3.7	35.3	37.0
4. LULUCF	6 009.44	7 325.64	7 055.79	7 042.45	7 338.25	17.2	4.2	NA	NA
5. Waste	1 709.24	1 643.38	564.24	972.79	943.36	–43.1	–3.0	3.1	1.5
6. Other[a]	NO	NO	NO	NO	NO	–	–	–	–
Gas[b]									
CO_2	32 944.42	45 249.11	41 793.22	35 123.78	37 547.28	6.6	6.9	59.2	60.5
CH_4	16 138.04	16 885.61	14 535.09	17 286.83	17 649.70	7.1	2.1	29.0	28.4
N_2O	6 524.85	6 871.20	5 582.67	5 926.08	6 146.64	–9.2	3.7	11.7	9.9
HFCs	0.50	245.68	1 016.91	624.08	672.99	125 722.3	7.8	0.0	1.1
PFCs	0.11	361.34	42.29	63.97	64.95	58 751.6	1.5	0.0	0.1
SF_6	34.92	53.41	34.15	18.95	16.23	–45.7	–14.3	0.1	0.0
NF_3	NO	46.03	27.83	12.62	12.07	–	–4.3	–	0.0
Total GHG emissions excluding LULUCF	55 642.84	69 712.38	63 032.16	59 056.30	62 109.87	6.1	5.2	100.0	100.0
Total GHG emissions including LULUCF	61 652.28	77 038.02	70 087.95	66 098.75	69 448.12	7.2	5.1	–	–

Source: GHG emission data: Ireland's 2023 annual submission, version 2.
[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 CO_2 emissions.

21. In brief, Ireland's national inventory arrangements, led by EPA and its Office of Environmental Sustainability, were established in accordance with EU regulation 525/2013. There have been no changes in these arrangements since the BR4. In addition to the national GHG inventory, information on the EU ETS and non-EU ETS sectors is compiled and reported to the European Commission, along with information on the compliance of its non-EU ETS sectors (i.e. those sectors that are covered by the ESR) under the EU regulatory framework. The ERT noted that EPA is responsible for preparing the national GHG projections, taking into account the effects of PaMs under the current action plan and maintaining consistency with historical GHG inventory information.

2. Assessment of adherence to the reporting guidelines

22. The ERT assessed the information reported in the NC8 and BR5 of Ireland 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

23. Ireland provided in the NC8 a description of how its national system for the estimation of anthropogenic emissions by sources and removals by sinks of all GHGs not controlled by the Montreal Protocol is performing the general and specific functions defined in the annex to decision 19/CMP.1 in conjunction with decisions 3/CMP.11 and 4/CMP.11. The description includes most of the elements mandated by paragraph 30 of the annex to decision 15/CMP.1. The NC8 also references the NIR of the 2022 annual submission, which contains a description of the national system. The ERT took note of the review of any changes to the national system reflected in the report on the individual review of the 2022 annual submission of Ireland.

(b) Assessment of adherence to the reporting guidelines

24. The ERT assessed the information reported in the NC8 of Ireland and identified an issue relating to transparency, and thus adherence to the reporting guidelines for supplementary information. The finding is described in table I.4.

4. National registry

(a) Technical assessment of the reported information

25. In its NC8 Ireland 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 ERT took note of the review of any changes to the national registry reflected in the report on the individual review of the 2022 annual submission of Ireland.

(b) Assessment of adherence to the reporting guidelines

26. The ERT assessed the information reported in the NC8 of Ireland and identified an issue relating to transparency, and thus adherence to the reporting guidelines for supplementary information. The finding is described in table I.4.

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

1. Technical assessment of the reported information

27. Ireland reported information on its economy-wide emission reduction target in its BR5. For Ireland the Convention entered into force on 19 July 1994. Under the Convention Ireland 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.

28. 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 CO_2, CH_4, N_2O, HFCs, PFCs and SF_6 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.

29. 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. For 2030, a reduction target of 62 per cent below the 2005 level has been set for emissions covered by the EU ETS. 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, small industry 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. The ESR, the successor to the ESD, was adopted in 2018 and amended in 2023 with the target of reducing emissions covered under the ESR by 40 per cent below the 2005 level by 2030.

30. 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.

31. The European Commission set out its vision for a climate-neutral EU in November 2018, and in December 2019 presented the European Green Deal as a road map with actions for making the EU economy sustainable. The European Council endorsed in December 2019 the objective of making the EU climate-neutral by 2050. As part of the European Green Deal,

the 2050 climate-neutrality target was made binding in the first European Climate Law, adopted in 2021. It also increased the ambition of the 2030 emission reduction target to at least 55 per cent below the 1990 level. Member States will set out any increased ambition in the update of their national energy and climate plans.

32. Ireland has a national target of reducing its emissions to 20 per cent below the 2005 level by 2020 for ESD sectors. This target has been translated into binding quantified AEAs for 2013–2020. Ireland's AEAs change following a linear path from 46.89 Mt CO_2 eq in 2013 to 37.65 Mt CO_2 eq in 2020.[6] Under the ESR, Ireland has a national target of reducing emissions from covered sectors to 42 per cent below the 2005 level by 2030.

33. Ireland also reported on its longer-term target of reducing its GHG emissions by 51 per cent by 2030 relative to the 2018 level and achieving net zero emissions by 2050. The longer-term targets are set out in Ireland's Climate Act 2021. To achieve the targets, Ireland has adopted a carbon budget programme that comprises three successive carbon budgets for 2021–2025, 2026–2030 and 2031–2035 (provisional). The average annual reduction proposed over the first five-year period is 4.8 per cent; for the second period it is 8.3 per cent; and for the final (provisional) period it is 3.5 per cent. In addition, the EU and its member States are acting under their current NDC to achieve the joint binding target of a net domestic reduction of at least 55 per cent in GHG emissions by 2030 compared with the 1990 level. The Climate Act 2021 also commits Ireland to producing a long-term climate action strategy consistent with Ireland's target of carbon neutrality by 2050 not less than once every five years. The long-term climate action strategies identify additional measures and indicative pathways beyond 2030, including analyses of transition options across key sectors, and inform future policymaking, investments and community action.

34. The national targets are complemented by a suite of commitments by sector, including increasing the proportion of renewable electricity to up to 80 per cent by 2030 and significantly reducing transport emissions by 2030 for the energy sector, phasing out fluorinated gases in the industry sector and reducing emissions from the agriculture sector.

2. Assessment of adherence to the reporting guidelines

35. The ERT assessed the information reported in the BR5 of Ireland 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.

D. Information on policies and measures

1. Technical assessment of the reported information

36. Ireland provided in its NC8 and BR5 information on its PaMs[7] implemented, adopted and planned to fulfil its commitments under the Convention. Ireland's set of PaMs is similar to that previously reported, with a few exceptions. Since the NC7, the Climate Act 2021 was enacted, replacing the Climate Act 2015. The 2021 Act has enhanced the statutory framework for the responses to climate challenges in Ireland by creating more comprehensive policies and pathways at different levels of governance, addressing the limited role that local and regional governments had under the 2015 Act. As a result of the new Act, Ireland has updated and enhanced its PaMs to thoroughly address climate change issues that affect the local, national and regional environment.

37. A number of policies have ended since the NC7 submission. In the agriculture sector, the knowledge transfer programme (2019) and the agri-environment options scheme (2018) came to an end. Ireland's National Policy Position on Climate Action and Low Carbon Development (2014) was replaced by the Climate Act 2015, which has now been replaced by the Climate Act 2021. As of December 2021, the National Investment Framework for

[6] According to the EU transaction log.

[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.

Transport in Ireland replaced the 2015 Strategic Investment Framework for Land Transport. In 2020 the National Mitigation Plan (2017) was nullified as it did not comply with the Climate Act 2015. Lastly, the new National Sustainable Mobility Policy (published in 2022) has replaced Smarter Travel: A Sustainable Transport Future and the National Cycle Policy Framework.

38. Ireland 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. Ireland 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. Under the Climate Act 2021, Ireland has committed to reaching net zero emissions by 2050 and to reducing emissions by 51 per cent by 2030 compared with the 2018 level. To facilitate the achievement of these targets, the Cabinet Committee on Environment and Climate Change is tasked with ensuring the implementation of the Climate Act 2021 and other climate change commitments, such as a just transition, agriculture and land-use considerations, finance for climate action and renewable energy advancements.

39. Ireland also reported that the Climate Change Advisory Council, an independent advisory group, has had its role strengthened by the Climate Act 2021 and is now tasked with assessing and advising on how Ireland can achieve its transition to a low-carbon, climate-resilient and environmentally sustainable economy. The Council is also responsible for reviewing and reporting on the progress that Ireland has made in achieving its national policy goals and GHG emission reduction targets. Monitoring tools are in place to increase the transparency of progress towards decarbonization. In 2022, the Irish Parliament (Oireachtas) adopted CO_2 emission ceilings for each economic sector for three successive carbon budget periods: 2021–2025, 2026–2030 and 2031–2035 (provisional).

40. As a result of Ireland's assessment of the economic and social consequences of its response measures, the National Planning Framework (under Project Ireland 2040) was developed. This high-level framework will enable the coordination of national, regional and local policies and investments for climate change mitigation and adaptation undertaken by the public and private sectors. Ireland has also revised its National Development Plan for 2021–2030, in which the support of economic, social, environmental and cultural development within the country is set out. The National Development Plan and National Planning Framework will work coherently under Project Ireland 2040 to support the investment strategy for spatial planning in rural, regional and urban areas. The Irish Government has committed Exchequer funding of EUR 8 billion for retrofits of residential buildings by 2030, in line with the National Development Plan, with EUR 5 billion planned to come from carbon tax receipts. Funds from carbon tax receipts will also be targeted towards addressing fuel poverty and a just transition (EUR 3 billion) and the promotion of sustainable agricultural practices (EUR 1.5 billion).

41. Ireland reported that its actions to identify and review its own policies and practices that encourage activities that lead to greater levels of emissions are described in its Climate Action Plan 2021, which provides a road map for reducing GHG emissions across sectors. Action three in the Plan, which relates to streamlining climate-related reporting processes in order to better distinguish between key actions that deliver significant emissions abatement and supporting actions, encourages greater transparency in Ireland's progress towards decarbonization. Each action under the Climate Action Plan 2021 has a timeline to ensure its completion, and progress reports are published every quarter by the Climate Action Delivery Board (which comprises secretaries-general of Government departments). The ERT noted that Ireland has achieved a 79 per cent delivery rate of its Climate Action Plan 2021 actions.

42. In its reporting on PaMs, Ireland provided the estimated emission reduction impacts for all of its PaMs. The Party explained during the review that estimated impacts were zero for some PaMs because of the short time between the implementation of these PaMs and the year for which the estimated impacts were reported, and that the estimated impacts for the measures on improved fuel economy of the private car fleet and on domestic heat pumps were reported as zero because the associated emission reductions are reflected in other PaMs.

43. The Party did not describe its general methodology for estimating the impacts of its PaMs. During the review, Ireland explained that the methodology used to determine the quantitative estimates of the impacts of individual PaMs is derived from the Sustainable Energy Authority of Ireland's National Energy Modelling Framework. The ERT noted that the estimated impacts of some PaMs have changed significantly since the BR4; for example, the impacts of the Sustainable Energy Authority of Ireland's Large Industry Programme. During the review, Ireland explained that the changes in estimated impacts are due to the updated energy projection modelling used to estimate the mitigation impacts of PaMs.

44. The key overarching related cross-sectoral policy in the EU is the 2020 climate and energy package, adopted in 2009, which includes the revised EU ETS and the ESD. The package is supplemented by renewable energy and energy efficiency legislation and legislative proposals on the 2020 targets for CO_2 emissions from cars and vans, the carbon capture and storage directive, and the general programmes for environmental conservation, namely the 7th Environment Action Programme and the clean air policy package. The 2021 European Climate Law, which forms part of the European Green Deal, made climate neutrality by 2050 legally binding and raised the EU-wide 2030 emission reduction target to at least 55 per cent compared with the 1990 level. In 2023, the EU adopted a series of legislative acts, collectively referred to as Fit for 55, intended to help achieve the new 2030 target. These new laws strengthened both the ESR and EU ETS 2030 targets, extended the EU ETS to include maritime shipping in 2024 and established the Social Climate Fund to address equitability of mitigation impacts. They also created the EU ETS 2 to cover at the point of distribution most fuel used in sectors not covered by the EU ETS, beginning in 2027.

45. The 2021–2030 EU-wide policies are operationalized through the national energy and climate plans of EU member States, which should set out national objectives for each of the five dimensions of the Energy Union, namely energy security; the internal energy market; energy efficiency; decarbonization; and research, innovation and competitiveness. The national energy and climate plans are periodically updated to reflect changes to EU policy, such as the implementation of the European Green Deal. Ireland's National Energy and Climate Plan specifies which commitments and key actions will be developed to reach the EU-level targets for 2021–2030, namely a 32 per cent share of renewable energy in the energy mix, 15 per cent electricity interconnection (to allow at least 15 per cent of the electricity produced on its territory to be transported to neighbouring countries), 32.5 per cent increase in energy efficiency (compared with 2007 EU modelling projections of the expected energy use in 2030) and a 30 per cent reduction in GHGs in the non-EU ETS sectors. The list of commitments and key actions included in Ireland's Draft National Energy and Climate Plan 2021–2030 is based on four scenarios: two baseline (WEM) scenarios and two advance (WAM) scenarios. The commitments and key actions are being implemented for five dimensions: decarbonization – GHG emissions and removals, and renewable energy; energy efficiency; energy security; internal energy market; and research, innovation and competitiveness. A revised draft National Energy and Climate Plan is currently in development and will set out how the more ambitious targets under the Fit for 55 package, including in relation to energy efficiency and renewable energy, will be pursued.

46. Ireland introduced national-level policies to achieve its targets under the ESD, the ESR and domestic emission reduction targets. The key policies reported are those included in the successive climate action plans required to be developed under the Climate Act 2021. Some of the most significant measures of the Climate Action Plan 2021 include commitments to increase the proportion of renewable energy to up to 80 per cent by 2030; significantly reduce transport emissions by 2030; implement the National Retrofit Plan, which takes an all-of-Government approach to delivering Ireland's residential retrofitting and decarbonization targets; ensure a faster uptake of carbon-neutral heating systems in the industry sector; and reduce emissions associated with agriculture. The Climate Action Plan 2021 also places a just transition at its core, which is especially innovative. The mitigation effect of the increase in renewable sources in the electricity sector because of the application of the EU directive on the promotion of the use of energy from renewable sources (directive 2009/28/EC) and amending and subsequently repealing EU directives 2001/77/EC and 2003/30/EC is the most significant. To comply with the directive, the Irish Government set a target of 12 per cent renewable heat by 2020. This renewable heat target, in conjunction with renewable fuel penetration in the transport sector and renewable electricity targets,

forms part of Ireland's overall renewable energy target of 16 per cent by 2020 under EU directive 2009/28/EC. By 2020 the equivalent measure under the WAM scenario assumes that Ireland will have achieved a 9.8 per cent renewable heat share in 2020. Other policies that have delivered significant emission reductions are the support schemes for renewable electricity, the three renewable energy feed-in tariff schemes for providing a floor price for renewable energy and the replacement of coal-fired electricity generation with natural gas electricity generation.

47. Ireland highlighted the domestic mitigation actions that are under development, such as those being revised to align with the more ambitious 2030 target of the EU to reduce domestic emissions by at least 55 per cent compared with the 1990 level. The ERT noted that Ireland has developed a number of PaMs for which two versions exist – a WEM version and a more ambitious WAM version. Among the mitigation actions that provide a foundation for significant additional action are the promotion of the use of energy from renewable sources, the use of low-carbon fuels, the carbon tax and the different programmes for the improvement of the energy efficiency of buildings (WAM version). The ERT noted Ireland's plan to ringfence an increase in carbon tax revenue for climate action. Given that carbon tax revenue is a key part of funding a just transition, the ERT notes that the transparency of Ireland's future submissions could be improved by improving the description of further actions, which could be done by incorporating into their design detailed data on social welfare payments; information on plans for social welfare, including total funding and funds distribution per year; clarification of what is understood as 'more sustainable farming practices' in the context of the Rural Environment Protection Scheme; and any information that could clarify the total amount of carbon tax revenue dedicated to the funding of just transition, the distribution of carbon tax revenue per year, the timeline of the plan, the beneficiary sectors and individuals, and welfare distribution criteria.

48. The ERT identified efficiency improvement in industrial end-use sectors as a mitigation action of particular interest because of its significant potential for reducing electricity demand and emissions and for replacing fossil fuels with renewable energy while at the same time being a voluntary agreement. In addition, the ERT also identified the reduction of fertilizer and manure use on cropland as of special interest because of its innovation and replicability as a voluntary agreement affecting the agriculture sector and because of its impact in terms of potential mitigation of CH_4 emissions. As a final action of particular interest, the ERT identified the Waste Action Plan for a Circular Economy because of its innovation and value as a transition tool to a more sustainable economy. With respect to the Waste Action Plan for a Circular Economy, the ERT notes that including additional objectives on circularity for water consumption and food waste would improve future submissions. Table 5 provides a summary of the reported information on the PaMs of Ireland.

Table 5
Summary of information on policies and measures reported by Ireland

Sector	*Key PaMs*	*Estimated mitigation impact in 2020 (kt CO_2 eq)*	*Estimated mitigation impact in 2030 (kt CO_2 eq)*	*Estimated mitigation impact in 2035 (kt CO_2 eq)*
Policy framework and cross-sectoral measures	Carbon tax WEM	395.71	1 418.00	1 395.00
	Carbon tax WAM	401.52	1 278.10	1 284.40
	EU ETS	NE	NE	NE
	ESD	NE	NE	NE
Energy				
Energy efficiency	Supplier obligation scheme WEM	791.50	1 736.80	1 640.50
	Public Sector Programme WAM (energy consumption)	520.14	501.20	503.50
Energy supply and renewable energy	Increase in renewable energy sources in the electricity sector WEM	2 557.37	7 188.70	879.10
	Increase in renewable energy sources in the electricity sector WAM	2 604.41	8 339.70	11 082.20
Transport	Low-carbon fuels in transport	509.57	577.50	512.70
IPPU	–	–	–	–

Sector	*Key PaMs*	*Estimated mitigation impact in 2020 (kt CO_2 eq)*	*Estimated mitigation impact in 2030 (kt CO_2 eq)*	*Estimated mitigation impact in 2035 (kt CO_2 eq)*
Agriculture	Fertilizer use measures	0.00	957.60	1 043.80
LULUCF	New afforestation	0.00	267.00	692.90
Waste	EU landfill directive (directive 1999/31/EC)	624.70	801.20	1 649.70
Other		–	–	–

Note: The estimated mitigation impacts are estimates of emissions of CO_2 eq avoided in a given year as a result of the implementation of mitigation actions, unless otherwise specified.

49. The Climate Act 2021 provides indicative ranges of emission reductions for each sector of the economy up until 2030 and sets out the actions needed for Ireland to deliver on its climate targets. Ireland highlighted the system and institutional arrangements in place to periodically assess and monitor progress in the implementation of the PaMs and their impacts. The Department of the Prime Minister (Taoiseach) monitors progress in implementing the actions and associated measures listed in the Annex of Actions to the Climate Act 2021 and leads the preparation of reports on the delivery of these actions. At the end of each quarter, a delivery report is compiled and provided to the Government ahead of its publication. The progress report for the fourth quarter of 2022 shows a delivery rate of 64 per cent. The quarterly reports also provide information on the status of implementation of mitigation actions by sector, on funds allocated and funding authorities, on "high impact" measures not delivered, and on how challenges to climate action implementation are being overcome. In the opinion of the ERT these reports provide transparency in progress towards decarbonization and a high level of monitoring of the extent to which mitigation actions achieve their stated objectives in a given year (for every yearly climate action plan).

50. During the review, the ERT noted that the Party's reporting in its next NC could be improved by identifying and reporting uncertainties in GHG emissions, the risks of significant releases of CO_2 and CH_4 and the implications of such releases for reaching climate neutrality; analysing how carbon pricing could be combined with fiscal policies to redistribute income across society and ensure a just transition (similar to the Social Climate Fund that is part of the EU Fit for 55 package) and evaluating the effects of a carbon tax; analysing the effects of the distributional socioeconomic impacts of the transition to a net zero society in the labour market; establishing a framework of social indicators as a reliable measure of the redistributive impacts of the transition to a net zero society and a tool to activate further PaMs in this area; and reporting additional PaMs for the sectors with a higher potential for emission reductions.

2. Assessment of adherence to the reporting guidelines

51. The ERT assessed the information reported in the NC8 and BR5 of Ireland 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

52. In its NC8, Ireland reported that the implementation of the Kyoto Protocol is underpinned by the Climate Act 2015. The overall responsibility for climate change policymaking lies with the Department of the Environment, Climate and Communications, and a number of national institutions are involved in policy implementation. The Climate Act 2021 establishes a legally binding framework with clear targets and commitments. Policy actions for each sector, as described in the annual climate action plans, are monitored by the Department of the Prime Minister (Taoiseach) and the Department of the Environment, Climate and Communications to ensure complete and timely implementation. Government ministers are responsible for meeting the legally binding sectoral targets and each minister is

accountable for the relevant sector's progress, which is assessed by a parliamentary committee each year. The Climate Change Advisory Council prepares and submits carbon budgets to the Minister for the Environment, Climate and Communications, who is responsible for Ireland's policy on climate change and has an overarching role in the delivery of the policy.

53. For the second commitment period of the Kyoto Protocol, from 2013 to 2020, Ireland committed to contributing to the joint EU effort to reduce GHG emissions by 20 per cent below the base-year level (see paras. 27–29 above).

54. The Party has arrangements and enforcement procedures to meet its commitments under the Kyoto Protocol, including procedures for addressing non-compliance. Ireland described the administrative procedures associated with the Climate Act 2021, such as the annual revision to the climate action plan and ministerial responsibility for sectors, detailing how these procedures act as review mechanisms and opportunities to re-adjust or refocus actions to ensure that targets and commitments under the Kyoto Protocol are achieved. The climate action plans and long-term climate action strategies, together with carbon budgets and sectoral ceilings, are key mechanisms used to ensure that Ireland meets its commitments and targets. Ministers are required to annually give an account of their performance, and actions are monitored by the Department of the Prime Minister (Taoiseach) and the Department of the Environment, Climate and Communications to ensure their implementation.

55. Ireland has provisions in place to make information on legislative arrangements and administrative procedures related to compliance and enforcement publicly accessible. Ireland noted that the Climate Act 2021 places a just transition at its core. The National Dialogue on Climate Action is the primary means by which stakeholders and the public are engaged with climate action towards net zero. Under the umbrella of the National Dialogue on Climate Action a number of 'climate conversations' were held in 2021 engaging individuals and networks and establishing the National Climate Stakeholder Forum as the central consultative forum on climate issues in 2022. The National Climate Stakeholder Forum will meet three times a year to inform climate action plans. Ireland has also initiated the National Youth Assembly on Climate to gather recommendations regarding areas of concern. Public statements and annual review reports of the Climate Change Advisory Council, together with other public awareness initiatives, are also used to inform climate policy.

56. Ireland 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. The Climate Act 2021 provides a statutory basis for a national climate objective, which commits Ireland to pursuing and achieving transition to a climate-resilient, biodiversity-rich, environmentally sustainable and climate-neutral economy by 2050. Ireland's Offshore Renewable Energy Development Plan includes an assessment of marine biodiversity. The Maritime Area Planning Act 2021 provides a modern, efficient and Aarhus Convention compliant regulatory and marine planning framework to enable the sustainable development of Ireland's offshore renewable energy resource, and together with the National Marine Planning Framework, Ireland's first marine spatial plan, will provide for long-term forward planning for Ireland's maritime area, including the effective management of marine activities, sustainable use of marine resources, and protection of marine environment and biodiversity. Expected in 2023, the Offshore Renewable Energy Development Plan II is a national-level spatial strategy that supports the implementation of the statutory process for the designation of areas for offshore renewable energy set out in the Maritime Area Planning Act that will underpin the transition to a plan-led Future Framework for offshore renewable energy development in Ireland. Ireland's agriculture sector development is aligned with the EU Common Agricultural Policy's objectives, including the objectives to contribute to halting and reversing biodiversity loss, enhance ecosystem services, and preserve habitats and landscapes. Ireland's Common Agricultural Policy Strategic Plan incorporates a range of measures for more climate-friendly farming that include enhancing the protection of wetlands and increasing space for nature and biodiversity-rich land areas and promoting organic farming. Ireland's Climate Action Plan 2021 includes an intense programme of peatland habitat

restoration. Ireland's forestry legislation requires approval from the Minister of Agriculture, Food and the Marine for afforestation, forest road construction, aerial fertilization and tree felling. Landowners are obliged to replant forests after clear-felling. In addition, the Department of Agriculture, Food and the Marine provides information to help manage the use of fuelwood products, including the certification and verification of firewood and other wood energy products.

(b) Assessment of adherence to the reporting guidelines

57. The ERT assessed the information reported in the NC8 of Ireland 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

58. Ireland 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. The ERT noted that this information is included in Ireland's 2022 annual submission, not in its NC8.

59. The NC8 includes information on how Ireland promotes and implements the decisions of ICAO and IMO to limit emissions from aviation and marine bunker fuels. Ireland has committed to participating in CORSIA and reports emission data to ICAO through the CORSIA central registry. In addition, Ireland participates in multilateral efforts to reduce maritime emissions through IMO and by applying regional EU measures, and supports ambition within the Fit for 55 package of measures, including ambition for the reduction of shipping emissions. Ireland also engages in other related activities, such as the Shipping High Ambition Coalition, which promotes ambitious targets for maritime GHG emission reductions through the IMO Marine Environment Protection Committee; contributes to the European Sustainable Shipping Forum, the IMO Intersessional Working Group on Reduction of GHG Emissions from Ships and the IMO Marine Environment Protection Committee; and has co-sponsored an EU proposal introducing a global GHG fuel standard for maritime fuels.

60. Further information on how Ireland 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. In its 2022 NIR, Ireland reported on its related activities as a member State of the EU, noting that its commitments under the Kyoto Protocol are being implemented jointly with the EU and that the minimization of adverse impacts on developing countries is largely dictated by the European Commission's policy on climate change. Ireland noted that the impact assessments associated with EU policies allow any adverse impacts to be identified and limited at an early stage. These impact assessments provide a framework to ensure that Ireland's implementation of climate policy also minimizes any adverse impacts.

61. The Party reported information in its 2022 NIR on what it prioritized in implementing its commitments under Article 3, paragraph 14, including cooperating with other Parties included in Annex I to the Convention as well as non-Annex I Parties on the development of improved cost-effective technologies for the capture, transport and long-term safe storage of CO_2; aligning with the EU legislation that ensures that the price of coal produced in EU member States is not lower than the price of coal of similar quality available from third countries by phasing out subsidies on fossil fuel production and consumption by 2010; assisting developing country Parties highly dependent on the export of fossil fuels, such as by cooperating on the Mediterranean Solar Plan, helping to create a subregional electricity market between Algeria, Morocco and Tunisia, and supporting energy efficiency and renewable energy projects in relevant countries; and strengthening the capacities of countries engaged in the export of fossil fuels.

(b) Assessment of adherence to the reporting guidelines

62. The ERT assessed the information reported in the NC8 of Ireland and identified an issue relating to completeness, and thus adherence to the reporting guidelines for supplementary information. The finding is described in table I.4.

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

63. Ireland reported in its BR5 that it intends to use units from market-based mechanisms under the Kyoto Protocol to meet its commitment under the ESD. It reported in CTF tables 4 and 4(b) that it used units from market-based mechanisms in 2019 and 2020 equivalent to 17.7 and 18.8 per cent respectively of its emissions under the ESD. Given that the contribution of LULUCF activities is not included in the joint EU target under the Convention, reporting thereon is not applicable to Ireland. The ERT noted that the transparency of Ireland's reporting could be improved by reporting "NA" in the relevant cells in CTF table 4. Table 6 illustrates Ireland'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 Ireland
(kt CO_2 eq)

Year	*ESD emissions*	*AEA*	*Use of units from market-based mechanisms*	*AEAs transferred to (–) or from (+) other Parties*	*Annual AEA surplus/deficit*	*Cumulative AEA surplus/deficit*
2013	42 206.81	46 891.93	–	–	4 685.13	4 685.13
2014	41 663.02	45 760.93	–	–	4 097.90	8 783.03
2015	43 037.17	44 629.92	–	–	1 592.74	10 375.78
2016	43 798.18	43 498.91	–	–	–299.27	10 076.51
2017	43 828.74	40 885.06	–	–	–2 943.69	7 132.82
2018	45 378.56	39 807.15	–	–	–5 571.41	1 561.41
2019	45 579.58	38 729.24	5 288.93	–	–1 561.41	0.00
2020	44 721.18	37 651.32	2 919.91	4 149.94	0.00	0.00

Sources: Ireland's BR5, BR5 CTF table 4(b) and EU transaction log.
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

64. The ERT assessed the information reported in the BR5 of Ireland and identified an issue relating to completeness, and thus adherence to the UNFCCC reporting guidelines on BRs. The finding is described in table II.2.

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

65. In assessing the Party's contribution towards achievement of the 2020 joint EU target on the basis of the information reported in its BR5, the ERT noted that, under the EU 2020 climate and energy package, Ireland committed to reducing its emissions under the ESD to 20 per cent below the 2005 level by 2020 (see para. 32 above). This target has been translated into binding quantified AEAs for 2013–2020. In 2020 Ireland's ESD emissions were 18.8 per cent (7,069.86 kt CO_2 eq) above the AEA. Taking the use of market-based mechanisms into account, Ireland has a cumulative deficit of 0.00 kt CO_2 eq with respect to its AEAs between 2013 and 2020.

66. The ERT noted that the Party reported that 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. See the report on the review of the BR5 of the EU for further details. Therefore, the ERT concluded that, on the basis of the information reported in the BR5 and provided during the review, Ireland has met its 2020 commitment under the Convention through its contribution to achieving the joint EU target.

67. The ERT noted that the Party's ESD emissions in 2020 exceed the AEA for 2020. To achieve its 2020 target under the ESD, Ireland used 2,919.9 kt CO_2 eq ESD-eligible international carbon credits acquired through purchases made under the first commitment period of the Kyoto Protocol (2008–2009) and purchases made between 2019 and 2021, and planned to purchase an additional 4,149.94 kt CO_2 eq surplus AEAs from EU member States that have overachieved their target under the flexibility allowed under the ESD to cover its AEA deficit. The ERT noted that Ireland's NC8 indicates that the quantity of surplus AEAs that Ireland intended to purchase to meet its AEA deficit was 3.8 million; however, by the date of purchase, which was in 2023, after the NC8 was submitted, the amount that Ireland required and that was transferred from another EU member State was 4.1 million AEAs, as noted above.

F. Projections

1. Projections overview, methodology and results

(a) Technical assessment of the reported information

68. Ireland reported in its BR5 and NC8 updated projections for 2030–2040 relative to actual inventory data for 2020 under the WEM scenario. The WEM scenario reported by Ireland includes PaMs implemented by the end of 2020, including those in the National Development Plan 2018–2027 and the Climate Action Plan 2019.

69. In addition to the WEM scenario, Ireland reported the WAM scenario. The WAM scenario includes PaMs specified in the Climate Action Plan 2021, which was published at the end of November 2021. Ireland provided a definition of its scenarios, explaining that its WEM scenario includes PaMs specified in the Climate Action Plan 2019, while its WAM scenario includes those in the Climate Action Plan 2021 but does not include PaMs added to or strengthened in the Climate Action Plan 2023, which was published in December 2022. The scenario projections for the Climate Action Plan 2023, which includes sufficient PaMs to meet the legally binding targets set out in Ireland's Climate Act 2021, were published in May 2023. The definitions indicate that the scenarios were prepared in accordance with the UNFCCC reporting guidelines on BRs. Ireland did not report a WOM scenario in its NC8 and BR5.

70. The projections are presented on a sectoral basis, using sectoral categories that are different from those used in the reporting on mitigation actions but consistent with Ireland's GHG inventory, and on a gas-by-gas basis for CO_2, CH_4, N_2O, PFCs, HFCs and SF_6 (treating PFCs and HFCs collectively in each case) as well as NF_3 for 2030–2040. The projections are also provided in an aggregated format for each sector and for a Party total using GWP values from the AR4. Ireland reported on key factors and activities affecting emissions for each sector.

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

71. The methodologies used for the preparation of the projections of demand-side energy is different from that used for the preparation of the emission projections for the NC7. The I3E model used for these projections is an inter-temporal computable general equilibrium model in which all existing economic transactions among diverse economic agents are quantified and various mechanisms behind changes in fuel demand are fully captured. It is therefore suitable for modelling the dual nature of Ireland's economy. For the non-energy parts of the model, no substantial changes have been made since the previous submission. For energy projections, in addition to the I3E model, supply-side models are used, such as

the Plexos integrated model for power supply, in addition to the data provided by the individual operators for aviation. For the non-energy parts of the model, simple calculations are used for the LULUCF sector using the projected land-use change for six subcategories of land use. Projections for the agriculture sector capture dynamic interrelationships and interactions not only in Ireland but also in the EU and the rest of the world. Emissions from the waste sector are estimated from the projections of the quantity of waste along with its organic content. Ireland provided information on changes since the submission of its NC7 in the assumptions, methodologies, models and approaches used for the projection scenarios.

72. To prepare its projections, Ireland relied on key underlying assumptions relating to GDP growth rate, population and its growth rate, number of households, international fossil fuel energy prices, etc. The assumptions were updated on the basis of the most recent economic developments known at the time of the preparation of the projections. These assumptions are reported in CTF table 5. Ireland did not report the main differences in the assumptions and the projection trends in the NC7 and BR4. The ERT notes that Ireland could improve its reporting by providing the relevant information in its future submissions.

73. Ireland undertook sensitivity analyses that focused on two sectors: agriculture and transport. For the agriculture sector, a 10 per cent increase in the farm gate milk price is expected to result in an approximate 10 per cent increase in CH_4 emissions from enteric fermentation over 10 years through growth in the size of the dairy herd, assuming the size of the herd of beef cows remains stable. The sensitivity analysis for the transport sector shows higher emissions when a lower crude oil price is assumed, although an explanation was not provided in the NC8. The ERT noted that the energy, agriculture and waste sectors were the focus of the Party's BR4. Given that a new model (I3E) was introduced for preparing the projections reported in the NC8 and BR5, the ERT considers that an analysis of the new model would be a useful addition to Ireland's reporting. The ERT notes that the transparency of reporting on the economy as a whole and on specific sectors could be improved by conducting a sensitivity analysis of GDP growth as a key driver of emissions, including a summary of previous sector-specific sensitivity analyses, and presenting the change in inputs and associated change in emissions in a table in order to illustrate the entirety of the projections.

(c) Results of projections

74. 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. As noted in paragraph 69 above, the WEM scenario covers the Climate Action Plan 2019 and the WAM scenario covers the Climate Action Plan 2021, while Ireland's latest plan is the Climate Action Plan 2023, published in December 2022 (presented to the ERT during the review week). The projections associated with the 2023 plan, which are to be released in May 2023, will be important to take note of because it is the Climate Action Plan 2023 that sets out the actions needed to meet the national target of a reduction in emissions of 51 per cent (compared with the 2018 level) for 2030 and the legally binding sectoral ceilings for the 2021–2025 and 2026–2030 carbon budgets.

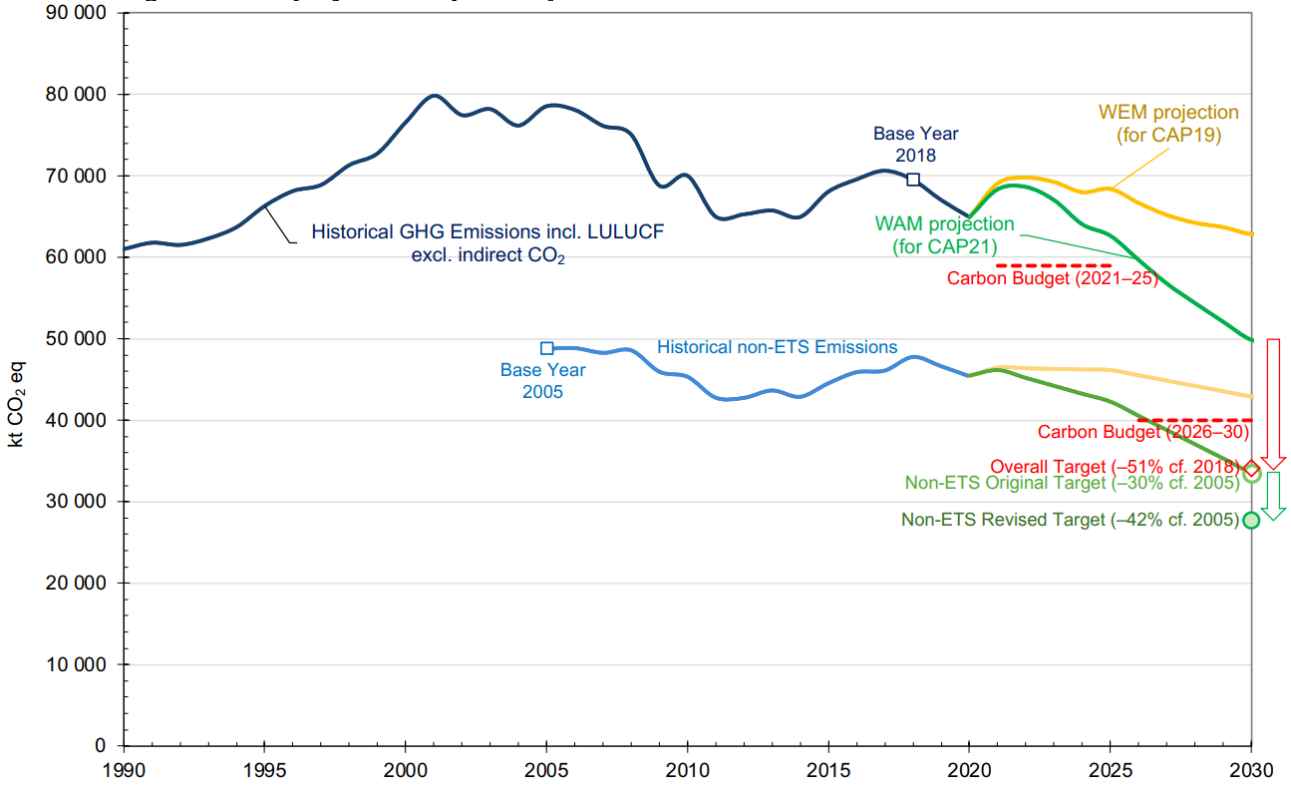
Table 7
Summary of greenhouse gas emission projections for Ireland

	GHG emissions (kt CO_2 eq/year)	*Change in relation to 1990 level (%)*	*Change in relation to 2020 level (%)*
Inventory data 1990	54 823.19	NA	NA
Inventory data 2020	58 032.34	5.9	NA
WEM projections for 2030	51 838.91	–5.4	–10.7
WAM projections for 2030	41 598.84	–24.1	–28.3
WEM projections for 2040	48 458.33	–11.6	–16.5
WAM projections for 2040	34 981.90	–36.2	–39.7

Sources: Ireland's BR5, NC8 and updated projections provided by Ireland during the review.
Note: The projections are of GHG emissions excluding LULUCF and excluding indirect CO_2.

Figure 1

Greenhouse gas emission projections reported by Ireland



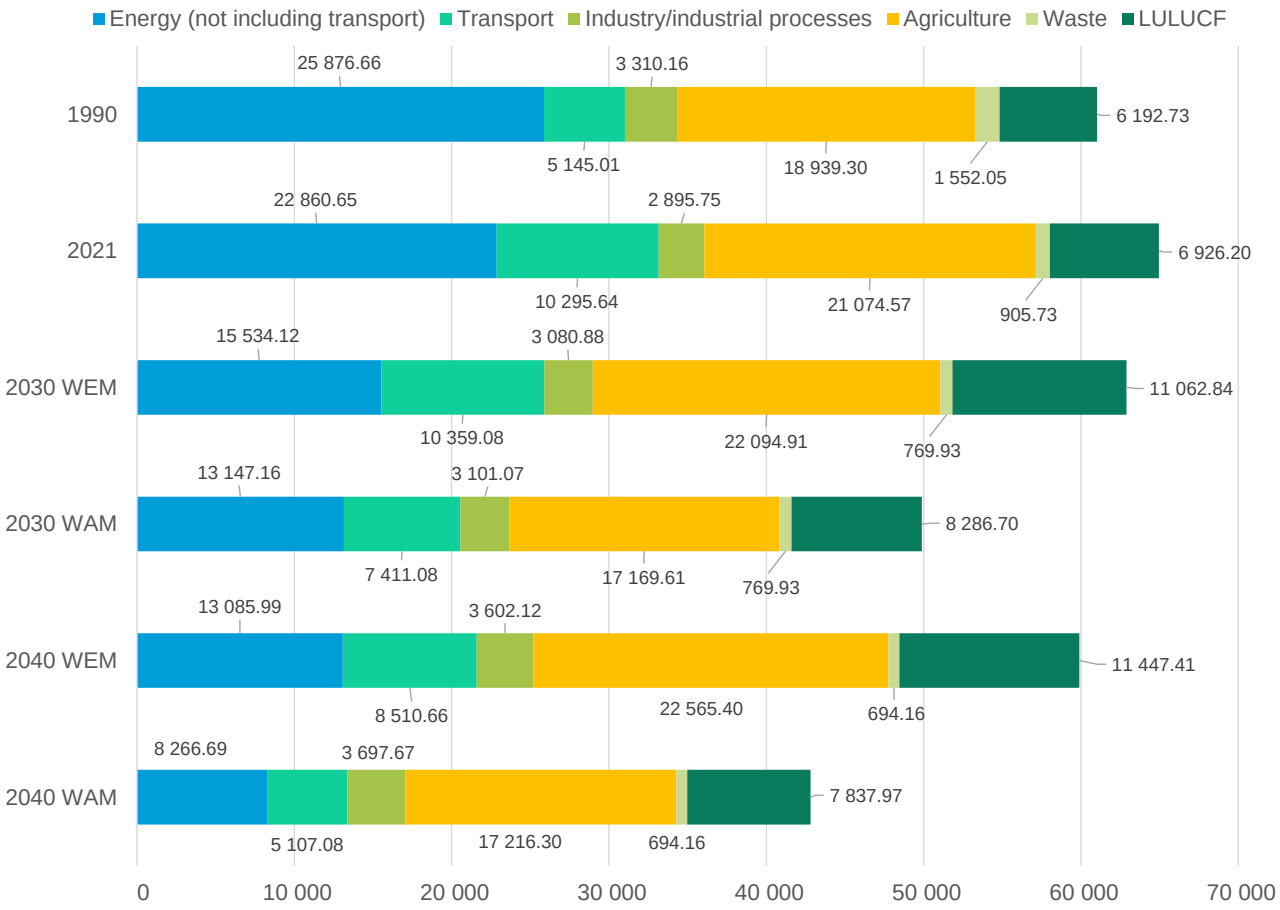
Sources: Ireland's BR5, BR5 CTF tables 1 and 6, and Climate Action Plan 2023.

Notes: The emission projections include LULUCF. In the figure, "non-ETS" refers to sectors that are not covered by the EU ETS. The WEM projection includes PaMs from the Climate Action Plan 2019 while the WAM projection includes PaMs from the Climate Action Plan 2021.

75. Ireland's total GHG emissions excluding LULUCF and excluding indirect CO_2 are projected under the WEM scenario to decrease by 5.4 and 11.6 per cent below the 1990 level in 2030 and 2040 respectively. When including LULUCF, total GHG emissions excluding indirect CO_2 are projected under the WEM scenario to increase by 3.1 per cent above the 1990 level in 2030 and decrease by 1.8 per cent below the 1990 level in 2040. Under the WAM scenario, emissions in 2030 and 2040 are projected to be lower than those in 1990 by 24.1 and 36.2 per cent respectively without LULUCF and 18.2 and 29.8 per cent respectively with LULUCF.

76. Ireland presented the WEM and WAM scenarios by sector for 2030 and 2040, as summarized in figure 2Figure and table 8.

Figure 2
Greenhouse gas emission projections for Ireland presented by sector
(kt CO_2 eq)



Source: Ireland's BR5 CTF table 6 (updated projections were provided by Ireland during the review).

Table 8
Summary of greenhouse gas emission projections for Ireland presented by sector

	GHG emissions and removals (kt CO_2 eq)					*Change (%)*			
		2030		*2040*		*1990–2030*		*1990–2040*	
Sector	*1990*	*WEM*	*WAM*	*WEM*	*WAM*	*WEM*	*WAM*	*WEM*	*WAM*
Energy (not including transport)	25 876.66	15 534.12	13 147.16	13 085.99	8 266.69	–40.0	–49.2	–49.4	–68.1
Transport	5 145.01	10 359.08	7 411.08	8 510.66	5 107.08	101.3	44.0	65.4	–0.7
Industry/ industrial processes	3 310.16	3 080.88	3 101.07	3 602.12	3 697.67	–6.9	–6.3	8.8	11.7
Agriculture	18 939.30	22 094.91	17 169.61	22 565.40	17 216.30	16.7	–9.3	19.1	–9.1
LULUCF	6 192.73	11 062.84	8 286.70	11 447.41	7 837.97	78.6	33.8	84.9	26.6
Waste	1 552.05	769.93	769.93	694.16	694.16	–50.4	–50.4	–55.3	–55.3
Total GHG emissions excluding LULUCF	**54 823.19**	**51 838.91**	**41 598.84**	**48 458.33**	**34 981.90**	**–5.4**	**–24.1**	**–11.6**	**–36.2**

Source: Ireland's BR5 CTF table 6 (updated projections were provided by Ireland during the review).

77. According to the projections reported for 2030 under the WEM scenario, the most significant absolute emission reductions are expected to occur in the energy (excluding transport) sector (which contributed approximately one third of total GHG emissions

including LULUCF in 2020), amounting to projected reductions of 40.0 per cent between 1990 and 2030. The pattern of projected emissions reported for 2040 under the same scenario remains the same. In the energy sector, the energy industry leads new technology developments and the energy demand sectors follow its lead. As shown in table 8, emissions from the transport sector (which are approximately 16 per cent of total emissions) will approximately double from 1990 to 2030, but are expected to stabilize at their 2030 level. Agriculture sector emissions (which are approximately one third of total emissions) are expected to be stable; this sector is difficult to abate under the WEM scenario (see also the assessment in paras. 19 and 78 above). Regarding the LULUCF sector, Ireland clarified during the review that the driver of the notable growth in emissions is drained organic soils. Maturing forest stocks offset this growth only to a limited extent.

78. Under the WAM scenario, the emission reductions are strengthened for all sectors compared with the WEM scenario. Although limited effects are expected in the agriculture and LULUCF sectors in the WEM scenario, large additional reductions (around a half of those in the energy industry) are expected in these sectors for the WAM scenario.

79. Ireland presented the WEM and WAM scenarios by gas for 2025, 2030, 2035 and 2040, as summarized in table 9, showing that GHG emission reductions are primarily attributed to CO_2 emission reductions while the WEM scenarios result in an increase in CH_4 emissions.

Table 9
Summary of greenhouse gas emission projections for Ireland presented by gas

	GHG emissions and removals (kt CO_2 eq)					*Change (%)*			
		2030		*2040*		*1990–2030*		*1990–2040*	
Gas[a]	*1990*	*WEM*	*WAM*	*WEM*	*WAM*	*WEM*	*WAM*	*WEM*	*WAM*
CO_2	32 944.42	29 336.90	24 054.99	25 506.98	17 364.55	–11.0	–27.0	–22.6	–47.3
CH_4	14 180.75	15 156.59	11 157.78	15 442.20	11 077.17	6.9	–21.3	8.9	–21.9
N_2O	7 663.43	6 649.10	5 669.54	6 607.66	5 543.14	–13.2	–26.0	–13.8	–27.7
HFCs	0.59	575.93	596.13	736.43	831.98	97 515.3	100 939.0	124 719.4	140 913.5
PFCs	0.12	97.29	97.29	134.71	134.71	80 975.0	80 975.0	112 154.2	112 154.2
SF_6	33.88	21.08	21.08	27.55	27.55	–37.8	–37.8	–18.7	–18.7
NF_3	NO	2.03	2.03	2.80	2.80	–	–	–	–
Total GHG emissions without LULUCF	**54 823.19**	**51 838.91**	**41 598.84**	**48 458.33**	**34 981.90**	**–5.4**	**–24.1**	**–11.6**	**–36.2**

Sources: Ireland's BR5 CTF table 6 and updated projections provided by Ireland during the review.
[a] Ireland did not include indirect CO_2 emissions in its projections.

80. The set of legally binding targets for Ireland includes an overall target of a 51 per cent reduction in emissions in 2030 from the 2018 level, carbon budgets for 2021–2025 and 2026–2030, and sectoral ceilings under the Climate Act 2021. In addition, the 2030 ESR target (i.e. for sectors not covered under the EU ETS) and AEAs are also legally binding for Ireland as a member State of the EU. The revised and enhanced target for Ireland is a 42 per cent reduction (the 2018 ESR target was a 30 per cent reduction) in emissions in 2030 compared with the 2005 level, which was published by the European Commission on 26 April 2023. The review week was conducted prior to the publication of the estimates on which the Climate Action Plan 2023 is based, but the Climate Action Plan 2023 is expected to fill in the gaps in the Climate Action Plan 2021 in terms of achieving the reduction target. Given that at the time of the review Ireland was already almost in the middle of the first carbon budget period (2021–2025), it is apparent from the projections shown in figure 1 that Ireland will face a considerable challenge to meet the emission levels required by that period. However, Ireland has developed a 'plan–do–check–act' process for following up PaMs, and monitoring and evaluation of their progress against key performance indicators has been conducted. The ERT notes that the question will be whether this process can sufficiently strengthen the appropriate PaMs in a timely manner.

81. The following are technical observations by the ERT. A sector-by-sector analysis shows that the energy industry is responsible for the largest emission reductions; however, the closure of peat- and coal-fired power plants has already been factored into the future trends, and the principal measure will be the expansion of renewable energy. The 2030 target for share of renewable electricity (80 per cent of projected domestic demand) appears to be quite close to reaching its maximum potential (i.e. close to 100 per cent of projected domestic demand). However, the ERT does not believe that such a limit for renewable energy exists, considering the potentially larger domestic demand for electricity than projected (by promoting electrification), as well as international demand, both of which could present a valid case for a renewable energy production target that is higher than 100 per cent of currently projected domestic demand.

82. In response to a request of the ERT, the Party provided a table of electrification projections. According to these data, even under the WAM scenario (Climate Action Plan 2021), the electrification rates are only 45 per cent for the residential sector, 44 per cent for the industrial sector, 75 per cent for the service sector, 28 per cent for the agriculture sector and 24 per cent for the transport sector in 2040, leaving considerable room for electrification to reach 100 per cent. Since the energy demand that cannot be electrified is quite small, it might ultimately be possible to shift most of the energy demand for heat and transport to electrical power. In addition, Ireland has a high potential for wind power generation owing to its favourable wind conditions, which would make it possible to supply renewable electricity at lower generation costs than natural gas. Furthermore, there is the potential for a scenario under which more than 100 per cent of electricity demand would be generated by renewables and Ireland would become an exporter of green electricity and green hydrogen.

83. While the targets are very challenging, Ireland has the potential to significantly reduce energy-related CO_2 emissions, which are the largest source of its GHG emissions; the question is to what extent the transition can be accelerated. Ireland has a large amount of CH_4 emissions (around a third of total GHG emissions including LULUCF), which will remain large even if energy-related CO_2 emissions are minimized; thus, this is another challenging area. Emissions of CH_4 are proportional to the number of cows, especially dairy cows. The number of dairy cows depends to a large extent on external factors, such as the international market price of milk, and hence the sector is hard to abate. To date, the PaMs targeting the agriculture sector in Ireland have had limited results, and therefore it may be desirable to formulate an integrated policy that includes measures to address this challenge as well as other measures that are not related to the climate.

(d) Assessment of adherence to the reporting guidelines

84. The ERT assessed the information reported in the NC8 and BR5 of Ireland 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 in tables I.2 and II.3.

2. Assessment of the total effect of policies and measures

(a) Technical assessment of the reported information

85. In its NC8 Ireland presented the estimated and expected total effect of its PaMs, in accordance with the WEM and WAM scenarios, compared with a situation without such PaMs. Ireland used a bottom-up approach for determining these effects because it does not undertake a WOM scenario analysis. GHG emission reductions, disaggregated by sector and by gas, are presented in terms of GHG emissions avoided or sequestered in 2020, 2025, 2030 and 2035. Ireland also presented relevant information on key drivers and relevant activities for each sector. The ERT noted that the differences between the total effects of PaMs under the WAM and WEM scenarios calculated in a bottom-up manner and those calculated in a top-down manner are very similar (12,611 and 12,725 kt CO_2 eq respectively for 2030 including LULUCF), which may provide an indication of the validity of the methods chosen by Ireland.

86. Ireland reported that the total estimated effect of its implemented and adopted PaMs is 12,110 kt CO_2 eq in 2020 (for both WEM and WAM) and 23,473 kt CO_2 eq (for WEM)

and 36,084 kt CO_2 eq (for WAM) in 2030. According to the information reported in its NC8, PaMs implemented in the energy industry will deliver the largest emission reductions. Table 10 provides an overview of the total effect of PaMs as reported by Ireland.

Table 10
Projected effects of Ireland's policies and measures under the WEM and WAM scenarios in 2020 and 2030
(kt CO_2 eq)

	2020		*2030*	
	Effect of implemented and adopted measures	*Effect of planned measures*	*Effect of implemented and adopted measures*	*Effect of planned measures*
Energy industry	4 074	–	8 452	9 361
Manufacturing industry and construction	2 386	–	4 321	5 903
Residential, commercial and institutional services	3 756	–	5 775	7 264
Transport	1 258	–	2 925	4 127
Agriculture	22	–	113	4 767
LULUCF	0	–	1 085	3 861
Waste management	625	–	801	801
Total	**12 120**	–	**23 473**	**36 084**

Sources: Ireland's NC8 and BR5.
Note: The total effect of implemented and adopted PaMs is estimated as a bottom-up aggregation of the effects of individual PaMs.

(b) Assessment of adherence to the reporting guidelines

87. The ERT assessed the information reported in the NC8 of Ireland 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.

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

(a) Technical assessment of the reported information

88. In the NC8 Ireland provided information on how its use of the mechanisms under Articles 6, 12 and 17 of the Kyoto Protocol is supplemental to domestic action. Ireland noted in its NC8 regarding its use of flexible mechanisms that any units it purchased were intended to supplement domestic climate change mitigation action.

89. Ireland reported that it established a carbon fund under the Carbon Fund Act 2007 for the purchase of carbon units and designated the National Treasury Management Agency as the Irish Government's purchasing agent. Ireland invested in three funds created by the World Bank and the European Bank for Reconstruction and Development and purchased carbon credits directly from the market.

(b) Assessment of adherence to the reporting guidelines

90. The ERT assessed the information reported in the NC8 of Ireland 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

91. In its NC8 and BR5 Ireland reported information on its provision of financial, technological and capacity-building support to non-Annex I Parties.

92. Ireland has provided support that it considers to be "new and additional". Its definition of "new and additional" is based on its national budgeting system, whereby budgeting for public funding carries no assumption that funding made available in any given year will be available in a subsequent year. Therefore, all public climate finance provided by Ireland annually is considered "new and additional".

93. Ireland 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. It explained that it uses the OECD Development Assistance Committee Rio markers definition for mitigation and adaptation to track finance allocated to climate change activities. Ireland also explained how it identifies the capacity-building elements of its activities. It highlighted that funding for capacity-building is based on the principles of national ownership by the developing country, stakeholder participation and country-driven demand (as contained in national strategic documents). Irish civil society organizations and non-governmental organizations working in developing countries are required to develop programmes in partnership with the host country to ensure that priority capacity-building needs are addressed. The Party also highlighted that capacity-building is a major feature of all the activities supported by Ireland regardless of the modality of support. In all its programming, there is a strong emphasis on building human and institutional capacity across all sectors.

94. Ireland's national approach to tracking the provision of support, including information on indicators, delivery mechanisms used and allocation channels tracked, is to use OECD Rio markers to track all bilateral official development assistance and civil society organization finance flows. Multilateral climate finance is calculated using two methods. One method involves the application of imputed shares, which are determined annually by OECD to track funding through multilateral channels such as international multilateral climate change funds. The imputed shares are subject to change owing to the varied nature in which multilateral institutions spend and report climate-relevant finance. The second method involves the application of OECD Rio markers for bilateral and civil society organization climate finance flows, as explained during the review by the Party.

95. Changes to Ireland's approach since the previous report include tracking more closely the categories under which Ireland's climate finance support falls, whether under technology transfer or capacity-building, in line with Ireland's new EU-level reporting requirements. These changes were brought about by the coming into force of the EU regulation on the governance of the Energy Union and climate action in 2020. The regulation recommends that a 40 per cent coefficient be applied to programmes with a "significant" Rio adaptation or mitigation marker as of 2020 in order to determine the amount of climate finance allocated to mitigation and adaptation. Ireland applied this requirement to its climate finance tracking for 2020. In previous years, a 50 per cent coefficient was applied.

96. Ireland's methodology and underlying assumptions used for collecting and reporting information on financial support, including guidelines, eligibility criteria and/or indicators, are based on the OECD Development Assistance Committee Rio markers system.

(b) Financial resources

97. Ireland 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 disbursed, allocation channels and annual contributions. Ireland's support strategy is guided by its international development policy, which is closely linked to the SDGs and is based on

the principle of reaching the people the furthest behind first. Through this policy, Ireland commits to scaling up its funding on climate action and exploring innovative approaches to climate finance, risk insurance and climate adaptation. All climate action is underpinned with institutional learning and capacity-building.

98. Ireland described how it seeks to ensure that the resources it provides to non-Annex I Parties effectively address their adaptation and mitigation needs. During the review, Ireland explained that it develops five-year country-specific strategies with each of its bilateral support partners through a consultative process with all key stakeholders. These strategies include comprehensive climate risk assessments for each partner country that are in line with its national plans and priorities in responding to risks arising from climate change. In this regard, Ireland prioritizes funding for adaptation and resilience in the most climate-vulnerable countries, particularly those in Africa and the small island developing States. For example, Ireland funds and works with Irish civil society organizations and non-governmental organizations operating in developing countries that aim to address the capacity needs of non-Annex I Parties in their adaptation planning cycle, particularly the formulation and implementation of NAPs. Ireland's funding for the LEG in 2019 and 2020 supported LDC adaptation planning through NAP writing workshops and the facilitation of technical assistance from sector-specific organizations. Table 11 summarizes the information reported by Ireland on its provision of financial support.

Table 11
Summary of information on provision of financial support by Ireland in 2019–2020
(Millions of United States dollars)

Allocation channel of public financial support	*Disbursement in 2019–2020*
ODA	1 961.20
Climate-specific contributions through multilateral channels, including:	80.66
Global Environment Facility	4.92
Least Developed Countries Fund	3.40
Adaptation Fund	0.68
Green Climate Fund	6.81
Trust Fund for Supplementary Activities	1.17
Other multilateral climate change funds	2.63
Financial institutions, including regional development banks	31.12
United Nations bodies	29.93
Climate-specific contributions through bilateral, regional and other channels	128.16

Sources: Ireland's BR5 CTF tables and Query Wizard for International Development Statistics, available at http://stats.oecd.org/qwids/.

99. Ireland's climate-specific public financial support[8] totalled USD 208.82 million in 2019–2020, representing an increase of 23.9 per cent since the BR4 (2017–2018).[9] With regard to future financial pledges aimed at enhancing the implementation of the Convention by developing countries, Ireland has committed to providing at least EUR 225 million in climate finance per year by 2025. Ireland reports on its disbursed financial amounts.

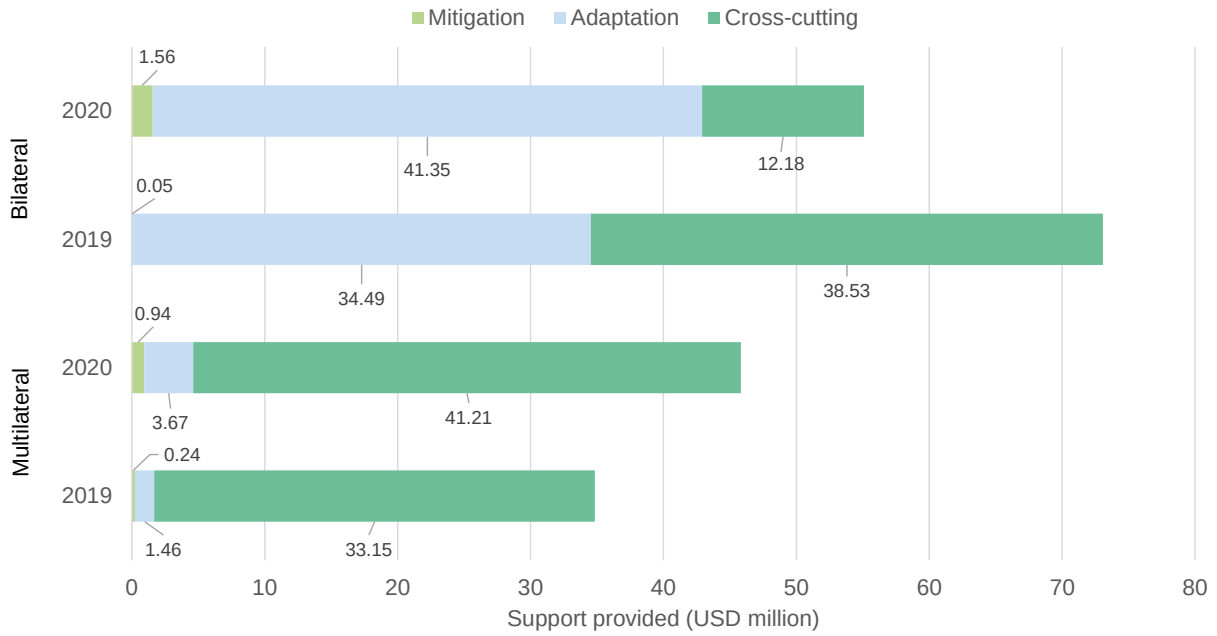
100. Ireland contributed through multilateral channels USD 80.66 million in 2019–2020. The contributions were made to specialized multilateral climate change funds, such as the Adaptation Fund, Global Environment Facility, Green Climate Fund and Least Developed Countries Fund; financial institutions, including regional development banks; and United Nations bodies. Multilateral climate support has increased by 126.5 per cent since the BR4, with most (75.7 per cent) of the multilateral climate finance channelled through financial institutions, including regional development banks, and United Nations bodies. Information

[8] For the remainder of this chapter, the term "financial support" means climate-specific financial support, unless otherwise noted.

[9] Comparisons with data from previous years have been calculated directly without adjusting for inflation.

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 12.

Figure 3
Provision of support by Ireland in 2019–2020



Sources: Ireland's BR5 CTF tables 7, 7(a) and 7(b).

Table 12
Summary of information on channels of financial support reported by Ireland
(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				
Mitigation	1.18	–	–	1.5
Adaptation	5.12	7.09	–27.7	6.3
Cross-cutting	74.36	28.52	160.7	92.2
Other	–	–	–	–
Total multilateral	**80.66**	**35.61**	**126.5**	**100.0**
Bilateral channels				
Mitigation	1.61	0.99	62.6	1.3
Adaptation	75.83	37.43	102.6	59.2
Cross-cutting	50.71	94.49	–46.3	39.6
Other	–	–	–	–
Total bilateral	**128.16**	**132.91**	**–3.6**	**100.0**
Total multilateral and bilateral	**208.82**	**168.52**	**23.9**	**100.0**

Sources: Ireland's BR5 CTF tables 7, 7(a) and 7(b). Report on the technical review of the fourth biennial report of Ireland 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.

101. The Party reported detailed information on the total financial support provided through bilateral, regional and other channels (USD 128.16 million) in 2019–2020. During the reporting period, Ireland placed a particular focus on Ethiopia, the Lao People's Democratic Republic, Malawi, Mozambique, the State of Palestine, the United Republic of Tanzania, Viet Nam and Zambia, to which it allocated a total of USD 69.14 million. The

level of financial support to the countries highlighted was at least USD 1 million combined in the reporting period. Ethiopia had the highest allocated amount (USD 25.44 million), followed by Malawi (USD 18.42 million).

102. 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, adaptation and cross-cutting projects were 1.3, 59.2 and 39.6 per cent respectively. In 2019–2020, the majority of financial contributions through bilateral and regional channels were allocated to the agriculture and cross-cutting sectors (USD 64.04 million). The ERT noted that the grants provided in 2019–2020 accounted for most of the bilateral and regional financial support. Ireland prioritizes adaptation activities in the LDCs, especially those in Africa. It is a member of the Champions Group on Adaptation Finance, which works towards improving the quantity, quality and accessibility of funding for adaptation. It has endorsed the principles for locally led adaptation and supports initiatives promoting grass-roots action, notably through funding for the LDC Initiative for Effective Adaptation and Resilience, which seeks to assist seven LDCs in designing and implementing their national climate action plans. Ireland supports several agriculture projects in sub-Saharan Africa, including a project in the United Republic of Tanzania that focuses on greening the dairy value chain by increasing productivity in dairying while promoting green economy principles and climate resilience. Climate-smart agriculture projects are being conducted in countries such as Eritrea, Kenya, Malawi and Mozambique to ensure food security.

103. During the review, Ireland explained that in its engagement with multilateral development banks and international financial institutions, it encourages the scaling up of private investment in mitigation and adaptation activities in developing countries. This is because the financial institutions have an important convening role, leveraging the contributions of governments, civil society and the private sector for sustainable development impact. Furthermore, they provide technical expertise to build capacity and support the achievement of the SDGs, including climate change adaptation and mitigation. The Party also reported on how it uses public funds to promote private sector financial support to increase mitigation and adaptation efforts in developing countries. For example, Ireland provided funding to the UNDP Financial Centres for Sustainability network to support the establishment of its SDG Pipeline Builder programme. The aim of the Pipeline Builder is to provide private investors with opportunities to support emerging markets and developing economies with country-level SDG-aligned investable projects in developing countries.

104. Ireland explained that it has three main policies that promote the scaling up of private investment, namely the Ireland for Finance strategy, the national Sustainable Finance Roadmap and the EU Strategy for Financing the Transition to a Sustainable Economy. Sustainable finance is a priority for Ireland and a key piece of its toolkit for addressing the climate crisis. It is scaling up investment planning to finance the activities and technologies needed to achieve its emission reduction targets. Ireland realizes that the public sector cannot do this alone, and that private finance must play its part in meeting the investment needs for climate action, both locally and in its international engagements. The financial services sector is a key enabler in this regard. Ireland has taken a significant leadership position in sustainable finance skills development and is supporting international capacity-building developments through its financial support of the UNDP Financial Centres for Sustainability network (see para. 103 above).

105. An example of Ireland's support is an adaptation project in Malawi on achieving sustainable poverty reduction through inclusive resilience and empowerment. The aim of the project is to increase the resilience of 25,000 poor households in Kaphuka and Chauma in Dedza District to economic, social and environmental shocks. Key activities include managing disaster risk, enhancing crop and livestock production and productivity, and empowering citizens in decision-making. The project is in line with Ireland's policies of reaching the people the furthest left behind first and focusing on adaptation activities.

106. The Party also reported on its funding of the LEG, which is the only body mandated by Parties to the Convention to provide dedicated support to the LDCs. The LEG supports the LDCs in their efforts to design, plan and implement NAPs and facilitates access to

financial and technical support. This approach aligns with Ireland's focus on the LDCs and its support for adaptation activities.

(c) Technology development and transfer

107. Ireland reported on its measures and activities related to technology transfer, access and deployment benefiting developing countries, including activities undertaken by the public sector. Examples of support provided for the deployment and enhancement of the endogenous capacities and technologies of non-Annex I Parties include a programme implemented in partnership with the Ministry of Energy of Malawi. The goal of the programme was to provide energy-poor communities in Malawi with 2 million clean, fuel-efficient cookstoves between 2012 and 2020. The programme assisted many small women's groups around Malawi in learning how to manufacture, use and market the energy-saving technology. The programme facilitated the creation of income-generating opportunities for 4,780 people along the value chain from manufacturing to distribution of the stoves. At least USD 1.34 million in income was generated for both the stove manufacturers and local retailers. A National Cookstove Steering Committee was established, which provided support for quality control and the establishment of standards and for awareness-raising and communication about the technology. The programme was a success owing to the innovative approaches to the manufacturing, distribution and marketing of the stoves brought about by the partnership between Irish and Malawian experts and the involvement of the community.

108. Ireland focused the provision of its technology transfer support on the following recipient countries: Democratic Republic of the Congo, Eritrea, Ethiopia, Kenya, Malawi, Nigeria, Mozambique, South Africa, United Republic of Tanzania and Uganda, developing countries outside Africa (State of Palestine and Viet Nam) and other LDCs that are not specified. The Party reported on 25 programmes and projects that focused on technology development and transfer for adaptation and mitigation in the agriculture, energy, water and sanitation, and other sectors. For example, one of the mitigation projects reported looked at developing a climate-smart community dairy model that could be replicated across Eritrea using a pilot model demonstration farm with selected dairy farmers. An adaptation project in Malawi focused on the installation of a solar pump at an agriculture research station for industrial hemp crop trials. The hemp is grown for use as an eco-fuel and as an element of climate-smart farming practices. Ireland also noted it has provided support for the development of a new drought-resistant seed variety in the United Republic of Tanzania, for clean technology development start-ups in developing countries, and for global water flow monitoring through its support of the Global Environment Monitoring System.

109. Since its last NC and BR, Ireland has implemented additional measures and activities. Whereas in the BR4 Ireland reported more projects for technology transfer in the agriculture sector, the NC8 and BR5 include a significant number of projects on both mitigation and adaptation, targeting several sectors (see para. 108 above). Ireland also described success and failure stories in relation to technology transfer, and in particular measures taken to promote, facilitate and finance the transfer and deployment of climate-friendly technologies.

110. Ireland reported that it does not have a long history of substantial investment in technology development and that large-scale technology development or transfer is not a strong feature of its climate support. However, its funding to multilateral climate funds, particularly the Adaptation Fund, Global Environment Facility and Green Climate Fund, is unearmarked and may have been used to support technology transfer projects.

(d) Capacity-building

111. Ireland 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. Ireland focused the provision of its capacity-building support on the Democratic Republic of the Congo, Eritrea, Ethiopia, Kenya, Nigeria, Malawi, Mozambique, South Africa, the United Republic of Tanzania and Uganda, and on developing countries outside Africa, particularly Viet Nam. The Party reported 38 programmes and projects focused on providing capacity-building for adaptation, mitigation and "multiple areas".

112. Ireland described individual measures and activities related to capacity-building support in textual and tabular format. Ireland funds and works with organizations that aim to address the capacity-building needs of developing countries, for example in adaptation and resilience planning. Examples of such measures include Ireland's Trust Fund within the Asian Development Bank, which was established in 2019. The Fund specifically targets climate change adaptation and resilience at the regional, national and subnational level. The support provided has facilitated capacity-building for post-disaster response and recovery and has ensured effective coordination between disaster risk management authorities and government ministries. Other activities funded by the Trust Fund include capacity-building for coastal communities, youth organizations and businesses related to climate resilience.

113. Young Scientists Kenya is an initiative that gives young people from across Kenya an opportunity to demonstrate innovation and showcase their scientific talents through a national science and technology competition. The initiative involves both the Kenyan Ministry of Education and the Irish Government (through its embassy in Kenya), as well as the support of other partners.

114. Ireland has supported climate-related capacity development activities relating to adaptation, mitigation and "multiple areas". Since the BR4, the focus of support has remained the same, although Ireland continues to step up its efforts to bring about climate action co-benefits in programming, in vulnerability and risk assessments, and in understanding the climate change implications for social inclusion, agriculture, health and gender equality. There is a strong emphasis on building human and institutional capacity across all sectors.

115. Ireland'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 and country-driven demand. During the review, Ireland explained that five-year strategies are developed in partnership with relevant developing countries, which focus on their priority needs, as indicated in their national development plans. This allows Ireland to provide support that meets the needs of developing countries (see para. 98 above for details). For example, through the NDC Partnership the Party provided funding to assist countries in accessing cutting-edge technical and financial resources to accelerate their climate action. Another project, on strengthening the livelihoods, nutrition and climate resilience of smallholder farmers in north-east Uganda, was implemented in partnership with Katakwi Conserve Uganda, Kaberamaido Operation Save the Needy, the Morukakise Integrated Development Association, the Olilim Rural Farmers' Association and the Eganganaros Build Tomorrow Group, thus ensuring that the needs of the targeted communities were addressed.

2. Assessment of adherence to the reporting guidelines

116. The ERT assessed the information reported in the NC8 and BR5 of Ireland 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.4.

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

(a) Technical assessment of the reported information

117. In its NC8 Ireland reported its activities, actions and programmes undertaken in fulfilment of its commitments under Article 10 of the Kyoto Protocol. Ireland 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 paras. 107–109 above).

118. Ireland provided information on its implementation of Article 11 of the Kyoto Protocol, including a description of the steps that Ireland is taking towards ensuring the adequacy and predictability of climate finance. Ireland reported on its 2020 Programme for Government, which emphasizes a target of doubling by 2030 the overall percentage of Ireland's official development assistance that counts as climate finance. This programme was

strengthened at the twenty-sixth session of the Conference of the Parties, with a commitment to double existing climate finance to EUR 225 million per year by 2025, which was then articulated in Ireland's International Climate Finance Roadmap 2022. The Party described how its contributions are "new and additional" (see para. 92 above).

119. Ireland reported on its financial contributions to the Adaptation Fund, which consisted of EUR 300,000 disbursed each year in 2019 and 2020. Ireland reported that it has increased its support to the Adaptation Fund, with a commitment of at least EUR 10 million combined in 2021 and 2022. Ireland noted that adaptation is a consistent strength and focus of its global climate action, such that 45 per cent of its climate finance in 2020 supported adaptation specifically, and a further 53 per cent supported actions with both adaptation and mitigation co-benefits.

(b) Assessment of adherence to the reporting guidelines

120. The ERT assessed the information reported in the NC8 of Ireland 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

121. In its NC8 Ireland 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. Ireland provided a description of climate change vulnerability and assessments of historical warming and projections, taking into account the scientific progress made and the improved observational data set. Ireland identified the most significant impacts to be those associated with flooding, droughts and storms. It has put in place institutional frameworks for adaptation and is developing climate resilience measures to mitigate these impacts.

122. Ireland has addressed adaptation matters on the basis of the climate risks and vulnerability assessment conducted by seven government departments leading in the preparation of nine sectoral adaptation plans covering 12 priority sectors, as is required by the 2018 National Adaptation Framework. Covering the entire country, 31 local authority adaptation plans have been developed that provide direction to government agencies on enhancing preparedness for climate change on the basis of the findings of the vulnerability assessments conducted for the 12 priority sectors identified. The National Adaptation Framework provides the structural basis that guides the development of sectoral adaptation plans. Plans for seven new priority sectors were developed in addition to the five sectors (agriculture, forestry, flood risk management, transport, and electricity and gas) reported in the NC7. Table 13 summarizes the information on vulnerability and adaptation to climate change presented in the NC8 of Ireland, excluding those listed in the NC7.

Table 13
Summary of information on vulnerability and adaptation to climate change reported by Ireland

Vulnerable area	*Examples/comments/adaptation measures reported*
Biodiversity and natural ecosystems	Vulnerability: Climate change may alter the timing of changes in plant and animal phenologies and geographical distribution, affecting species composition and ecosystem functioning. Projected increases in temperature and precipitation will result in the increased occurrence of invasive species and competitive pressures for native species. Projected increases in the frequency of extreme weather events (e.g. heatwaves, droughts and storms) may have devastating impacts for Ireland's coastal habitats, including those of fish and birds.

Vulnerable area	*Examples/comments/adaptation measures reported*
	Adaptation: Ireland's 2018 National Adaptation Framework sets out a strategy for the application of adaptation measures, including for biodiversity, in different Government sectors, including the local government sector. The Climate Change Advisory Council provides independent and science-based advice to the Government and other policymakers on what Ireland needs to do to achieve a climate-resilient, biodiversity-rich, environmentally sustainable and climate-neutral economy by 2050. The Climate Change Advisory Council in its annual review provides an update on implementation progress across the sectors and local authorities in Ireland. The Offshore Renewable Energy Development Plan, published in 2014, is being reviewed and will include an assessment of marine biodiversity.
Built and archaeological heritage	Vulnerability: The built and archaeological heritage is projected to be affected by a number of different climate change impacts, such as increased frequencies of flooding owing to extreme precipitation as well as sea level rise (potentially resulting in loss or damage, closure of the site, health and safety risks, increased risks for bog bursts and erosion), changes in storm activity (potentially resulting in structural damage or loss and altering the character of the landscape), changes in temperature and humidity levels (creating more favourable conditions for mould growth) and increases in temperature and droughts (potentially resulting in an increased frequency of wildfires).
	Adaptation: The Built and Archaeological Heritage: Climate Change Sectoral Adaptation Plan, published in 2019, was developed to counteract the anticipated impacts of climate change. Its overarching aims are to build adaptive capacity within the sector, reduce the vulnerability of the built and archaeological heritage to climate change, and identify and capitalize on the various potential opportunities for the sector. The plan includes specific actions, such as carrying out risk and vulnerability assessments, undertaking the monitoring of climate change impacts on heritage assets and integrating heritage issues into national and local policies.
Communication networks	Vulnerability: The projected increase in precipitation, sea level rise and storm surges will result in communications infrastructure being increasingly exposed to flooding (particularly impacting underground networks) and high winds will result in increased infrastructure loss or damage (particularly impacting overhead lines). Increased inaccessibility to key communications infrastructure, owing to the projected rise in extreme weather events, will result in increased service disruption, especially in the case of infrastructure located in remote areas.
	Adaptation: A climate change adaptation plan for the communications sector was published in 2019 and serves as a high-level approach for adapting the sector to the challenges during project planning stages. The outcome from the development of the plan is a better understanding of the projected climate change impacts on and vulnerabilities within the communication sector, an overview of the existing and planned mitigation and adaptation measures and the identification of additional adaptation measures that could be implemented under the current legislation.
Health	Vulnerability: Six main climate change impacts with health implications have been identified in the Climate Change Adaptation Plan for the Health Sector 2019–2024: temperature change, drought, flooding, storms, mental health impacts and impacts on the provision of health services (with regard to usage patterns and infrastructure threats). Potential consequences of these impacts include an increase in waterborne disease (owing to extreme precipitation resulting in overland flows of pollutants), an increase in food-borne disease (owing to warmer and wetter conditions resulting in more favourable environments for bacterial growth and viral survival) and an increase in heat-related mortality and morbidity.
	Adaptation: The above-mentioned Climate Change Adaptation Plan outlines a set of measures to address the identified vulnerabilities in the health sector and build resilience in this area. The Healthy Ireland Framework, while not directly aimed at climate change adaptation, contains several actions with climate co-benefits, such as active travel, diet, warmth and well-being, and outdoor recreation.
Seafood	Vulnerability: Increased temperature affects seafood production as pathogenic waterborne bacterial infections and potentially toxic harmful algal blooms occur more frequently. Warming of the ocean and the consequent reduction of dissolved oxygen result in stress and increased metabolic demand, causing increased sensitivity and acidification, and will accelerate the vulnerability of seafood species to infectious diseases. Ocean acidification affects crustaceans and molluscs, while changing rainfall

Vulnerable area	*Examples/comments/adaptation measures reported*
	patterns affect the freshwater availability for aquaculture, with decreased water availability over the summer months and inducing a freshwater surplus in estuarine systems in autumn and winter.
	Adaptation: A mitigation policy and adaptive capacities to address impacts on the seafood and aquaculture sectors were developed, including building the knowledge base, holding implementation forums, improving capacity-building and enabling financial mechanisms to support the industry. A study of sites collecting relevant ocean variables conducted in 2021 is to be expanded in order to improve data collection. Vessel-based CO_2 monitoring and research is ongoing. A seafood climate action group was established to drive the implementation of seafood adaptation actions.
Social vulnerability to climate change	Vulnerability: The Central Statistics Office Survey on Income and Living Conditions estimated that, in 2019, 12.8 per cent of the Irish population were at risk of poverty, with the predominant risk factors being illness, disability or unemployment. The focal points with the highest levels of deprivation were found to be in cities or urban areas in otherwise rural counties. Ireland's population has increased by 36 per cent since 1990 and is expected to reach at least 5.58 million in 2051, with a substantial increase in people aged 65 years and over by 2051. With this population growth comes a continued increase in the urban population.
	Adaptation: Project Ireland 2040 and the National Development Plan include the strategic objective of facilitating a shift to the development of more compact urban and rural communities instead of an expansion of the unplanned growth currently seen.
Water quality and water services infrastructure	Vulnerability: Several potential climate change impacts adversely affecting water quality have been identified: increased temperatures and occurrence of invasive species (affecting the environmental and ecological status of habitats), decreases in annual precipitation (potentially resulting in reduced river flow, reduced groundwater recharge and lower water tables, which in turn could lead to increased nutrient and sediment transport to rivers and lakes) and high short-term precipitation (possibly causing high concentrations of pollutants owing to overland flow). In addition, more frequent droughts and a changed consumption pattern owing to increased temperatures and heatwaves could have a negative impact on water supply.
	Adaptation: The Water Quality and Water Services Infrastructure: Climate Change Sectoral Adaptation Plan, published in 2019, focuses on setting high-level objectives, rather than specifying individual actions, with the aim of providing strategic direction for developing adaptation policies in the water quality and water services infrastructure sector. These aims include fully adopting the integrated catchment management approach, improving the treatment capacity and network functions for water services infrastructure, engaging in water resource planning and conservation, and including climate measures in monitoring programmes and research.

123. Ireland provided information on international adaptation activities undertaken under the Department of Foreign Affairs through Irish Aid. Activities include ongoing support for mitigation and adaptation action in developing countries, mainly the LDCs and small island developing States, particularly in sub-Saharan Africa and South-East Asia, through Ireland's international development programme and through Irish civil society organizations operating across developing countries.

2. Assessment of adherence to the reporting guidelines

124. The ERT assessed the information reported in the NC8 of Ireland 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.

I. Research and systematic observation

1. Technical assessment of the reported information

125. In its NC8 Ireland provided information on its general policy and funding relating to research and systematic observation and both domestic and international activities, including

contributions to the World Climate Programme, the International Geosphere–Biosphere Programme, the Global Climate Observing System and the Intergovernmental Panel on Climate Change.

126. Ireland has implemented and planned international and domestic policies and programmes on climate change research, systematic observation and climate modelling that aim to advance capabilities to predict and observe the physical, chemical, biological and human components of the Earth's system over space and time. EPA is responsible by law for coordinating environmental research and, as such, has established the Research 2030 framework and the Impact 2030 research and innovation strategy for Ireland. The EPA research funding programme was restructured in 2020, and all environmental and climate change research will be reassessed by EPA in line with its research framework for 2021–2023. The research looks at Ireland in a changing world, including at Ireland achieving climate neutrality by 2050, preparing for the future climate, and realizing the benefits of transition and transformation. National-level activities include projects under the Collaborative Alliances for Societal Challenges; research, development and demonstration projects on energy production and supply; research projects to improve the understanding of the North Atlantic climate system; and the TRANSLATE project on standardizing national climate projections. At the international level, activities include a coordination and support action project funded by Horizon Europe, which includes the objective of improving coordination activities on research and systematic observation.

127. In terms of activities related to systematic observation, Ireland reported on national plans, programmes and support for ground- and space-based climate observing systems, including satellite and non-satellite climate observation. Ireland also reported on challenges related to the maintenance of a consistent and comprehensive observation system. The Irish National Meteorological Service (Met Éireann) has primary responsibility for atmospheric observations, although the National University of Ireland, Galway, also coordinates upper-air and composition observations. Work has progressed on reinforcing elements of the climate observation system, such as the atmospheric climate observation system, oceanic climate observation systems and terrestrial climate observation systems. Specific actions include the modernization and automation of meteorological observing stations and the installation of oceanic offshore buoys for data collection.

128. 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. Ireland provided funding for scientists from developing countries working on global climate change research. In 2022, Irish Aid provided funding to strengthen the ability of developing countries to predict and prepare for extreme weather events through the Systematic Observations Financing Facility established by the World Meteorological Organization and the United Nations. The Systematic Observations Financing Facility will work with developing countries by providing funding and technical expertise to help them address weather and climate information gaps to better manage events such as floods, droughts and heatwaves, which are increasing in frequency and intensity as a result of climate change.

2. Assessment of adherence to the reporting guidelines

129. The ERT assessed the information reported in the NC8 of Ireland 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

130. In its NC8 Ireland 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. Originally published in 2014, Ireland's National Strategy on Education for Sustainable Development was updated following a public consultation process in 2021–2022 with a second edition published in June 2022 that encompasses planning up until 2030.

131. The National Strategy on Education for Sustainable Development 2030 is aligned with the United Nations Educational, Scientific and Cultural Organization's education for sustainable development framework, which covers five priority areas: advancing policy; transforming learning environments; building the capacities of educators; empowering and mobilizing youth; and accelerating local-level actions. It builds on the existing framework and is accompanied by an implementation plan for 2022–2025, with an interim review planned for 2026 to evaluate progress and identify any additional actions required. The revised Education for Sustainable Development Strategy will provide more opportunities to both local and global citizens by co-sponsoring research, innovation and science and by ensuring that children, people with disabilities and youth are equitably included in education. The revised strategy seeks to advance a lifelong learning and whole-of-institution approach to Education for Sustainable Development, transforming educational spaces into places and spaces for sustainability and embedding Education for Sustainable Development across teaching and learning, research, and operational environments. The strategy supports inclusive learning environments, with a particular focus on engaging and mobilizing young people in action for sustainable development. Some of the existing programmes include Green-Campus (increasing environmental awareness at tertiary institutions), Green-Schools (environmental education and management programme working with primary and secondary schools) and the Green Skills for Further Education and Training programme, which includes green skills for the construction sector. At the international level, the Climate Youth Delegate Programme was recently established to enable young people to participate in Ireland's international activities, such as the Conferences of the Parties, by being part of the delegation. This will increase awareness and engagement with international climate action and international climate change policy and processes and ensure that Ireland's delegation benefits from youth perspectives and knowledge.

132. In addressing public awareness, a National Dialogue on Climate Action has been initiated to assist with the transition to a net zero and climate-neutral economy by no later than 2050. A collaborative effort from the Government, business, communities and individuals is needed to deliver this ambition. The increased public engagement is implemented through the Climate Conversations programme, National Climate Stakeholder Forum, National Youth Assembly on Climate, Public Participation Networks and Citizens' Assemblies, among others.

2. Assessment of adherence to the reporting guidelines

133. The ERT assessed the information reported in the NC8 of Ireland 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.

III. Conclusions and recommendations

134. The ERT conducted a technical review of the information reported in the NC8 of Ireland 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 Ireland.

135. The information provided in the NC8 includes most of the elements of the supplementary information under Article 7, paragraph 2, of the Kyoto Protocol. Ireland 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 Ireland in its 2022 annual submission.

136. The ERT conducted a technical review of the information reported in the BR5 and BR5 CTF tables of Ireland 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 Ireland towards achieving its target; and the Party's provision of support to developing country Parties.

137. In its NC8 Ireland reported on its key national circumstances related to GHG emissions and removals, including the impacts of the COVID-19 pandemic on the Irish economy, particularly on transport and energy use; the continued growth in renewable energy; and the significance of the agriculture sector to national emissions. Ireland also provided information on the Climate Act 2021, which strengthened the statutory framework for governance and binds Ireland to more ambitious emission reduction targets of 51 per cent by 2030 relative to 2018 and net zero by 2050.

138. Ireland's total GHG emissions including LULUCF were estimated to be 6.5 and 12.6 per cent above its 1990 level in 2020 and 2021 respectively. Emissions peaked in 2001 following steady growth from 1990 and experienced a sharp decline from 2008 to 2011. After remaining stable for a number of years, emissions rose slightly during 2016–2018, underwent a dip in 2020 attributed to the COVID-19 pandemic, and rebounded by 5.2 per cent without LULUCF and 5.1 per cent with LULUCF in 2021 (compared with the 2020 level). The changes in total emissions were driven mainly by factors such as growth in GDP, fuel switching in the power sector, growth in energy-related transport emissions and an increase in the population size of cattle. Ireland, unlike other EU countries, experienced relatively high population growth and strong GDP growth prior to the COVID-19 pandemic. The Irish economy is a dual economy, characterized by highly productive foreign-owned corporations and small- and medium-sized domestic enterprises; this structure can mask domestic economic changes. Ireland has limited energy-intensive industries.

139. As reported in the BR5, under the Convention Ireland 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 CO_2, CH_4, N_2O, HFCs, PFCs and SF_6, expressed using GWP values from the AR4. Emissions and removals from the LULUCF sector are not included. The EU generally allows its member States to use units from the Kyoto Protocol mechanisms for compliance purposes up to an established limit and subject to a number of restrictions on the origin and the type of project. Under the ESD, Ireland has a target of reducing its emissions by 20 per cent below the 2005 level by 2020.

140. The EU has a joint 2030 emission reduction target of at least 55 per cent below the 1990 level. This will be primarily implemented through the EU ETS and ESR, which have targets to reduce emissions by 2030 by 62 and 40 per cent respectively compared with the 2005 level. Ireland has a longer-term target of reducing its GHG emissions by 51 per cent by 2030 relative to the 2018 level and achieving net zero emissions by 2050.

141. The ERT noted that the total GHG emissions of the EU excluding LULUCF 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 Ireland has met its 2020 commitment under the Convention through its contribution to achieving the joint target of the EU. See the report on the review of the BR5 of the EU for further details. The ERT noted that the Party met its 2020 ESD target by using the flexibility allowed under the ESD to cover its AEA deficit through a combination of using its surplus AEAs from prior years, using market-based mechanisms in 2019 and 2020, and purchasing for 2020 4.1 million surplus AEAs from EU member States that have overachieved their target.

142. The GHG emission projections provided by Ireland in its NC8 and BR5 correspond to the WEM and WAM scenarios. Under the WEM scenario, total GHG emissions excluding

LULUCF and excluding indirect CO_2 are projected to be 5.4 per cent below the 1990 level (10.7 per cent below the 2020 level) in 2030. Under the WAM scenario, emissions excluding LULUCF and excluding indirect CO_2 in 2030 are projected to be 24.1 per cent below the 1990 level (28.3 per cent below the 2020 level).

143. Ireland's main policy framework relating to energy and climate change is the Climate Act 2021. The Party described the mitigation actions that it has implemented to help it achieve its 2020 targets and those that are planned to help it achieve its longer-term targets, including those in the successive climate action plans, the carbon tax increase and the planned use of its revenue, the support schemes for renewable electricity, the three renewable energy feed-in tariff schemes for providing a floor price for renewable energy, and the replacement of coal-fired electricity generation with natural gas. These PaMs are notable because of their ambitious nature and if they are successfully implemented, they will aid Ireland in meeting its national and international targets. The ERT identified the following as mitigation actions of particular interest: efficiency improvement in industrial end-use sectors because of its potential for reducing electricity demand and emissions and because it is based on a voluntary agreement; the reduction of fertilizer and manure use on cropland because of its innovation, replicability and voluntary nature and because the agriculture sector would significantly benefit from the mitigation of emissions owing to its high overall CH_4 emission contribution; and the Waste Action Plan for a Circular Economy, because it has value as a transition tool across all subsectors of the waste sector.

144. Ireland continued to provide climate financing to developing countries in line with its international development policy. It has increased its contributions by 23.9 per cent since the BR4; its public financial support in 2019–2020 totalled USD 208.82 million. The biggest share of support went to projects and programmes in agriculture and cross-cutting sectors. An example of this support is an adaptation project in Malawi, the aim of which is to increase the resilience of 25,000 poor households to economic, social and environmental shocks in Dedza District.

145. Ireland continued to provide support for technology development and transfer and capacity-building. Priority for technological support was given to projects and programmes in mitigation and adaptation in Africa (Democratic Republic of the Congo, Eritrea, Ethiopia, Kenya, Nigeria, Malawi, Mozambique, South Africa, United Republic of Tanzania and Uganda), other developing countries (State of Palestine, Viet Nam) and other unspecified LDCs. Over time, the focus has remained the same in terms of providing technology transfer to address both mitigation and adaptation. However, the NC8 and the BR5 report on a significant number of projects for both mitigation and adaptation targeting several sectors (agriculture, energy, water and sanitation, and other), not solely agriculture. Priority for capacity-building support was given to projects and programmes in mitigation, adaptation and "multiple areas" in Africa and other developing countries, with a focus on Viet Nam. Over time, the focus of the support has remained the same, although more countries are receiving such support.

146. In its NC8 Ireland provided information on the expected impacts of climate change in the country; the adaptation policies covering regional, sectoral and cross-sectoral, and local authority 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. Ireland developed 7 new sectoral plans, which increases the total number of sectoral plans to 12, and it has now published 31 local authority adaptation plans covering the entire country. The Climate Act 2015 was revised in 2021, and the sectoral and local authority adaptation plans were developed following the same guidelines and on the basis of climate observations and projections, vulnerability analyses, expert opinion and stakeholder inputs.

147. In its NC8 Ireland provided information on its activities relating to research and systematic observation. EPA is responsible by law for coordinating environmental research and, as such, has established the Research 2030 framework and the Impact 2030 research and innovation strategy for Ireland. EPA published a report on Ireland's climate in 2021.

148. In its NC8 Ireland provided information on its actions relating to education, training and public awareness. The Education for Sustainable Development Strategy was revised and is being finalized with targets for 2030 and is accompanied by an implementation plan for

2022–2025 and an interim review plan for 2026. The revised Education for Sustainable Development Strategy will provide more opportunities to both local and global citizens by co-sponsoring research, innovation and science and by ensuring that children, disabled people and youth are equitably included in education. Several systems are in place to enhance public participation and awareness, including the Climate Conversations programme, National Climate Stakeholder Forum, National Youth Assembly on Climate and Public Participation Networks.

149. In the course of the review, the ERT formulated the following recommendations for Ireland 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) Including a brief description of the methods used to estimate the impacts of PaMs or an explanation as to why such an estimation is not possible (see issue 3 in table I.1);

(ii) Providing information on the indicators it uses for the tracking of technological and capacity-building support (see issue 1 in table I.3);

(b) To improve the timeliness of its reporting by submitting its next NC on time (see para. above).

150. In the course of the review of Ireland's NC8, the ERT formulated the following recommendations relating to adherence to the reporting guidelines for supplementary information:

(a) Issues with the completeness of its reporting relating to information provided 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, effects on international trade, and social, environmental and economic impacts on other Parties, especially developing country Parties and in particular those identified in Article 4, paragraphs 8–9, of the Convention, taking into account Article 3 of the Convention in its NC8 (see issue 3 in table I.4);

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

(i) Providing more detailed information on the name and contact information for the national entity and its designated representative with the overall responsibility for the national inventory of the Party (see issue 1 in table I.4);

(ii) Providing more detailed information on each required element of the description of how its national registry performs the functions defined in the annex to decision 13/CMP.1 and the annex to decision 5/CMP.1 and complies with the requirements of the technical standards for data exchange between registry systems as adopted by the first and second sessions of the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol (see issue 2 in table I.4).

151. In the course of the review of Ireland's BR5, the ERT formulated the following recommendations relating to adherence to the UNFCCC reporting guidelines on BRs:

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

(i) Providing information on total GHG emissions in CTF table 4 (see issue 1 in table II.2);

(ii) Providing information on the indicators it uses for the tracking of technological and capacity-building support (see issue 1 in table II.4);

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

(i) Reporting on PaMs by sector (see issue 1 in table II.1);

(ii) Reporting projections in an aggregated format for each sector as well as national totals, consistently between the textual and tabular portions (see issue 3 in table II.3);

(c) Timeliness of its reporting (see para. 8I.B.1.8 above).

Annex I

Assessment of adherence to the reporting guidelines for the eighth national communication of Ireland

Tables I.1–I.4 summarize the ERT assessment of adherence to the UNFCCC reporting guidelines on NCs for Ireland's NC8.

Table I.1
Findings on policies and measures from the review of the eighth national communication of Ireland

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
1	Reporting requirement specified in paragraph 14 Issue type: transparency Assessment: encouragement	The Party organized its reporting on PaMs by sector using the following sectors: energy, industry, agriculture, forestry and peatlands, waste, cross-sectoral and the built environment. However, the use of "LULUCF" as a sector is not consistent throughout the NC8 and is used interchanged with "forestry and peatlands". During the review, Ireland clarified that the forestry and peatlands sector, as reported in NC8 chapter 4 on PaMs, and the LULUCF/forestry sector, as reported in CTF table 3, are equivalent. The ERT encourages Ireland to, to the extent possible, use the sectors energy, transport, industry/IPPU, agriculture, LULUCF/forestry, waste management/waste, other sectors and cross-cutting, or provide an explanation for the descriptions used in the textual part of the submission in order to minimize confusion and enhance transparency.
2	Reporting requirement specified in paragraph 19 Issue type: transparency Assessment: encouragement	Ireland reported on the PaMs that are planned, implemented and adopted; however, in table 1 of its NC8 ("Summary of policies and measures by sector"), Ireland reported some of its PaMs with a status of implementation as "planned", but the reported implementation start date is earlier than the submission date of the NC8 (e.g. the Excellence in Energy Efficient Design Certified Grant 2021). Ireland also listed activities with a start year of implementation of 2021 that have a reported mitigation impact already in 2020, that is, before its implementation. Further, the ERT noted that in table 1 of the NC8, the status of implementation of some PaMs was stated as "expired" without providing further explanation. During the review, Ireland explained that for certain measures there are alternative WEM and WAM versions (e.g. the Excellence in Energy Efficient Design Certified Grant). The WAM version represents planned future increased ambition (from 2021) with respect to the measure. In these cases, the savings in 2020 represent the savings attributed under the WEM version. Ireland also clarified that the correct status of implementation for these PaMs is "implemented" and that the confusion was caused by the use of the additional category "expired" from the government regulation on PaMs reporting. The ERT encourages Ireland to improve the transparency of its reporting by providing information that clarifies its definitions for planned and implemented PaMs for their WEM and WAM versions, for example by including a footnote stating that the WAM version represents an implementation date with the increased ambition from 2021. In the case of PaMs with WAM and WEM versions, to avoid cases of double counting, the ERT encourages Ireland to only include the incremental savings in the estimates of mitigation impacts; for example, the estimated mitigation impacts for the WAM versions could be "NA" for 2020 and for subsequent years could be only the increased differential savings between the WAM and WEM versions. Further, the ERT encourages Ireland to enhance transparency by reporting consistently between the tabular and textual parts of its next submission.
3	Reporting requirement specified in paragraph 20 Issue type: completeness Assessment: recommendation	In the description of each policy or measure or set of complementary measures reported, Parties shall include, as appropriate, a quantitative estimate of the impact of individual PaMs or collections of PaMs (if such an estimation is not possible, Parties shall explain why), including estimated changes in activity levels and/or emissions and removals due to adopted and implemented PaMs reported and a brief description of estimation methods. The Party did not describe its general methodology for estimating the impacts of its PaMs.

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
		During the review, Ireland explained that the methodology used to determine the quantitative estimates of the impacts of individual PaMs is derived from the Sustainable Energy Authority of Ireland's National Energy Modelling Framework. Ireland did not, however, provide a summary of the methodologies used to estimate the impacts of PaMs. The ERT also noted that the estimated impacts for some PaMs have changed significantly since the BR4; for example, the impacts of the Sustainable Energy Authority of Ireland's Large Industry Programme. During the review, Ireland explained that its changes in estimated impacts are due to the updated energy projection modelling used to estimate the mitigation impacts of PaMs. The ERT recommends that Ireland enhance the completeness of its next submission by including a brief description of the methods used to estimate the impacts of PaMs or an explanation as to why such an estimation is not possible.

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 Ireland

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
1	Reporting requirement specified in paragraph 27 Issue type: transparency Assessment: encouragement	Ireland reported sensitivity analyses in its NC8 focused on specific sectors (i.e. agriculture and transport), but a relevant description was missing for the transport sector's analysis. During the review, Ireland informed the ERT that the transport sensitivity analysis used an oil price that is 38 per cent lower in 2030 than that used in the WEM scenario and provided a link to further information. The ERT encourages Ireland in its next submission to transparently report on sensitivity analyses, including by providing relevant explanations necessary to understand them (e.g. a brief explanation of the methodologies and parameters used).
2	Reporting requirement specified in paragraph 32 Issue type: completeness Assessment: encouragement	Ireland did not report projections for indirect gases such as CO, NO_x, NMVOCs and SO_x in its NC8. During the review, Ireland noted that no progress had been made on indirect gas projections since the BR4. The ERT reiterates the encouragement from the previous review report for Ireland to undertake this study in order to improve the completeness of its next submission.
3	Reporting requirement specified in paragraph 42 Issue type: completeness Assessment: encouragement	Ireland did not report the main differences in assumptions and results between the projections reported in the NC8 and those reported in previous NCs, with the exception of the new methodological tool that was introduced. During the review, the Party provided information on the policy changes since its previous submission, which underpin the new projections. The ERT encourages Ireland in its next submission to report on the main differences in the assumptions and results between the projections reported in the NC9 and those reported in previous NCs. The ERT notes that the Party could potentially describe the development of policies such as those prior to the Climate Action Plan 2019 (the WAM scenario of the BR4), the Climate Action Plan 2019 (the WEM scenario of the NC8 and the BR5), the Climate Action Plan 2021 (the WAM scenario of the NC8 and the BR5) and the Climate Action Plan 2023 for future submissions), and the key contributors, in order to explain the progress from one climate action plan to another.

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 Ireland

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
1	Reporting requirement specified in paragraph 49 Issue type: completeness Assessment: recommendation	The Party did not report in its NC8 the indicators it uses for the tracking of its technological and capacity-building support as required by the UNFCCC reporting guidelines on NCs. During the review, Ireland explained that up until 2020 it did not apply or use indicators for capacity-building or technology transfer though some of its partnerships, such as the LEG and the International Institute for Environment and Development learning platform, engage in capacity-building and the support is reported under climate finance. Furthermore, Ireland explained that in the absence of applying technological and capacity-building indicators for 2019 and 2020, the Party captured its support areas through qualitative information contained in the project descriptions in the NC8. However, Ireland indicated that from 2021 onward it has been using both capacity-building and technology transfer indicators, where possible. The ERT recommends that Ireland improve the completeness of its reporting by including information on the indicators it uses for the tracking of technological and capacity-building support in its next submission.
2	Reporting requirement specified in paragraph 55 Issue type: completeness Assessment: encouragement	The Party did not report on PaMs that promote the scaling up of private investment in mitigation and adaptation activities in developing countries in its NC8. During the review, Ireland explained that in its engagement with multilateral banks and funds it encourages the scaling up of private investment in mitigation and adaptation activities in developing countries since these bodies have a key role at the interface between developing countries and international capital markets. Ireland prioritizes sustainable finance through its Ireland for Finance strategy, its national Sustainable Finance Roadmap and the EU Strategy for Financing the Transition to a Sustainable Economy. These strategies include actions that directly or indirectly promote the scaling up of climate-related private investment. For example, Ireland provided funding to the UNDP Financial Centres for Sustainability network to support the establishment of its SDG Pipeline Builder programme, the aim of which is to provide private investors with opportunities to support emerging markets and developing economies with country-level SDG-aligned investable projects. The ERT encourages Ireland to provide information on PaMs that promote the scaling up of investment in mitigation and adaptation in developing countries in order to enhance the completeness of its reporting in its next submission.
3	Reporting requirement specified in paragraph 58 Issue type: completeness Assessment: encouragement	The Party did not report in its NC8 information on how it encourages private sector activities and how those activities help Ireland to meet its commitments under the Convention. During the review, Ireland explained that in its engagement with multilateral banks and funds it encourages scaling up of private investment in mitigation and adaptation activities in developing countries since these bodies have a key role at the interface between developing countries and international capital markets. Ireland prioritizes sustainable finance domestically and at the EU level through its Ireland for Finance strategy, national Sustainable Finance Roadmap and the EU Strategy for Financing the Transition to a Sustainable Economy. These include actions that directly and indirectly promote the scaling up of climate-related private investment. Furthermore, Ireland provided funding to the UNDP Financial Centres for Sustainability network to support the establishment of its SDG Pipeline Builder programme, the aim of which is to provide private investors with opportunities to support emerging markets and developing economies with country-level SDG-aligned investable projects. The ERT encourages Ireland in its next submission, where feasible, to provide information on how it encourages private sector activities and how those activities help it to meet its commitments under the Convention.

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 minimization of adverse impacts and supplementary information related to the Kyoto Protocol reported in the eighth national communication of Ireland

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation*
1	Reporting requirement specified in paragraph 30 Issue type: transparency Assessment: recommendation	The Party reported information in its NC8 on how it is performing the general and specific functions defined in the guidelines for national systems under Article 5, paragraph 1, of the Kyoto Protocol. However, the Party did not report the required element, name and contact information for the national entity and its designated representative with the overall responsibility for the national inventory of the Party in its NC8. During the review, Ireland provided the relevant information, indicating the designated representative and providing contact information. The ERT recommends that Ireland improve the transparency of its reporting by including the name and contact information for the national entity and its designated representative with the overall responsibility for the national inventory of the Party. The ERT concludes that this potential problem of a mandatory nature does not influence the Party's ability to fulfil its commitments for the second commitment period of the Kyoto Protocol.
2	Reporting requirement specified in paragraph 32 Issue type: transparency Assessment: recommendation	The Party reported information in its NC8 on how its national registry performs the functions defined in the annex to decision 13/CMP.1 and the annex to decision 5/CMP.1 and complies with the requirements of the technical standards for data exchange between registry systems, as adopted by the first and second sessions of the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol; however, it did not report a description of each element. Ireland reported on what has changed for each element, without a clear reference to where the full description of each element can be found. During the review, Ireland explained that changes to the relevant information had been reported in the NC7 and the BR3, and that the same format was followed in its approach to reporting in the NC8 and the BR5. Ireland further noted that where descriptive details of the relevant information are required, it is awaiting details from the European Commission; these were expected at the time of the review. The ERT recommends that Ireland increase the transparency of its reporting by including more complete descriptions of each required element regarding its national registry or providing a reference to where the complete information can be found. The ERT concludes that this potential problem of a mandatory nature does not influence the Party's ability to fulfil its commitments for the second commitment period of the Kyoto Protocol.
3	Reporting requirement specified in paragraph 36 Issue type: completeness Assessment: recommendation	The Party did not report in its NC8 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, effects on international trade, and social, environmental and economic impacts on other Parties, especially developing country Parties and in particular those identified in Article 4, paragraphs 8 and 9, of the Convention, taking into account Article 3 of the Convention. During the review, Ireland reported that, as a member State of the EU, Ireland's commitments under the Kyoto Protocol are being implemented under decision 2005/166/EC, which covers joint fulfilment under Article 4, and decision 280/2004/EC, which covers specific emissions monitoring and reporting requirements. Ireland noted that in this context, the minimization of adverse impacts on developing countries is also largely dictated by the European Commission's policy on climate change and by its policies and programmes affecting developing countries, and that European regulations also influence a variety of aspects of the economy of each EU member State. Ireland also noted that the impact assessment of policy initiatives in the EU examines potential adverse impacts on stakeholders, including developing country Parties, and seeks to limit such impacts at early stages. Ireland stated that owing to this activity by the EU, member States such as Ireland ensure that the impacts of EU and member State policies are minimized. Ireland noted that detailed information in this regard is included in its 2022 NIR, chapter 15 ("Minimisation of adverse impacts under Article 3, Paragraph 14"). The ERT reiterates the recommendation from the previous review report for Ireland to report information on how it strives to implement PaMs in such a way as to minimize

No.	Reporting requirement, issue type and assessment	Description of the finding with recommendation
		adverse effects, or provide the relevant references to the presentation of this information within its NIR. The ERT concludes that this potential problem of a mandatory nature does not influence the Party's ability to fulfil its commitments for the second commitment period of the Kyoto Protocol.

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

Annex II

Assessment of adherence to the reporting guidelines for the fifth biennial report of Ireland

The BR5 of 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.4 summarize the ERT assessment of adherence to the UNFCCC reporting guidelines on BRs for Ireland's BR5.

Table II.1
Findings on mitigation actions and their effects from the review of the fifth biennial report of Ireland

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	The Party organized its reporting on PaMs by sector using the following sectors: energy, industry, agriculture, forestry and peatlands, waste, cross-sectoral and the built environment. However, the use of "LULUCF" as a sector is not consistent throughout the NC8 and is used interchanged with "forestry and peatlands". During the review, Ireland clarified that the forestry and peatlands sector, as reported in the BR5 (which references NC8 chapter 4 on PaMs) and the LULUCF/forestry sector, as reported in CTF table 3, are equivalent. The ERT recommends that Ireland, to the extent possible, use the sectors energy, transport, industry/IPPU, agriculture, LULUCF/forestry, waste management/waste, other sectors and cross-cutting, or provide an explanation for the descriptions used in the textual part of the submission or in the CTF tables, for example in a custom footnote in CTF table 3, in order to minimize confusion and enhance transparency.

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.

Table II.2
Findings on estimates of emission reductions and removals and on the use of units from market-based mechanisms and land use, land-use change and forestry from the review of the fifth biennial report of Ireland

No.	*Reporting requirement and issue type*	*Description of the finding with recommendation or encouragement*
1	Reporting requirement specified in paragraph 9 Issue type: completeness Assessment: recommendation	The Party did not report information on total GHG emissions in CTF table 4. During the review, Ireland indicated that it reported total GHG emissions in CTF table 1. Further, Ireland cited footnote d of table 4 of decision 19/CP.18, "Information in this column should be consistent with the information reported in table 4(a)I or 4(a)II, as appropriate. The Parties for which all relevant information on the LULUCF contribution is reported in table 1 of this common tabular format can refer to table 1", and also cited the footnote b to table 4(a)I of decision 19/CP.18, "Parties that use the LULUCF approach that is based on table 1 do not need to complete this table". However, the ERT notes that the footnote d cited by the Party refers only to the table 4 column titled "Contribution from LULUCF" and is not related to the column "Total emissions excluding LULUCF".

[1] The Conference of the Parties, by decision 1/CP.24, decided that the final BRs 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 BR, 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*
		The ERT reiterates the recommendation from the previous review report for Ireland to improve the completeness of its reporting by including the required tabular information on total GHG emissions in its next submission.

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.

Table II.3
Findings on projections reported in the fifth biennial report of Ireland

No.	*Reporting requirement and issue type*	*Description of the finding with recommendation or encouragement*
1	Reporting requirement[a] specified in paragraph 27	Ireland reported sensitivity analyses in its BR5 focused on specific sectors (i.e. agriculture and transport), but a relevant description was missing for the transport sector's analysis.
	Issue type: transparency	During the review, Ireland informed the ERT that the transport sensitivity analysis used an oil price that is 38 per cent lower in 2030 than that used in the WEM scenario and provided a link to further information.
	Assessment: encouragement	The ERT encourages Ireland in its next submission to transparently report on sensitivity analyses, including by providing relevant explanations necessary to understand them (e.g. a brief explanation of the methodologies and parameters used).
2	Reporting requirement[a] specified in paragraph 32	Ireland did not report projections for indirect gases such as CO, NO_x, NMVOCs and SO_x in its BR5.
	Issue type: completeness	During the review, Ireland noted that no progress had been made on indirect gas projections since the BR4.
	Assessment: encouragement	The ERT reiterates the encouragement from the previous review report for Ireland to undertake this study in order to improve the completeness of its next submission.
3	Reporting requirement[a] specified in paragraph 32	Ireland reported its projections in an aggregated format for each sector as well as national totals; however, there were slight differences in the information reported in tables 2(a) and 4(a) in the textual portion of the report and CTF tables 6(a) and 6(c).
	Issue type: transparency	During the review, Ireland clarified that the information in the textual portion of the report was correct.
	Assessment: recommendation	The ERT recommends that in its next submission Ireland reports its projections in an aggregated format for each sector as well as national totals consistently between the textual and tabular portions of the report.
4	Reporting requirement[a] specified in paragraph 42	Ireland did not report the main differences in assumptions and results between the projections reported in the current submission and those reported in previous BRs, with the exception of the new methodological tool that was introduced.
	Issue type: completeness	During the review, the Party provided information on the policy changes since its previous submission, which underpin the new projections.
	Assessment: encouragement	The ERT encourages Ireland in its next submission to report on the main differences in the assumptions and results between the projections reported in the next submission and those reported in previous BRs. The ERT notes that the Party could potentially describe the development of policies such as those prior to the Climate Action Plan 2019 (the WAM scenario of the BR4), the Climate Action Plan 2019 (the WEM scenario of the NC8 and the BR5), the Climate Action Plan 2021 (the WAM scenario of the NC8 and the BR5) and the Climate Action Plan 2023 (for future submissions), and the key contributors, in order to explain the progress of actions from one climate action plan to another.

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.4
Findings on provision of financial, technological and capacity-building support to developing country Parties from the review of the fifth biennial report of Ireland

No.	*Reporting requirement and issue type*	*Description of the finding with recommendation or encouragement*
1	Reporting requirement specified in paragraph 14 Issue type: completeness Assessment: recommendation	The Party did not report in its BR5 the indicators it uses for the tracking of its technological and capacity-building support as required by the UNFCCC reporting guidelines on BRs. During the review, Ireland explained that up until 2020, it did not apply or use indicators for capacity-building or technology transfer though some of its partnerships, such as the LEG and the International Institute for Environment and Development learning platform, engage in capacity-building and the support is reported under climate finance. Furthermore, Ireland explained that in the absence of applying technological and capacity-building indicators for 2019 and 2020, the Party captured its support areas through qualitative information contained in the project descriptions in the BR5. However, Ireland indicated that from 2021 onward it has been using both capacity-building and technology transfer indicators, where possible. The ERT recommends that Ireland improve the completeness of its reporting by including information on the indicators it uses for the tracking of technological and capacity-building support in its next submission.
2	Reporting requirement specified in paragraph 19 Issue type: completeness Assessment: encouragement	The Party did not report on PaMs that promote the scaling up of private investment in mitigation and adaptation activities in developing countries in its BR5. During the review, Ireland explained that in its engagement with multilateral banks and funds it encourages the scaling up of private investment in mitigation and adaptation activities in developing countries since these bodies have a key role at the interface between developing countries and international capital markets. Ireland prioritizes sustainable finance through its Ireland for Finance strategy, its national Sustainable Finance Roadmap and the EU Strategy for Financing the Transition to a Sustainable Economy. These strategies include actions that directly or indirectly promote the scaling up of climate-related private investment. For example, Ireland provided funding to the UNDP Financial Centres for Sustainability network to support the establishment of its SDG Pipeline Builder programme, the aim of which is to provide private investors with opportunities to support emerging markets and developing economies with country-level SDG-aligned investable projects. The ERT encourages Ireland to provide information on PaMs that promote the scaling up of investment in mitigation and adaptation in developing countries in order to enhance the completeness of its reporting in its next submission.

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 Ireland. Available at https://unfccc.int/ghg-inventories-annex-i-parties/2022.

2023 GHG inventory submission of Ireland. Available at https://unfccc.int/ghg-inventories-annex-i-parties/2023.

BR4 of Ireland. Available at https://unfccc.int/BR4.

BR5 CTF tables of Ireland. Available at https://unfccc.int/BR5.

BR5 of Ireland. Available at https://unfccc.int/BR5.

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

"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.

European Green Deal. European Commission document COM(2019) 640 final. Available at https://ec.europa.eu/info/files/communication-european-green-deal_en.

"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 Ireland 2021–2030. Available at https://www.gov.ie/en/publication/0015c-irelands-national-energy-climate-plan-2021-2030/.NC8 of Ireland. Available at https://unfccc.int/NC8.

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

Report on the individual review of the annual submission of Ireland submitted in 2018. FCCC/ARR/2018/IRL. Available at https://unfccc.int/process-and-meetings/transparency-and-reporting/reporting-and-review-under-the-convention/greenhouse-gas-inventories-annex-i-parties/inventory-review-reports/inventory-review-reports-2018.

Report on the technical review of the BR4 of Ireland. FCCC/TRR.4/IRL. Available at https://unfccc.int/documents/231664.

Report on the technical review of the NC8 and the technical review of the BR5 of the EU. FCCC/IDR.8/EU–FCCC/TRR.5/EU. Available at https://unfccc.int/documents/630393.

"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 Stacy Wrenn (Department of the Environment, Climate and Communications of Ireland), including additional material. The following references were provided by Ireland and may not conform to UNFCCC editorial style as some have been reproduced as received:

Climate Action Plan 2019, To Tackle Climate Breakdown. Government of Ireland, June 2019.

Climate Action Plan 2021, Securing Our Future. V0.2. Government of Ireland, November 2021.

Climate Action Plan 2023, Changing Ireland for the Better. Version 2. Government of Ireland, April 2023.

EU Emissions Trading System (EU ETS). Available at https://climate.ec.europa.eu/eu-action/eu-emissions-trading-system-eu-ets_en.

Ireland's Informative Inventory Report. Available at https://www.epa.ie/publications/monitoring--assessment/climate-change/air-emissions/Ireland-IIR-2023-finalv2.1.pdf.