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

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 Finland, 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 Finland, 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 Helsinki from 20 to 24 March 2023.

Contents

Abbreviations and acronyms

AEA	annual emission allocation
Annex I Party	Party included in Annex I to the Convention
AR	Assessment Report of the Intergovernmental Panel on Climate Change
BR	biennial report
CH_4	methane
CO_2	carbon dioxide
CO_2 eq	carbon dioxide equivalent
CTF	common tabular format
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
F-gas	fluorinated gas
GDP	gross domestic product
GHG	greenhouse gas
GWP	global warming potential
HFC	hydrofluorocarbon
IE	included elsewhere
IPPU	industrial processes and product use
LULUCF	land use, land-use change and forestry
N_2O	nitrous oxide
NA	not applicable
NC	national communication
NE	not estimated
NF_3	nitrogen trifluoride
NFI	national forest inventory
NIR	national inventory report
NO	not occurring
non-Annex I Party	Party not included in Annex I to the Convention
ODA	official development assistance
PaMs	policies and measures
PFC	perfluorocarbon
reporting guidelines for supplementary information	“Guidelines for the preparation of the information required under Article 7 of the Kyoto Protocol. Part II: Reporting of supplementary information under Article 7, paragraph 2”
SF_6	sulfur hexafluoride
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 Finland. 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 Finland, which provided comments that were considered and incorporated, as appropriate, into this final version of the report.

3. The review was conducted from 20 to 24 March 2023 in Helsinki by the following team of nominated experts from the UNFCCC roster of experts: Gamze Celikyilmaz (Türkiye), Hannah Förster (EU), Jiyun Jeoung (Republic of Korea), Mauro Meirelles de Oliveira Santos (Brazil) and Saritha Vishwanathan (India). Gamze Celikyilmaz and Mauro Meirelles de Oliveira Santos were the lead reviewers. The review was coordinated by Laura Della Rocca and Jamie Howland (secretariat).

B. Summary

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

1. Timeliness

5. The NC8 was submitted on 22 December 2022, before the deadline of 31 December 2022 mandated by decision 6/CP.25.

6. The BR5 was submitted on 22 December 2022, before the deadline of 31 December 2022 mandated by decision 6/CP.25. The CTF tables were also submitted on 22 December 2022.

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

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

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

(a) The transparency of the GHG inventory information reported by discussing emission trends in subsectors and reporting on the factors underlying these trends;

[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.

(b) The completeness of the information reported on PaMs by providing detailed information for considerably more PaMs than in its NC7;

(c) The transparency of the information reported on projections and the total effects of PaMs by reporting historical indirect CO_2 emissions for all relevant scenarios; providing detailed information on the strengths and weaknesses of the models used and references to more detailed information on those models; discussing the differences in results in relation to the previously reported projections; explaining why it was unable to report a WOM scenario; including projections of indirect GHGs; and providing GHG emission projections disaggregated into emissions covered and not covered by the EU ETS, in tabular format;

(d) The transparency of the information reported on financial, technological and capacity-building support by providing footnotes that clearly indicate the support provided to Ukraine, which, although it is an Annex I Party, is eligible for ODA;

(e) The completeness of the information reported on vulnerability assessment, climate change impacts and adaptation measures by providing detailed information on vulnerabilities for each area and economic sector; information on adaptation policies and strategies at the national, regional, local and sectoral level; and a description of its monitoring activities with respect to the effectiveness of its climate policies;

(f) The completeness of the information reported on research and systematic observation by providing well-structured, detailed information on research and systematic observation activities;

(g) The completeness of the information reported on education, training and public awareness by including information on the extent of public participation in the preparation or domestic review of the NC8.

Table 1
Assessment of completeness and transparency of mandatory information reported by Finland 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	Complete	Transparent	–
Projections and the total effect of PaMs	Complete	Transparent	–
Vulnerability assessment, climate change impacts and adaptation measures	Complete	Mostly transparent	Issue 1 in table I.4
Financial resources and transfer of technology	Complete	Mostly 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 Finland in its eighth national communication

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

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

[a] The assessment refers to information provided by the Party on the provisions contained in Article 4, paras. 3, 5 and 7, of the Convention, as reported under Article 10 of the Kyoto Protocol, which is relevant to 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.

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

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

(a) The completeness of the information reported on progress in achievement of quantified economy-wide emission reduction targets and relevant information by providing detailed information for considerably more PaMs than in its BR4;

(b) The transparency of the information reported on projections by reporting historical indirect CO_2 emissions for all relevant scenarios; providing detailed information on the strengths and weaknesses of the models used and references to more detailed information on those models; discussing the differences in results in relation to the previously reported projections; explaining why it was unable to report a WOM scenario; including projections of indirect GHGs; and providing GHG emission projections disaggregated into emissions covered and not covered by the EU ETS, in tabular format.

Table 3
Summary of completeness and transparency of mandatory information reported by Finland 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	Complete	Transparent	–
Provision of support to developing country Parties	Complete	Mostly transparent	Issue 1 in table II.3

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

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

11. The NC8 contains key data on legislation, population trends, geography and land use, climate and climate change, economic developments, energy supply and consumption, energy markets, transport, the building sector, industry, agriculture, forestry and waste. Finland provided a concise description of its national circumstances and presented information on its legislative framework for and key policy documents on climate change.

12. During 1990–2020, population and GDP increased by 10.6 and 58.9 per cent respectively, equivalent to a compound annual growth rate of 0.34 and 1.56 per cent respectively between 1990 and 2020. GHG emissions per capita decreased by 39 per cent (without LULUCF) and 52 per cent (with LULUCF), while GHG emissions per unit of GDP decreased by 58 per cent (without LULUCF) and 67 per cent (with LULUCF). This indicates that Finland has made significant progress in decoupling its GHG emissions from its growth since the reporting in the NC7.

13. A slight increase was observed in settlements because of an increase in human activity (from 14,688 km^2 in 2015, as reported in the NC7, to 15,058 km^2 in 2020, as reported in the NC8). Finland's cold climate, energy-intensive industries and long commuting distances have led to relatively high energy intensity and per capita GHG emissions. The average annual temperature increased by about 2 °C between 1900 and 2020, while the average annual precipitation was 10 per cent higher between 1991 and 2020 than between 1961 and 1990.

14. Total energy consumption decreased from 1,301 PJ in 2015 to 1,277 PJ in 2020 owing in part to the coronavirus disease 2019 pandemic and exceptionally warm weather in 2020. Unlike other Nordic countries, Finland observed a decline in the consumption of hard coal and peat when compared with the values reported in the NC7. One of the reasons for this is the ban on the use of hard coal for energy, which will enter into force in 2029 but which is having immediate effects. The share of renewables increased considerably between 2015 (as reported in the NC7) and 2020, both in the total primary energy supply (from 16 to 44.6 per cent) and in domestic electricity production (from 3.5 to 12.3 per cent).

2. Assessment of adherence to the reporting guidelines

15. The ERT assessed the information reported in the NC8 of Finland and identified an issue relating to transparency, and thus adherence to the UNFCCC reporting guidelines on NCs. The finding is described in table I.1.

B. Greenhouse gas inventory information[4]

1. Technical assessment of the reported information

16. Finland reported information in its BR5 and NC8 on its historical GHG emissions and inventory arrangements. Total GHG emissions[5] excluding emissions and removals from

[4] GHG emission data in this section are based on Finland's 2022 annual submission, version 6, which has not yet been subject to review. All emission data in subsequent chapters are based on Finland'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 and including indirect CO_2 emissions, unless otherwise specified.

LULUCF decreased by 32.9 per cent between 1990 and 2020, whereas total GHG emissions including net emissions or removals from LULUCF and including indirect CO_2 decreased by 47.2 per cent over the same period. Emissions peaked in 2003 and decreased thereafter. The changes in total emissions were driven mainly by factors such as the effects of the coronavirus disease 2019 pandemic, increases in emission-free and energy-efficient road transport, measures to phase out oil heating, and a ban on the use of hard coal for energy from 2029, which was announced in 2019 but had immediate impacts.

17. Table 4 illustrates the emission trends by sector and by gas for Finland. The emissions reported in the 2022 annual submission are the same as those reported in CTF table 1.

Table 4
Greenhouse gas emissions by sector and by gas for Finland for 1990–2020

	GHG emissions (kt CO_2 eq)					*Change (%)*		*Share (%)*	
	1990	*2000*	*2010*	*2019*	*2020*	*1990–2020*	*2019–2020*	*1990*	*2020*
Sector									
1. Energy	53 442.15	53 709.68	60 230.38	38 922.22	34 289.50	–35.8	–11.9	75.3	71.9
A1. Energy industries	18 969.25	22 141.40	30 954.39	16 248.84	13 129.76	–30.8	–19.2	26.7	27.5
A2. Manufacturing industries and construction	13 374.91	11 934.04	10 042.19	6 591.16	6 238.23	–53.4	–5.4	18.8	13.1
A3. Transport	12 095.17	12 078.40	12 674.31	11 249.40	10 443.43	–13.7	–7.2	17.0	21.9
A4. and A5. Other	8 879.25	7 434.19	6 417.32	4 740.81	4 379.40	–50.7	–7.6	12.5	9.2
B. Fugitive emissions from fuels	123.56	121.65	142.16	92.03	98.68	–20.1	7.2	0.2	0.2
C. CO_2 transport and storage	NO, NA	NO, IE, NA	NO, IE, NA	NO, IE, NA	NO, IE, NA	–	–	–	–
2. IPPU	5 397.60	5 988.41	6 159.40	5 394.61	5 124.48	–5.1	–5.0	7.6	10.7
3. Agriculture	7 506.86	6 614.85	6 650.75	6 624.45	6 565.95	–12.5	–0.9	10.6	13.8
4. LULUCF	–13 441.26	–15 047.94	–21 710.64	–13 589.55	–17 303.12	28.7	27.3	NA	NA
5. Waste	4 669.16	3 817.15	2 561.95	1 793.38	1 736.37	–62.8	–3.2	6.6	3.6
6. Other[a]	NO	NO	NO	NO	NO	–	–	–	–
Gas[b]									
CO_2	56 914.34	57 009.92	64 080.76	42 381.84	37 595.93	–33.9	–11.3	80.1	78.8
CH_4	7 687.13	6 566.27	5 350.01	4 492.79	4 401.88	–42.7	–2.0	10.8	9.2
N_2O	6 361.59	5 809.16	4 784.12	4 828.58	4 721.77	–25.8	–2.2	9.0	9.9
HFCs	0.02	715.47	1 363.18	1 011.33	975.87	4 658 372.0	–3.5	0.0	2.0
PFCs	0.21	3.21	2.62	1.90	1.72	729.4	–9.8	0.0	0.0
SF_6	52.48	26.06	21.79	18.21	19.13	–63.6	5.1	0.1	0.0
NF_3	NO	NO	NO	NO	NO	–	–	–	–
Total GHG emissions excluding LULUCF	**71 015.77**	**70 130.08**	**75 602.47**	**52 734.65**	**47 716.30**	**–32.8**	**–9.5**	**100.0**	**100.0**
Total GHG emissions including LULUCF	**57 574.51**	**55 082.15**	**53 891.83**	**39 145.10**	**30 413.18**	**–47.2**	**–22.3**	**NA**	**NA**
Total GHG emissions excluding LULUCF, including indirect CO_2	**71 182.11**	**70 238.38**	**75 672.35**	**52 788.02**	**47 782.25**	**–32.9**	**–9.5**	**NA**	**NA**
Total GHG emissions including LULUCF, including indirect CO_2	**57 740.85**	**55 190.44**	**53 961.71**	**39 198.47**	**30 479.13**	**–47.2**	**–22.2**	**NA**	**NA**

Source: GHG emission data: Finland's 2022 annual submission, version 6.
[a] Emissions and removals reported under the sector other (sector 6) are not included in total GHG emissions.
[b] Emissions by gas without LULUCF and excluding indirect CO_2.

18. In brief, Finland's national inventory arrangements were established in accordance with the government resolution of 30 January 2003 on the organization of climate policy activities of government authorities. In 2015, the role of Statistics Finland as the national entity with overall responsibility for preparation of the GHG inventory was enforced through the Climate Change Act (609/2015). There have been no significant changes in these arrangements since the BR4.

2. Assessment of adherence to the reporting guidelines

19. The ERT assessed the information reported in the NC8 and BR5 of Finland and identified an issue relating to transparency and thus adherence to the UNFCCC reporting guidelines on NCs and the UNFCCC reporting guidelines on BRs. The findings are described in tables I.2 and II.1.

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

(a) Technical assessment of the reported information

20. Finland 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 all the elements mandated by paragraph 30 of the annex to decision 15/CMP.1.

(b) Assessment of adherence to the reporting guidelines

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

4. National registry

(a) Technical assessment of the reported information

22. In its NC8 Finland 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 the changes to the national registry reflected in the report on the individual review of the 2020 annual submission of Finland.

(b) Assessment of adherence to the reporting guidelines

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

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

1. Technical assessment of the reported information

24. Finland reported information on its economy-wide emission reduction target in its BR5. For Finland the Convention entered into force on 1 August 1994. Under the Convention Finland 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.

25. 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.

26. 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 43 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 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 with the target of reducing emissions covered under the ESR by 30 per cent below the 2005 level by 2030.

27. 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.

28. 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 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.

29. Finland has a national target of reducing its emissions to 16 per cent below the 2005 level by 2020 for ESD sectors. This target has been translated into binding quantified AEAs for 2013–2020. Finland's AEAs change following a linear path from 31,800 kt CO_2 eq in 2013 to 28,500 kt CO_2 eq in 2020.[6] Under the ESR, Finland has a national target of reducing emissions from covered sectors to 39 per cent below the 2005 level by 2030.

30. Finland introduced a carbon-neutrality target for 2035, which was included in the reformed Climate Act in 2022. Under the Act, emission reduction targets are now 60 per cent by 2030, 80 per cent by 2040 and at least 90 per cent, aiming for 95 per cent, by 2050 compared with the 1990 level. The scope of the Act was extended to cover the LULUCF sector and a target for the strengthening of carbon sinks was added. Furthermore, under the EU Fit for 55 package, Finland's proposed revised targets are as follows: a reduction in emissions for ESR sectors of 50 per cent by 2030 compared with the 2005 level (previous target: 39 per cent) and a contribution of removals from the LULUCF sector of 17 Mt CO_2 eq by 2030.

2. Assessment of adherence to the reporting guidelines

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

[6] According to the EU transaction log.

D. Information on policies and measures

1. Technical assessment of the reported information

32. Finland provided in its NC8 and BR5 information on its PaMs[7] implemented, adopted and planned to fulfil its commitments under the Convention. Finland has expanded the number of measures included since its BR4 and NC7 considerably as a result of regrouping and disaggregation. For example, in road transport, more individual measures were reported than in the NC7.

33. Finland noted that some previously reported PaMs have been discontinued. For example, the Climate Programme for Finnish Agriculture – Steps towards Climate Friendly Food has been discontinued and partly replaced by the new Common Agricultural Policy of the EU Strategic Plan, the Medium-term Climate Change Policy Plan and the Climate Food Programme, which is currently under preparation. The building regulations (2003, 2008, 2010 and 2012) that preceded decree 1010/2017 of the Ministry of the Environment on the energy efficiency of new buildings have expired. The car scrapping premium from 2020 and 2021 has expired.

34. Finland 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. Finland also indicated that there have been no major 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.

35. Since 2003, ministerial working groups, which include representatives of all political parties, have been responsible for preparing and updating the national strategies on energy and climate policy. The main policy plans include the National Energy and Climate Strategy, which focuses on all sectors and includes implemented and planned PaMs, as well as WEM and WAM scenario assessments; the Medium-term Climate Change Policy Plan for PaMs in the sectors outside the EU ETS; and the Climate Plan for the Land Use Sector for PaMs in the LULUCF sector. The relevant ministries are responsible for implementing the PaMs in their sectors and for their monitoring and evaluation. In some cases, this responsibility is delegated to specialized government entities.

36. Finland's assessment of the economic and social consequences of its response measures includes several initiatives aimed at minimizing adverse impacts. The Party reported in its NC8 that it supports developing countries by helping them to build their capacity and develop their economic infrastructure to diversify their economies and improve energy production. Examples of such activities include the Energy and Environment Partnership in Southern and East Africa and similar programmes in the Mekong region, Central America, the Andean region and Indonesia. Finland has also worked to reduce and phase out market imperfections, fiscal incentives and fossil fuel subsidies in all GHG-emitting sectors. Finland reported that its actions to identify and review its own policies and practices that encourage activities that lead to greater levels of emissions include the major revision in 2011 of its energy taxation, whereby fuels were subsequently taxed on the basis of their energy and fossil carbon content and life cycle emissions. Electricity, coal, natural gas, peat, tall oil and liquid fuels are all subject to energy taxes.

37. In its reporting on PaMs, Finland provided the estimated emission reduction impacts for nearly half of its PaMs. Where estimated impacts were not provided, the Party supplied a general explanation on the use of notation keys and for some PaMs a specific explanation. The notation key "NE" was used in some cases for reasons including complexity, overlapping with other PaMs, being in a phase with unknown details of implementation, and covering a heterogenous target group of actors or PaMs where the quantification of the effect is difficult (e.g. for advice and information measures).

38. Finland estimated the impacts of some of its PaMs in groups, for example for F-gas measures and waste sector measures. The rationale for grouping them was to avoid double

[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.

counting and improve accuracy. The impact of the respective individual measures was reported as "IE". Finland explained during the review that it intended to report "Partly IE" for the measure "Promoting new energy technology projects", but because this key is not available in the CTF reporting tool, the corresponding cells appear empty.

39. The Party described the different methodologies used for estimating the impacts of its individual PaMs or groups of PaMs. These methodologies generally differed by sector or subsector and were integrated into the methodologies for projecting emissions. In the building sector, for example, the effects of policies were used to develop inputs to the EKOREM and POLIREM models, which were used for producing the estimated changes in emissions.

40. 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. The scope of this target includes LULUCF and international aviation. The Fit for 55 package of legislative proposals aims to introduce a series of policies intended to help achieve the new 2030 target.

41. 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. Finland's national energy and climate plan specifies the following key commitments: a reduction in GHG emissions in the ESR sectors of 39 per cent by 2030 compared with the 2005 level; total LULUCF sector emissions not to exceed the calculated sinks in 2021–2025 and 2026–2030; a total renewable energy share of final energy consumption of at least 51 per cent by 2030; a renewable energy share of final energy consumption in road transport of 30 per cent by 2030; and an energy efficiency target of final energy consumption not to exceed 290 TWh by 2030.

42. Finland introduced national-level policies to achieve its targets under the ESD and ESR and to achieve domestic emission reduction targets. The latest key strategy, Carbon Neutral Finland 2035, sets the key starting points and objectives for the overarching Government Programme, including the national target for carbon neutrality by 2035. The Medium-term Climate Change Policy Plan specifies key measures for achieving the Party's binding ESD target. The Climate Plan for the Land Use Sector is a key policy specifying how emissions from the land-use sector can be reduced and carbon sinks and reservoirs strengthened. Finland also introduced the Roadmap to Fossil-free Transport in May 2021.

43. In its NC8 and BR5 Finland reported 87 implemented measures, highlighting the main measures per sector. The key policies reported are carbon pricing through energy taxation and the EU ETS; building regulations; energy efficiency agreements; measures for promoting the use of renewable energy sources, especially past and present subsidies on new technologies such as wind and solar and the phase-out of coal use for energy; the biofuel distributor blending obligation in transport; government decree 861/1997 on landfills, revised in 2013 (331/2013) and 2021 (1030/2021); and the National Biowaste Strategy (2004) banning organic waste in landfills, which set quantitative limits on amounts and proportion of organic waste in landfill waste.

44. The ERT noted that in its NC8 and BR5 Finland reported on all implemented sectoral measures in the corresponding sector sections under the heading "Policies and measures in the WM projection". However, CTF table 3 and the corresponding tables in the NC8 indicate only a subset of these measures as being included in the WEM projections.

45. The estimated 2020 mitigation impact of the energy efficiency agreements is the most significant among the PaMs. The energy efficiency agreements, which are drawn up between

the Government and companies in the energy and industry sector or municipalities, implement and monitor the implementation of the obligations under the EU energy efficiency directive. The energy consumption of these actors accounts for around 60 per cent of Finland's total energy consumption. Other policies that have delivered significant emission reductions are the building regulations and "Promoting of wood chips" and "Promoting of wind power" in the energy sector, which include measures such as investment subsidies, electricity tax subsidies, feed-in tariffs, and information and education measures. The ERT identified the Catch the Carbon programme in the agriculture and LULUCF sectors as a mitigation action of particular interest. The programme focuses on two aspects in parallel: it funds research and innovation projects as well as practical demonstration projects at the farm level.

46. Finland reported eight adopted measures: promoting the use of bioliquids in non-road mobile machinery; including biogas and electrofuels in the distributor obligation legislation; reducing CH_4 emissions from dairy cows through feed changes; promoting the use of biogas in agriculture; undertaking actions to prevent deforestation (preventing forest conversion to fields, developing the property structure of arable land, preventing the deforestation of unimproved building land and exploring land-use change fees); managing peatland forests for climate resilience (applying continuous cover forestry and avoiding remedial ditching); implementing non-quantifiable measures to improve carbon sequestration in the land-use sector; and renewing the temporary Act on the Financing on Sustainable Forestry (in process).

47. Finland 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. Finland reported on 22 planned measures. Energy sector measures include improving energy efficiency and promoting the use of alternative fuels in non-road mobile machinery; a biofuel distributor blending obligation to reach 100 per cent by 2045; and CO_2 emission performance standards for new heavy-duty vehicles. International transport measures include developing a maritime emissions trading system; promoting the use of liquefied natural gas and other alternative fuels in sea transport; and using alternative fuels and sustainable aviation fuels in air transport. Industry sector measures include improving the control of F-gas banks and recovery of F-gases; while agriculture and LULUCF sector measures include the Climate Food Programme, nutrition recommendations, influencing the age structure of cattle and promoting agroforestry; and waste sector measures include amending waste tax legislation.

48. Table 5 provides a summary of the reported information on key implemented PaMs of Finland.

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

Sector	*Key PaMs*	*Estimated mitigation impact in 2025 (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				
Energy	Implementation of the EU ETS in Finland	NE	NE	NE
Energy efficiency	Energy taxation	NE	NE	NE
	Energy efficiency agreements	8 469.93	9 537.69	9 616.98
	Building regulations (2003, 2008, 2010)	4 559.30	5 686.60	6 813.90
	Revised building regulations (2012, 2017)	371.10	520.40	669.60
Energy supply and renewable energy	Promotion of wind power	8 934.00	11 140.00	11 708.00
	Promotion of wood chips	8 017.00	8 098.00	7 675.00
	Promotion of solar power	287.00	906.00	1 444.00
	Promotion of biogas in electricity and heat production	130.00	137.00	156.00
	Phase-out of coal in energy production	NE	650.00	400.00
Transport	Promotion of the use of biofuels in the transport sector	2 509.00	2 689.00	2 129.00

Sector	*Key PaMs*	*Estimated mitigation impact in 2025 (kt CO_2 eq)*	*Estimated mitigation impact in 2030 (kt CO_2 eq)*	*Estimated mitigation impact in 2035 (kt CO_2 eq)*
	Promotion of the use of biofuels in the transport sector, amending minimum levels	555.34	398.60	339.59
	CO_2 emission performance standards for new passenger cars and for new light commercial vehicles, including the alternative fuels infrastructure regulation	40.95	209.52	603.86
IPPU	PaMs related to F-gases (HFCs, PFCs and SF_6) under the WEM scenario	2 665.00	3 204.00	3 464.00
Agriculture	Reduction in CH_4 emissions from dairy cows through feed changes	298.00	295.00	289.00
	Action Plan to Reduce Ammonia Emissions from Agriculture in Finland for 2021–2027	NE	NE	NE
	Use of gender-selected semen in cattle breeding	NE	NE	NE
	Improved management of organic soils	350.01	748.09	1 084.33
	Improved management of mineral soils	202.00	273.00	245.00
	Catch the Carbon research and innovation programme	NE	NE	NE
LULUCF	New ownership policy decisions concerning Metsähallitus (climate actions in State-owned forests)	NE	400.00	700.00–900.00
	Actions to prevent deforestation (preventing forest conversion to fields, developing the property structure of arable land, preventing deforestation of unimproved building land, land-use change fee for all land uses)	NE	NE	500
Waste	All implemented waste sector PaMs	3 825.00	4 077.00	4 295.00

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.

2. Assessment of adherence to the reporting guidelines

49. The ERT assessed the information reported in the NC8 and BR5 of Finland 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. Domestic and regional programmes and legislative arrangements and procedures related to the Kyoto Protocol

(a) Technical assessment of the reported information

50. In its NC8 Finland reported that the implementation of the Kyoto Protocol is underpinned by the Climate Change Act and the Act on the Use of the Kyoto Mechanisms. A ministerial working group, with representatives of all political parties, has overall responsibility for energy and climate policymaking. The ministerial working group has a network of officials acting as its preparatory body, comprising representatives of the Ministry of Economic Affairs and Employment, the Ministry of Transport and Communications, the Ministry of Agriculture and Forestry, the Ministry of Education and Culture, the Ministry for Foreign Affairs, the Prime Minister's Office, the Ministry of Finance and the Ministry of the Environment. The Energy Authority is the registry administrator for the national emissions trading registry under the Kyoto Protocol and the EU ETS. In addition, the Ministry of the Environment bears the responsibility for the application of joint implementation and international emissions trading under the Kyoto Protocol and is the national focal point for

the UNFCCC, while the Ministry for Foreign Affairs bears the responsibility for Finland's participation in the clean development mechanism. The Ministry of Economic Affairs and Employment is responsible for the overall coordination of national energy and climate strategy work, issues related to the Kyoto Protocol mechanisms, and transposition and implementation of the EU ETS.

51. For the second commitment period of the Kyoto Protocol, from 2013 to 2020, Finland committed to contributing to the joint EU effort to reduce GHG emissions by 20 per cent below the base-year level (see paras. 24–26 above).

52. The Party has arrangements and enforcement procedures to meet its commitments under the Kyoto Protocol, including procedures for addressing non-compliance. These include annual monitoring by the European Commission to ensure that EU member States follow their emission reduction targets in accordance with EU decision 406/2009/EC and regulation 2018/842. Finland has not established specific national rules for taking action against domestic non-compliance with emission reduction targets as such rules are established under EU legislation. Further information was provided via a reference to the BR4 of the EU.

53. Finland has provisions in place to make information on legislative arrangements and administrative procedures related to compliance and enforcement publicly accessible. It reported that the right to access information is a basic right protected by the Constitution of Finland. The Act on the Openness of Government Activities provides for the public's right to information on the activities of public officials. Finlex, an online database maintained by the Ministry of Justice, makes up-to-date legislation on climate and energy publicly accessible.

54. Finland 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. Finland reported emissions and removals from afforestation/reforestation and deforestation activities. Emissions and removals from forest management were reported as an elected activity under Article 3, paragraph 4, for the first commitment period of the Kyoto Protocol. Finland has not elected other voluntary activities under Article 3, paragraph 4, for the second commitment period.

(b) Assessment of adherence to the reporting guidelines

55. The ERT assessed the information reported in the NC8 of Finland 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

56. In the NC8 Finland 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. Environmental impact assessments have been conducted for all of Finland's PaMs to observe their effects not only at the national level but also on developing countries. A life cycle analysis has been carried out on the impacts of Finland's fossil fuel imports beyond its borders. Finland also investigated the potential adverse impacts of increased use of bioenergy and analysed the criteria of sustainability for biofuels.

57. The NC8 includes information on how Finland promotes and implements the decisions of the International Civil Aviation Organization and the International Maritime Organization to limit emissions from aviation and marine bunker fuels. Finland's Action Plan to Reduce CO_2 Emissions from Aviation 2021 has been submitted to the International Civil

Aviation Organization. Finland proposes to reduce its emissions from domestic and international air traffic by 15 per cent by 2030 and by 50 per cent by 2045 below the 2018 level. Finland also reported on 23 PaMs pertaining to renewable energy, energy efficiency and pricing. Finland's national action plan to address GHG emissions from international shipping under the International Maritime Organization framework proposes energy efficiency measures and alternative fuel and propulsion technologies for maritime transport. The Party is also committed to reducing black carbon emissions from shipping.

58. Further information on how Finland strives to implement its commitments under Article 3, paragraph 14, of the Kyoto Protocol in such a way as to minimize adverse social, environmental and economic impacts on developing country Parties was reported in the 2022 annual submission. The Party reported information on what it prioritized in implementing its commitments under Article 3, paragraph 14, including (1) progressively reducing or phasing out market imperfections, fiscal incentives, tax and duty exemptions, and subsidies for fuels (e.g. tax on biofuels, finance for new coal power plants); (2) assisting developing countries in diversifying their fuel mix (e.g. through the Energy and Environment Partnership Trust Fund for Southern and East Africa, blended finance for the private sector); and (3) supporting developing countries in improving energy efficiency, transitioning to cleaner sources of energy and sustainable transport, and restoring carbon sinks through the Global Environment Facility and the Green Climate Fund.

(b) Assessment of adherence to the reporting guidelines

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

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

1. Technical assessment of the reported information

60. Finland reported in its BR5 that it did not use units from market-based mechanisms under the Kyoto Protocol to meet its commitment under the ESD. It did not report in CTF tables 4 and 4(b) on its use of market-based mechanisms as the targets for 2013–2020 have been met with domestic PaMs. Given that the contribution of LULUCF activities is not included in the joint EU target under the Convention, reporting thereon is not applicable to Finland. The ERT noted that the transparency of Finland's reporting could be improved by reporting "NA" in the relevant cells in CTF table 4. Table 6 illustrates Finland'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 Finland
(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	31 588.12	31 776.52	NA	NA	188.41	188.41
2014	30 146.83	31 288.40	NA	NA	1 141.56	1 329.97
2015	29 886.48	30 800.27	NA	NA	913.79	2 243.76
2016	31 358.14	30 312.14	NA	NA	–1 046.01	1 197.75
2017	30 062.24	30 177.15	NA	NA	114.91	1 312.66
2018	29 921.57	29 622.61	NA	NA	–298.97	1 013.70
2019	29 643.29	29 068.07	NA	NA	–575.22	438.48
2020	28 120.10	28 513.53	NA	NA	393.44	831.92

Sources: Finland's BR5 and 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

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

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

62. 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, Finland committed to reducing its emissions under the ESD to 16 per cent below the 2005 level by 2020 (see para. 29 above). This target has been translated into binding quantified AEAs for 2013–2020. In 2020 Finland's ESD emissions were 1.4 per cent (339.44 kt CO_2 eq) below the AEA. Finland has a cumulative surplus of 831.92 kt CO_2 eq with respect to its AEAs between 2013 and 2020.

63. The ERT noted that the Party reported that the total GHG emissions excluding LULUCF of the EU 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, Finland has met its 2020 commitment under the Convention through its contribution to achieving the joint EU target.

64. The ERT noted that the Party's ESD emissions in 2020 do not exceed its AEA for 2020.

F. Projections

1. Projections overview, methodology and results

(a) Technical assessment of the reported information

65. Finland reported in its BR5 and NC8 updated projections for 2025, 2030 and 2035 relative to actual inventory data for 2020 under the WEM scenario. The WEM scenario reported by Finland includes the PaMs implemented and adopted until July 2022.

66. In addition to the WEM scenario, Finland reported the WAM scenario. The WAM scenario includes the PaMs that had been planned but not implemented as of 1 August 2022. Thus, only a few measures are additional to the WEM scenario; these include improved emission standards for heavy-duty vehicles, a campaign to encourage the retirement of inefficient vehicles by offering a scrapping premium, measures to improve the control of F-gas banks and the recovery of F-gases, and measures to improve resource efficiency in the agriculture and LULUCF sectors. Finland provided a definition of its scenarios, explaining that they are based on data produced for three new plans: the Medium-term Climate Change Policy Plan, the National Climate and Energy Strategy and the Climate Plan for the Land Use Sector, all of which were submitted to the Finnish Parliament in 2022. The WEM scenario includes PaMs such as phasing out oil heating, promoting emission-free and energy-efficient road transport, and banning the use of hard coal for energy.

67. The projections are presented on a sectoral basis, using the same sectoral categories as those used in the reporting on mitigation actions, and on a gas-by-gas basis for CO_2, CH_4, N_2O, PFCs, HFCs and SF_6 (treating PFCs and HFCs collectively in each case) for 2025, 2050 and 2035. NF_3 emissions do not occur in the country. The projections are also provided in an aggregated format for each sector and for a Party total (including indirect CO_2 emissions with and without LULUCF) using GWP values from the AR4. Finland reported on factors and activities affecting emissions for each sector.

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

68. The methodology used for the preparation of the projections is identical to that used for the preparation of the emission projections for the NC7, except for the LULUCF sector. Finland provided information on changes since the submission of its NC7 in the assumptions, methodologies, models and approaches used for the projection scenarios. Finland reported supporting information further explaining the methodologies and the changes in the LULUCF projections made since the NC7. Owing to the change in the development of forest resources, the growth calibration model for trees was modified to better fit the new growth increment data and to better match the natural mortality measured in the NFI.

69. To prepare its projections, Finland relied on key underlying assumptions relating to GDP growth, structure of the economy and industry, population growth and structure, technology development and the effects of the coronavirus disease 2019 pandemic on the economy. The assumptions were updated on the basis of the most recent economic developments known at the time of the preparation of the projections. In the NC7 a projected increase in the population was reported, whereas in the NC8 and BR5, a slow decrease starting in 2031 was reported. The ERT noted that the transparency of projections could be further improved by describing the sensitivity of projections to this change in the population forecast. The projections take into account updated estimates of GHG emissions and removals for the whole GHG inventory time series (1990–2020) as well as any updates to models and assumptions. The projections' starting point is 2020, which is the most recent inventory year available at the time of the preparation of the BR5.

70. Sensitivity analyses were conducted for the WEM scenario on how the rate of economic growth affects the overall energy balance and GHG emissions, assuming energy use in the transport and building sector remains unchanged. The results of the analyses indicate that the increase in primary energy consumption will be smaller than that in final energy consumption, mostly because of efficiencies derived from the EU ETS.

(c) Results of projections

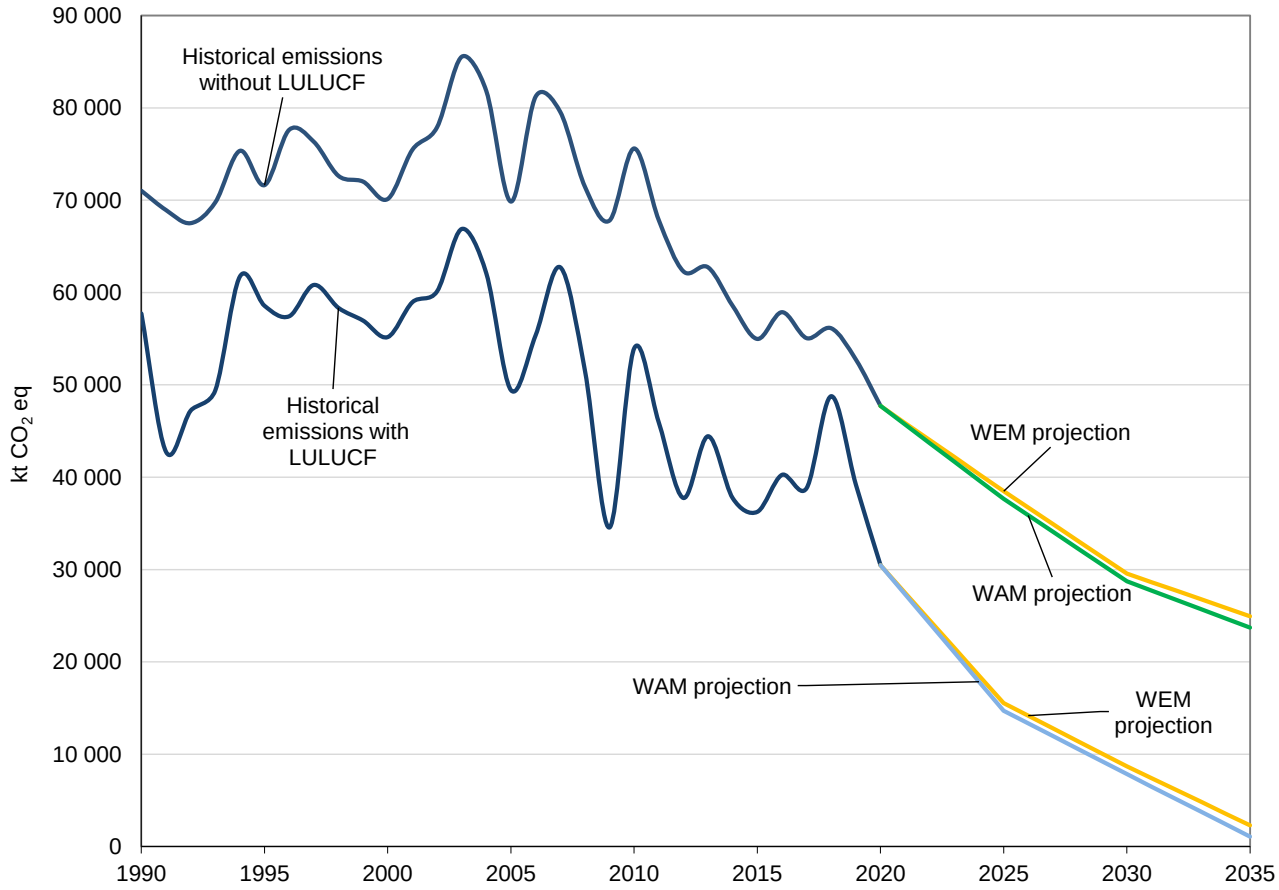
71. The projected emission levels under different scenarios and information on the quantified economy-wide emission reduction target are presented in table 7 and figure 1.

Table 7
Summary of greenhouse gas emission projections for Finland

	GHG emissions (kt CO_2 eq/year)	*Change in relation to 1990 level (%)*	*Change in relation to 2020 level (%)*
Inventory data 1990	71 182.11	NA	NA
Inventory data 2020	47 782.25	–32.9	NA
WEM projections for 2030	29 565.31	–58.5	–38.1
WAM projections for 2030	28 737.53	–59.6	–39.9
WEM projections for 2035	24 942.00	–65.0	–47.8
WAM projections for 2035	23 714.59	–66.7	–50.4

Sources: Finland's BR5 and BR5 CTF table 6 and information provided by Finland during the review.
Note: The projections are of GHG emissions excluding LULUCF and including indirect CO_2.

Figure 1
Greenhouse gas emission projections reported by Finland



Sources: Finland's BR5 and BR5 CTF tables 1 and 6 and information provided by Finland during the review.
Note: The projections are of GHG emissions including indirect CO_2.

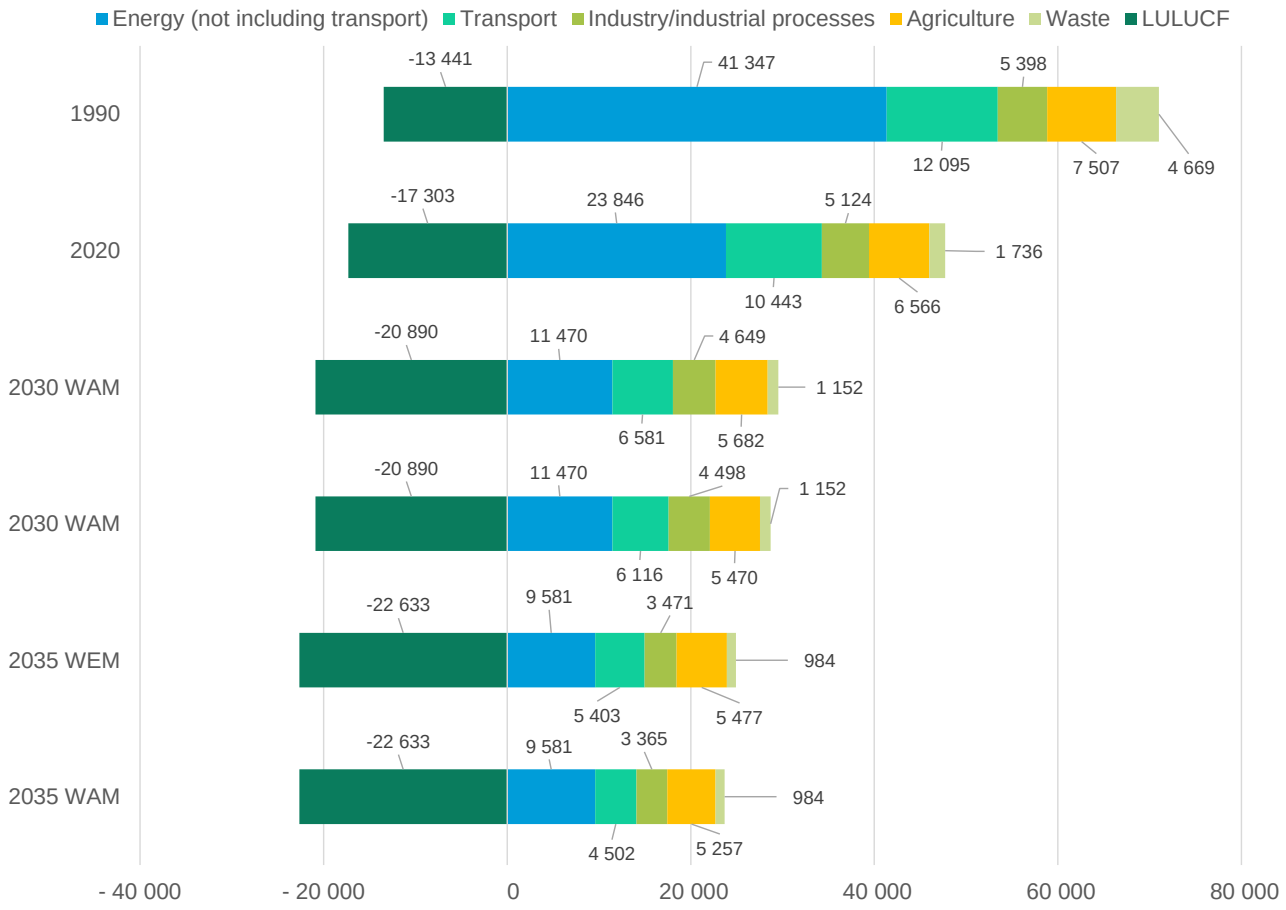
72. Finland's total GHG emissions excluding LULUCF and including indirect CO_2 are projected under the WEM scenario to decrease by 58.5 and 65.0 per cent respectively below the 1990 level in 2030 and 2035. When including LULUCF, total GHG emissions including indirect CO_2 are projected under the WEM scenario to decrease by 71.5 and 92.4 per cent respectively below the 1990 level in 2030 and 2035. Under the WAM scenario, emissions excluding LULUCF and including indirect CO_2 in 2030 and 2035 are projected to be lower than those in 1990 by 59.6 and 66.7 per cent respectively. When including LULUCF, emissions in 2030 and 2035 are projected to be lower than those in 1990 by 74.3 and 96.5 per cent respectively.

73. Finland presented the WEM and WAM scenarios by sector for 2030 and 2035, as summarized in figure 2 and table 8.

Figure 2

Greenhouse gas emission projections for Finland presented by sector

(kt CO_2 eq)



Sources: Finland's NC8 and BR5 CTF table 6 and information provided by Finland during the review.

Table 8

Summary of greenhouse gas emission projections for Finland presented by sector

	GHG emissions and removals (kt CO_2 eq)					*Change (%)*			
		2030		*2035*		*1990–2030*		*1990–2035*	
Sector	*1990*	*WEM*	*WAM*	*WEM*	*WAM*	*WEM*	*WAM*	*WEM*	*WAM*
Energy (not including transport)	41 346.98	11 469.85	11 469.84	9 581.00	9 581.04	–72.3	–72.3	–76.8	–76.8
Transport	12 095.17	6 581.07	6 116.32	5 403.00	4 502.11	–45.6	–49.4	–55.3	–62.8
Industry/industrial processes	5 397.60	4 648.56	4 498.25	3 471.00	3 364.77	–13.9	–16.7	–35.7	–37.7
Agriculture	7 506.86	5 682.21	5 469.51	5 477.00	5 257.11	–24.3	–27.1	–27.0	–30.0
LULUCF	–13 441.26	–20 889.81	–20 889.81	–22 633.00	–22 632.85	55.4	55.4	68.4	68.4
Waste	4 669.16	1 152.17	1 152.17	984.00	983.72	–75.3	–75.3	–78.9	–78.9
Other (indirect CO_2)	166.3	31.4	31.4	26.00	25.83	–81.1	–81.1	–84.4	–84.5
Total GHG emissions excluding LULUCF and including indirect CO_2	**71 182.11**	**29 565.31**	**28 737.53**	**24 942.00**	**23 714.59**	**–58.5**	**–59.6**	**–65.0**	**–66.7**

Sources: Finland's NC8 and BR5 CTF table 6 and information provided by Finland during the review.

74. According to the projections reported for 2030 under the WEM scenario, the most significant absolute emission reductions are expected to occur in the energy sector (not including transport), amounting to projected reductions of 72.3 per cent between 1990 and 2030. The pattern of projected emissions reported for 2035 under the WEM scenario remains the same, with projected emission reductions amounting to 76.8 per cent in the energy sector (not including transport). While the waste sector accounts for a relatively small fraction of Finland's emissions, it is projected to see the largest relative decrease with respect to 1990 in both 2030 and 2035.

75. According to the projections under the WAM scenario, reductions additional to those under the WEM scenario relative to the 1990 level are estimated to be 1.1 per cent in 2030 and 1.7 per cent in 2035. The additional emission reductions are expected to occur mostly in the transport sector, amounting to an additional 4.0 per cent in 2030 and 7.5 per cent in 2035. The agriculture and IPPU sectors are projected to contribute minor additional reductions under the WAM scenario in 2030 and 2035.

76. Projections reported in the NC8 and BR5 were prepared under the assumption that population will increase only slightly between 2020 and 2030, from 5.53 to 5.57 million, and will start slowly decreasing from 2031, reaching 5.56 million in 2035. Based on the population forecast, the total emissions (including indirect CO_2 emissions) per capita will be 5.3 t CO_2 eq in 2030 and 4.5 t CO_2 eq in 2035 under the WEM scenario, and 5.2 t CO_2 eq in 2030 and 4.3 t CO_2 eq in 2035 under the WAM scenario. Given that current (2020) emissions per capita are 8.6 t CO_2 eq, total emissions per capita will be reduced by 40 per cent in 2030 under the WAM scenario.

77. Finland reported on its medium-term holistic action plan for each sector aimed at achieving national targets. In the energy sector, the share of emission-free sources in electricity generation reached 85 per cent in 2020 owing to the diversification of carbon-free energy sources in the electricity mix such as nuclear, hydro and wind power. Meanwhile, around 30 per cent of electricity production consisted of combined heat and power production, which was used for both district heat production and production by industry for its own use. Significant reductions in emissions in the energy sector are forecasted in the projections for 2030, including through a nuclear power plant that is under construction, the ban on coal from 2029, increased renewable electricity generation and much greater use of heat pumps for residential space heating. Because some oil and gas boilers are expected to remain in use as reserves and for peak power demand, some hard-to-abate residual GHG emissions in the power sector are expected to remain.

78. Domestic transport emissions are estimated to halve by 2030 compared with the 2005 level and be fossil free (i.e. almost zero emissions in the sector) by 2045, assuming that all measures defined in the Roadmap to Fossil-free Transport will be implemented and funding for the coming years secured.

79. The WAM scenario projected total emissions of 23.7 Mt CO_2 eq remaining from mostly hard-to-abate sectors (e.g. agriculture, aviation, shipping and industrial processes). Finland reported that the residual GHG emissions will be counterbalanced by the deployment of CO_2 removal methods in the forest sector, enabling Finland to become carbon neutral by 2035 and carbon negative thereafter.

80. After reaching climate neutrality in 2035, total emissions in Finland are expected to continue declining owing to the replacement of the remaining fossil energy with bioenergy and biofuels; the increased use of black liquor, a by-product of the pulp industry, as a biofuel; the phase-out of fossil oil and natural gas boilers; and the electrification, digitalization and increased use of renewable fuels in the transport sector. Meanwhile, carbon removals are estimated to continue rising owing to growing forest stock through active forest management, with a net impact of at least 3 Mt CO_2 eq by 2035. Thus, according to the projections, and given the full implementation of all adopted and planned PaMs, Finland will be a carbon-negative country after 2035.

81. Finland presented the WEM and WAM scenarios by gas for 2030 and 2035, as summarized in table 9.

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

	GHG emissions and removals (kt CO_2 eq)					*Change (%)*			
		2030		*2035*		*1990–2030*		*1990–2035*	
Gas[a]	*1990*	*WEM*	*WAM*	*WEM*	*WAM*	*WEM*	*WAM*	*WEM*	*WAM*
CO_2	57 080.68	21 582.04	21 117.28	17 476.00	16 549.13	–62.2	–63.0	–69.4	–71.0
CH_4	7 687.13	3 305.30	3 207.01	3 056.00	2 968.76	–57.0	–58.3	–60.2	–61.4
N_2O	6 361.59	4 327.40	4 212.99	4 189.00	4 056.72	–32.0	–33.8	–34.2	–36.2
HFCs	0.02	320.90	170.77	189.00	85.50	1 604 400.0	853 750.0	944 900.0	408 021.9
PFCs	0.21	1.11	1.00	1.00	0.86	428.6	376.2	376.2	311.1
SF_6	52.48	28.56	28.48	31.00	27.79	–45.6	–45.7	–40.9	–47.1
NF_3	NO	NO	NO	NO	NO	–	–	–	–
Total GHG emissions without LULUCF	**71 182.11**	**29 565.31**	**28 737.53**	**24 942.00**	**23 714.59**	**–58.5**	**–59.6**	**–65.0**	**–66.7**

Sources: Finland's BR5 and BR5 CTF table 6 and information provided by Finland during the review.
[a] Finland included indirect CO_2 emissions in its projections.

(d) Assessment of adherence to the reporting guidelines

82. The ERT assessed the information reported in the NC8 and BR5 of Finland and identified an issue relating to transparency and thus adherence to the UNFCCC reporting guidelines on BRs. The finding is described in table II.2.

2. Assessment of the total effect of policies and measures

(a) Technical assessment of the reported information

83. In its NC8 Finland presented the estimated and expected total effect of implemented and adopted PaMs separately from planned PaMs. Information is presented in terms of GHG emissions avoided or sequestered, by gas (on a CO_2 eq basis), in 2020, 2025, 2030 and 2035.

84. Finland reported that the total estimated effect of its implemented and adopted PaMs is 24,900 kt CO_2 eq in 2020, 52,000 kt CO_2 eq in 2030 and 55,000 kt CO_2 eq in 2035. The total additional estimated effect of planned PaMs is 800 kt CO_2 eq in 2030 and 900 kt CO_2 eq in 2035. According to the information reported in its NC8, PaMs implemented in the energy sector will deliver the largest emission reductions.

(b) Assessment of adherence to the reporting guidelines

85. The ERT assessed the information reported in the NC8 of Finland 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

86. In the NC8 Finland reported that its use of the mechanisms under Articles 6, 12 and 17 of the Kyoto Protocol is supplemental to domestic action. Owing to the additional burden arising from activities under Article 3, paragraphs 3–4, of the Kyoto Protocol, Finland will have to use emission units transferred from the first commitment period of the Kyoto Protocol or acquired from the clean development mechanism or joint implementation.

87. Finland did not retire any Kyoto Protocol units to cover its emissions from ESD sectors. Between units carried over from the first commitment period and units generated in

the second commitment period, Finland has a total of 9,986,208 certified emission reductions and 2,912,592 emission reduction units that are eligible for the second commitment period. Finland can further request 14,018,572 assigned amount units (this includes 10,000,000 assigned amount units transferred by the EU from the Union Registry to Finland's third-party holding account) to be carried over from the first to the second commitment period. The transfer was designed to enable Finland's compliance with its commitments in the second commitment period of the Kyoto Protocol after the international LULUCF accounting rules were changed by decision 2/CMP.7.

(b) Assessment of adherence to the reporting guidelines

88. The ERT assessed the information reported in the NC8 of Finland 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

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

90. Finland has provided support that it considers to be "new and additional". Its definition of "new and additional" is based on the ODA provided in 2009. Finland's process for determining resources to be "new and additional" is to consider its climate funding that goes beyond that provided in 2009, which was approximately EUR 26.8 million.

91. Finland 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. Finland uses the Rio markers included in the Creditor Reporting System of the Development Assistance Committee of the Organisation for Economic Co-operation and Development to classify its support. Moreover, the shares for adaptation and mitigation of the core support for multilateral organizations are based on data provided by those organizations on thematic budget allocation. Finland does not have a systematic method for tracking capacity-building support, although it considers that the projects it supports through both bilateral and multilateral assistance include a capacity-building element.

92. Finland's national approach to tracking the provision of support, including information on indicators, delivery mechanisms used and allocation channels tracked, is based on the Rio markers, which provide qualitative information. Regarding quantitative information, the desk officer responsible for the respective intervention assigns a value to the markers. For multilateral development banks, Finland uses a similar approach to that of the Organisation for Economic Co-operation and Development when calculating imputed multilateral contributions. During the review, Finland confirmed that there have been no changes to its approach since the previous report.

93. Finland's methodology and underlying assumptions used for collecting and reporting information on financial support are based on the project document or other relevant documentation from the implementing organization (e.g. budget information or agreed strategies), which provides information that is kept by the Ministry for Foreign Affairs in a spreadsheet. This includes Rio marker parameters used to classify the disbursements under mitigation or adaptation labels. For multilateral development banks, Finland uses a similar approach when calculating imputed multilateral contributions.

94. When providing information on its provision of support to non-Annex I Parties in CTF tables 7 and 7(a), Finland included support for Ukraine, which, although it is an Annex I Party, is also an ODA eligible country. Following the recommendation from the previous

technical review report, the specific support for Ukraine was indicated with footnotes in CTF table 7(a).

(b) Financial resources

95. Finland reported in its NC8 and BR5 information on its provision of financial support to non-Annex I Parties as required under the Convention, including on financial support committed and disbursed, allocation channels and annual contributions.

96. Finland described how it seeks to ensure that the resources it provides to non-Annex I Parties effectively address their adaptation and mitigation needs. Its development cooperation is based on the development needs defined by the partner countries and their own development plans. Finland's actions are grounded in the Convention, the Kyoto Protocol and the Paris Agreement, as well as the Sustainable Development Goals. The Party follows the principles of the Paris Declaration on Aid Effectiveness, under which donors and partner developing countries work together on the provision of support. With its bilateral partners, Finland has prepared a country programme for each of its long-term partner countries based on the partner countries' own development plans, including discussion with civil society. During the review, Finland provided a link to the country programmes covering 2021–2024.

97. Finland described how the resources it provides assist non-Annex I Parties in mitigating GHG emissions and adapting to the adverse effects of climate change and any economic and social consequences of response measures and contribute to technology development and transfer and capacity-building related to mitigation and adaptation.

98. With regard to the most recent financial contributions aimed at enhancing the implementation of the Convention by developing countries, Finland allocated its climate finance in line with its overarching development goal of participating in international cooperation for the protection of peace and human rights and for the development of society with a view to achieving the Sustainable Development Goals. This approach is set out in the Government's *Report on Development Policy Across Parliamentary Terms*. As an example, the project to upgrade the rainfall, storm and lightning detection capabilities of the national hydrometeorological service of Viet Nam has been receiving grants since 2017 with total funding of approximately EUR 12.4 million. Table 10 summarizes the information reported by Finland on its provision of financial support.

Table 10
Summary of information on provision of financial support by Finland in 2019–2020
(Millions of United States dollars)

Allocation channel of public financial support	*Disbursement in 2019–2020*
ODA	2 427.19
Climate-specific contributions through multilateral channels, including:	229.20
Global Environment Facility	2.94
Least Developed Countries Fund	7.98
Special Climate Change Fund	0.00
Adaptation Fund	0.00
Green Climate Fund	55.52
Trust Fund for Supplementary Activities	0.00
Other multinational climate change funds	67.67
Financial institutions, including regional development banks	71.46
United Nations bodies	23.64
Climate-specific contributions through bilateral, regional and other channels	83.59

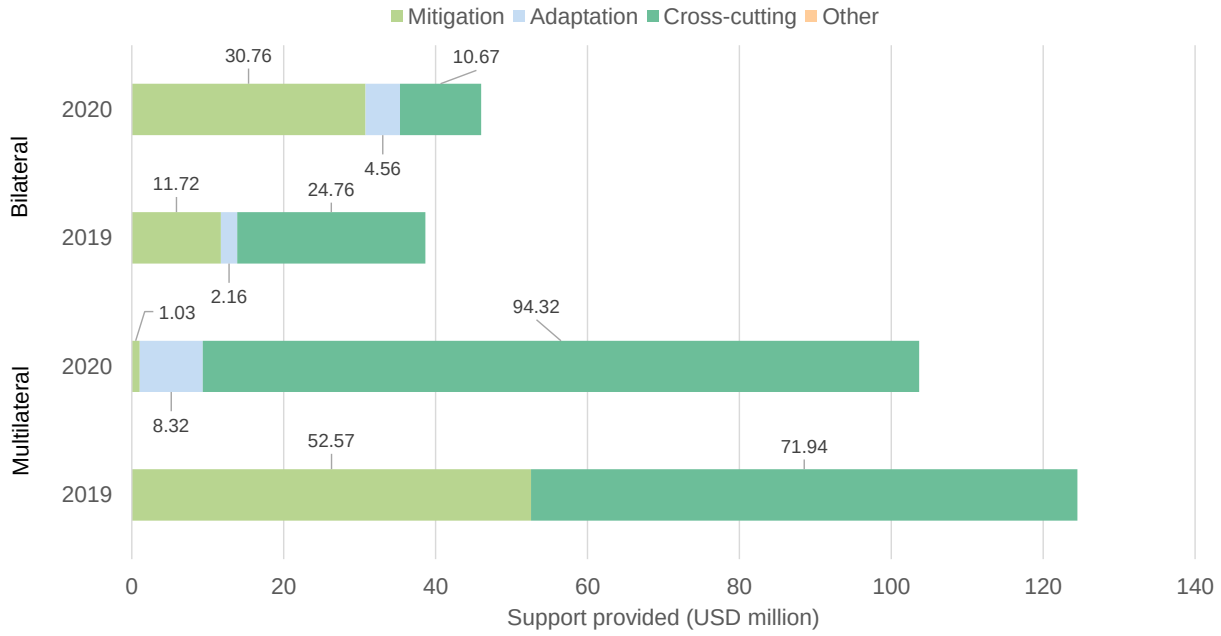
Sources: Finland's BR5 CTF tables and Query Wizard for International Development Statistics, available at http://stats.oecd.org/qwids/.

Note: The values in this table differ from those provided in CTF tables 7 and 7(a) because this table excludes the USD 0.56 million that Finland allocated to Ukraine in 2019 and USD 0.57 million in 2020 as cross-cutting multilateral support, and USD 1.03 million in 2020 as cross-cutting bilateral support.

99. Finland's climate-specific public financial support[8] totalled USD 312.79 million in 2019–2020 (not including the USD 2.16 million allocated for Ukraine in 2019–2020) representing an increase of 65.8 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, Finland has a planned provision to increase annual support to approximately EUR 200 million in 2023–2026.

100. Finland contributed through multilateral channels USD 229.20 million in 2019–2020, excluding the USD 2.16 million support allocated for Ukraine in this period. The contributions were made to specialized multilateral climate change funds, such as the Global Environment Facility, the Least Developed Countries Fund, the Green Climate Fund, the World Bank, the International Finance Corporation, the African Development Bank, the Asian Development Bank, the European Bank for Reconstruction and Development, the United Nations Development Programme, the United Nations Environment Programme, the Food and Agriculture Organization of the United Nations, the International Fund for Agricultural Development, the United Nations Children's Fund and the United Nations Office for Disaster Reduction. Finland increased the share of climate-specific contributions through multilateral channels from 64.0 per cent in 2017–2018 to 72.9 per cent in 2019–2020; the increase was mainly due to contributions through the Green Climate Fund, which received 24.1 per cent of the funding through multilateral channels in 2019–2020 as opposed to zero in 2017–2018. Information on financial support from the public sector provided through multilateral and bilateral channels and the allocation of that support by target area is presented in figure 3 and table 11.

Figure 3
Provision of support by Finland in 2019–2020



Source: Finland's BR5 CTF tables 7, 7(a) and 7(b).
Note: The values in this figure differ from those provided in CTF tables 7 and 7(a) because the former excludes the USD 0.56 million that Finland allocated to Ukraine in 2019 and USD 1.60 million cross-cutting multilateral support in 2020.

[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.

Table 11
Summary of information on channels of financial support reported by Finland
(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	53.59	6.71	698.6	17.1
Adaptation	8.32	3.51	137.3	2.7
Cross-cutting	166.26	110.4	50.6	53.2
Other	0.0	0	–	–
Total multilateral	**228.17**	**120.62**	**89.2**	**72.9**
Bilateral channels				
Mitigation	42.47	19.33	119.7	13.6
Adaptation	6.72	9.74	–31.0	2.1
Cross-cutting	35.42	38.92	–9.0	11.3
Other	0.0	–	–	–
Total bilateral	**84.62**	**67.99**	**24.5**	**27.1**
Total multilateral and bilateral	**312.79**	**188.61**	**65.8**	**100.0**

Source: Finland's BR5 CTF tables 7, 7(a) and 7(b).
Note: The values in this table differ from those provided in CTF tables 7 and 7(a) because this table excludes the USD 0.94 million that Finland allocated to Ukraine in 2017–2018 as cross-cutting multilateral support and the USD 2.16 million in 2019–2020.
[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 though bilateral, regional and other channels in 2019–2020. During the reporting period, Finland placed a particular focus on energy, forestry, natural resource management, water and sanitation, and meteorology projects and both the least developed countries and lower-middle-income countries, particularly those in Africa and Asia, to which it allocated USD 46.62 million.

102. The NC8 and 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 50.2, 7.9 and 41.9 per cent respectively. In 2019–2020, the majority of financial contributions through bilateral and regional channels were allocated to capacity-building, cross-cutting, energy and forestry, with shares of 46.7, 18.7, 15.9 and 13.6 per cent respectively. The ERT noted that the equities and grants provided in 2019–2020 accounted for most of the bilateral and regional financial support, with shares of 68.7 and 28.0 per cent respectively.

103. Finland reported on how it uses public funds to promote private sector financial support for developing countries to increase mitigation and adaptation efforts in developing countries by investing USD 58.1 million through Finnfund. Finland has long-term equity investments in markets to which commercial investors find too risky to commit. It searches for profitable business projects that advance sustainable development and are implemented by responsible businesses in developing countries, especially in sectors that it views as critical to sustainable development: renewable energy, sustainable forestry, sustainable agriculture, financial institutions, and digital infrastructure and solutions. Finland reported on the difficulty of collecting information and reporting on private financial flows leveraged by bilateral climate finance for mitigation and adaptation activities in non-Annex I Parties due to the lack of information on initiatives undertaken by the private sector.

104. An example of Finland's support is "Capacity building on novel approaches in sustainable management of forest and wood resources in Mozambique", an institutional cooperation between Natural Resources Institute Finland and the Agricultural Research

Institute of Mozambique with the Faculty of Agronomy and Forest Engineering of Eduardo Mondlane University in Mozambique. The Party also reported on a cross-cutting project in Nepal that involves adaptation and sanitation, the Rural Village Water Resources Management Project (phase III).

(c) Technology development and transfer

105. Finland reported on its measures and activities related to technology transfer, access and deployment benefiting developing countries, including activities undertaken by the public and private sector. Examples of support provided for the deployment and enhancement of the endogenous capacities and technologies of non-Annex I Parties include a project on upgrading the rainfall, storm and lightning detection capabilities of the national hydrometeorological service of Viet Nam. The goal of the project was to strengthen the capability of Viet Nam to mitigate the adverse impacts of climate change and weather, thus providing safer living conditions, decreased economic losses and improved overall preparedness for civil crisis management. Under the project, the weather radar observation network and three weather radars were upgraded, five new weather radars were added and a lightning detection network was established. The project included the installation and commissioning of the meteorological data visualization and automated forecast production system SmartMet, developed by the Finnish Meteorological Institute. Among the factors that led to the success of the project were the high-quality products and extensive technical assistance and capacity-building provided by Vaisala, a Finnish company specializing in weather observation technologies, throughout the project phases, as well as the extensive capacity-building provided by the Finnish Meteorological Institute. Counterpart funding from the partner/host country was provided for infrastructural works, including the establishment of data communication systems for equipment and road access to installation sites.

106. Finland focused the provision of its technology transfer support on the least developed countries and small island developing States, mostly in Africa and Asia, and on weather observation technology and systems, in which Finland is a global leader.

107. Since its last NC and BR, Finland has implemented additional measures and activities; namely, it joined the Climate Risk and Early Warning Systems Initiative in late 2020. Finland also described success stories in relation to technology transfer in its BR5 and details of recent projects in the *Development Policy Results Report 2022*.

(d) Capacity-building

108. Finland reported on its capacity-building support for mitigation, adaptation and technology that responds to the existing and emerging needs identified by non-Annex I Parties. It described measures and activities related to capacity-building support in textual and tabular format, in particular the support programmes for hydrometeorological institutions in Africa and Asia and supporting country stakeholders in developing mitigation and/or adaptation projects to enable them to apply for funding or capacity development on a specific climate change theme. Finland reported that most of its bilateral projects that have a climate-related objective as their principal objective also include a capacity-building component as a response to existing and emerging capacity-building needs in partner countries.

109. Finland has supported climate-related capacity development activities relating to adaptation and environmental law sectors. Since the BR4, the focus of support has remained almost the same, with two programmes being discontinued as they reached their expected end: a waste project in Peru, which ran for eight years, and carbon-market-related capacity-building in developing countries in Asia under the Asian Development Bank's Technical Support Facility under the Carbon Market Initiative, which ran in 2016–2018. Regarding carbon-market-related capacity-building in developing countries, Finland is now supporting the World Bank's Partnership for Market Implementation initiative, which started in 2021. Finland's support has responded to the existing and emerging capacity-building needs of non-Annex I Parties by following the principles of stakeholder participation and country-driven demand.

2. Assessment of adherence to the reporting guidelines

110. The ERT assessed the information reported in the NC8 and BR5 of Finland and identified issues relating to transparency and thus adherence to the UNFCCC reporting guidelines on NCs and the UNFCCC reporting guidelines on BRs. The findings are described in tables I.3 and II.3.

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

(a) Technical assessment of the reported information

111. In its NC8 Finland reported its activities, actions and programmes undertaken in fulfilment of its commitments under Article 10 of the Kyoto Protocol. Finland 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. 105–106 above).

112. Finland provided information on its implementation of Article 11 of the Kyoto Protocol, including information on its long-term approach to climate support (see para. 96 above). The Party described how its contributions are "new and additional" (see para. 90 above).

(b) Assessment of adherence to the reporting guidelines

113. The ERT assessed the information reported in the NC8 of Finland 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

114. In its NC8 Finland provided information on the expected impacts of climate change in the country; and adaptation policies covering regional, sectoral and cross-sectoral vulnerabilities and considerations to implement Article 4, paragraph 1(b), of the Convention with regard to adaptation. Finland provided a description of climate change vulnerability and impacts on water resources, agriculture, forestry, fisheries, and reindeer husbandry and herding, as well as economic sectors such as energy, buildings, cultural heritage, industry, mining, transport and communications, tourism and finance. However, the reflection in the NC8 of the adaptation response measures for each indicated vulnerability taken to address Article 4, paragraph 1(b), of the Convention remains limited. The Party explained that adaptation measures are embedded in national-, sectoral- and local-level adaptation action plans and strategies.

115. Finland has addressed adaptation matters through the adoption of the National Climate Change Adaptation Plan 2022, the Climate Change Act (2015) and the National Strategy for Adaptation to Climate Change (2005), which was updated with the National Adaptation Plan 2030 at the end of 2022. In addition, national climate adaptation PaMs are supported by sectoral climate adaptation strategies and plans, which are explained in detail in the NC8. Table 12 summarizes the information on vulnerability and adaptation to climate change presented in the NC8 of Finland.

Table 12
Summary of information on vulnerability and adaptation to climate change reported by Finland

Vulnerable area	*Examples/comments/adaptation measures reported*
Agriculture and food security	Vulnerability: climate change is expected to have positive impacts on crop productivity as a result of moderate temperatures and a longer growing season. However, the increased variability of climatic conditions and extreme weather events, together with

Vulnerable area	*Examples/comments/adaptation measures reported*
	increased risks of disease and pests, are expected to create stress on agricultural production.
	Adaptation: developing risk profiles and emergency plans for various existing and emerging pests and diseases, together with crop rotation, have been indicated as adaptation measures in adaptation plans for the agriculture sector.
Reindeer husbandry and herding	Vulnerability: changing climatic conditions directly impact reindeer food supply, health and well-being, as well as the grazing environment; and loss of pastureland has already resulted in an increased need for additional winter feeding of reindeer.
	Adaptation: no further information is reported in the NC8.
Coastal zones	Vulnerability: increased frazil ice and coastal floods are already observed and are expected to continue. Increasing water temperature is expected to result in increased phytoplankton and eutrophication in seawater, together with invasion of alien species from southern seas and loss of biodiversity due to reduced surface water salinity.
	Adaptation: no further information is reported in the NC8.
Drought	Vulnerability: increased frequency of droughts is already observed, a trend which is expected to continue.
	Adaptation: no further information is reported in the NC8.
Fisheries	Vulnerability: fisheries have already been affected by impacts of climate change such as extreme weather events, increasing water temperature and associated reduced oxygen levels, eutrophication and invasive alien species.
	Adaptation: no further information is reported in the NC8.
Forests	Vulnerability: forests are vulnerable to strong wind and the loss of ground frost makes trees more susceptible to wind damage. Also, insects and diseases are considered as increased risks for forests, exacerbated by climate change. Droughts are expected to increase the vulnerability of forests to fires and insects.
	Adaptation: removal of timber from the forest to prevent insect damage to growing trees, together with the use of high-quality seed suitable for different climatic conditions, are included in climate adaptation plans.
Tourism	Vulnerability: winter tourism in southern Finland is threatened by increased seasonal temperatures and a shortened snow season.
	Adaptation: no further information is reported in the NC8.
Infrastructure and economy	Vulnerability: pluvial floods resulting from heavy rain and melting snow are considered as risks that can cause damage in urban areas, the communications sector, security and transport, as well as to human health. Increased extreme weather events have already been causing power outages. Increased seawater temperatures have caused issues for cooling systems of nuclear power plants, and droughts have caused reduced power generation in hydropower plants. Increased humidity can damage buildings.
	Adaptation: in the energy sector, energy utilities have replaced a significant amount of overhead electricity lines with underground cables. In addition, energy and transport systems are planned to be designed in a way that is more responsive to extreme weather conditions, including through better collection and communication of meteorological information.
Water resources	Vulnerability: increased floods are expected to have negative impacts on the quality of fresh water – both groundwater and surface water. Increased evaporation resulting from temperature rise affects freshwater systems. Extreme weather events are expected to create additional risks in water availability and quality.
	Adaptation: flood forecasting, flood maps and early warning systems are indicated as measures against floods in climate change adaptation plans. Nature-based solutions are also indicated for protecting water quality.

116. Finland provided a detailed description of international adaptation activities, including the Development Policy of Finland (2016) under which climate change is mainstreamed in international development cooperation activities. Finland has financed the improvement of weather and climate change services of more than 50 national meteorological and hydrological services around the world in the past decade. The support provided to

developing countries has mainly been in the form of capacity-building activities for State institutions; for example, national hydrometeorological institutes in Kenya, Rwanda, the Sudan, Ukraine, the United Republic of Tanzania and Uzbekistan.

2. Assessment of adherence to the reporting guidelines

117. The ERT assessed the information reported in the NC8 of Finland and identified issues relating to transparency and thus adherence to the UNFCCC reporting guidelines on NCs. The findings are described in table I.4.

I. Research and systematic observation

1. Technical assessment of the reported information

118. In its NC8 Finland 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 Research Programme; World Weather Watch; Global Atmosphere Watch; the Integrated Carbon Observation System; the Aerosol, Clouds and Trace Gases Research Infrastructure; the Global Climate Observing System; and the Intergovernmental Panel on Climate Change.

119. Finland has implemented international and domestic policies and programmes on climate change research, systematic observation and climate modelling that aim to advance capabilities to predict and observe the physical, chemical, biological and human components of the Earth's system over space and time. Funding from the Academy of Finland and the Strategic Research Council for climate change related research together totalled more than EUR 175 million between 2017 and 2021. The Academy of Finland's ongoing climate and energy initiatives are the Climate Change and Health Academy Programme; the C1 Value Academy Programme, which seeks solutions for industrial green chemistry manufacturing from CO_2 emissions; the Academy Programme on a bio-based economy; and Arctic research projects. The Academy of Finland has recently established the Academy Programme for Climate Change and Carbon Neutrality Research. Moreover, the Strategic Research Council has several programmes relevant to climate change such as Adaptation and Resilience for Sustainable Growth; Towards a Sustainable, Healthy and Climate-Neutral Food System; and Climate Change and Humans.

120. In terms of activities related to systematic observation, Finland reported on national plans, programmes and support for ground- and space-based climate observing systems, including satellite and non-satellite climate observation. The Finnish Meteorological Institute participates in the Global Climate Observing System and Finland is a participant in the Integrated Carbon Observation System and the Global Atmosphere Watch programme of the World Meteorological Organization.

121. 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. Finland provided funding for scientists from developing countries working on global climate change research. Finland finances the Systematic Observations Financing Facility, launched in 2022, which supports the least developed countries and small island developing States in generating and exchanging basic surface-based observational data critical for improved weather forecasts and climate services. Finland also finances the Climate Risk and Early Warning Systems Initiative, which funds the development of risk-informed early warning systems in the least developed countries and small island developing States. Furthermore, many other organizations and funds that Finland contributes to, such as the Adaptation Fund, the Green Climate Fund and the Nordic Development Fund, implement projects that strengthen the capacities of developing countries to assess climate risks, develop early warning systems and take anticipatory action.

2. Assessment of adherence to the reporting guidelines

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

J. Education, training and public awareness

1. Technical assessment of the reported information

123. In its NC8 Finland 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. The national Medium-term Climate Change Policy Plan, submitted to the Finnish Parliament in 2022, includes the raising of education levels and advanced training in various sectors to support citizens in reducing their carbon footprints. The Finnish National Agency for Education has launched projects and initiatives to promote sustainability, climate responsibility and the green transition in education from early childhood to secondary education, such as the Teacher's Climate Guide and A Sustainable Future. Other relevant institutions include the OKKA Foundation, the Regional Centre of Expertise on Education for Sustainable Development and LUMA Centre Finland. The training of experts from developing countries in managing forests and other natural resources is an integral part of the agricultural and forest science programmes at the University of Helsinki. Training activities in developing countries are also implemented through development cooperation financed by the Ministry for Foreign Affairs. The main financing instruments are the Institutional Cooperation Instrument, Higher Education Institutions Institutional Cooperation Instrument and the Academy Programme for Development Research.

124. The Finnish Ministry of the Environment has the responsibility of coordinating cooperation on climate change communications with the public. Media coverage of climate change has been extensive in Finland. Finland's NC8 was released to open public opinion in 2022. In 2019 a "Climate Barometer" was conducted comprising a survey of Finnish citizens' views concerning climate change issues. In order to encourage the public to participate in the planning of Finland's climate policies, an open online platform[10] has been established where anyone can comment on planned strategies and measures to reduce GHG emissions. The Finnish Climate Change Panel of interdisciplinary and independent researchers and academics was established with the aim of enhancing communication between science and politics on issues related to climate change. The Panel actively participates in public debates by releasing statements, organizing discussions, developing consumer tools to support climate-friendly decision-making, and interacting with the media, decision makers and other stakeholders.

2. Assessment of adherence to the reporting guidelines

125. The ERT assessed the information reported in the NC8 of Finland 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

126. The ERT conducted a technical review of the information reported in the NC8 of Finland in accordance with the UNFCCC reporting guidelines on NCs. The ERT concluded

[10] http://www.energiajailmasto.com/.

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 Finland.

127. The information provided in the NC8 includes all elements of the supplementary information under Article 7, paragraph 2, of the Kyoto Protocol. Finland 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 Finland in its 2022 annual submission.

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

129. In its NC8 Finland reported on its key national circumstances related to GHG emissions and removals, including key data on legislation, population trends, geography and land use, climate and climate change, economic developments, energy supply and consumption, energy markets, transport, the building sector, industry, agriculture, forestry and waste. Population and GDP increased at a compound annual growth rate of 0.34 and 1.56 per cent respectively between 1990 and 2020.

130. Finland's total GHG emissions in 2020 excluding LULUCF and including indirect CO_2 were estimated to be 32.9 per cent below its 1990 level. Emissions peaked in 2003 and decreased to 47,782.25 kt CO_2 eq in 2020. The changes in total emissions were driven mainly by factors such as the effects of the coronavirus disease 2019 pandemic, increases in emission-free and energy-efficient road transport, measures to phase out oil heating, and a ban on the use of hard coal for energy from 2029, which was announced in 2019 but had immediate impacts.

131. As reported in the BR5, under the Convention Finland 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. Under the ESD Finland has a target of reducing its emissions by 16 per cent below the 2005 level by 2020.

132. 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 43 and 30 per cent respectively compared with the 2005 level. Finland has a longer-term target of carbon neutrality by 2035. Its emission reduction targets excluding LULUCF for 2030 and 2040 are 60 and 80 per cent respectively compared with the 1990 level. Finland's emission reduction target for 2050 is at least 90 per cent, aiming for 95 per cent, compared with the 1990 level.

133. 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 Finland 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 because its ESD emissions in 2020 do not exceed its AEA for 2020.

134. The GHG emission projections provided by Finland in its NC8 and BR5 correspond to the WEM and WAM scenarios. Under the WEM scenario, emissions in 2030 are projected

to be 58.5 per cent below the 1990 level and 38.1 per cent below the 2020 level, excluding LULUCF and including indirect CO_2. Under the WAM scenario, emissions in 2030 are projected to be 59.6 per cent below the 1990 level and 39.9 per cent below the 2020 level. Finland reported on the methodologies, key drivers and assumptions underlying these projections.

135. Finland's main policy framework relating to energy and climate change is the National Climate and Energy Strategy, which focuses on all sectors and includes implemented and planned PaMs; the Medium-term Climate Change Policy Plan, for PaMs in the Effort Sharing Sectors; and the Climate Plan for the Land Use Sector, for PaMs in the LULUCF sector. Ministries are responsible for implementing the PaMs in their sectors and for their monitoring and evaluation. In some cases, this responsibility is delegated to specialized government entities.

136. The Party described the mitigation actions that it has implemented to help it achieve its 2020 and longer-term targets, which include the following key PaMs: carbon pricing through energy taxation and the EU ETS; building regulations; energy efficiency agreements; measures for promoting the use of renewable energy sources; government decree 861/1997 on landfills; and the National Biowaste Strategy (2004), which bans organic waste in landfills. Electricity, coal, natural gas, peat, tall oil and liquid fuels are subject to energy taxes. Building regulations set minimum standards for new buildings and are revised regularly. Companies in the energy and industry sectors and municipalities enter energy efficiency agreements with the Government. Measures that promote the use of renewable energy sources include investment aid for projects on rapidly phasing out coal use.

137. Finland continued to provide climate financing to developing countries in line with its climate finance programmes such as those contained in the *Report on Development Policy Across Parliamentary Terms* and the *Development Policy Results Report 2022*. Finland has increased its contributions by 65.8 per cent since the BR4; its public financial support in 2018–2020 totalled USD 312.79 million. For those years, Finland provided more support for mitigation than for adaptation. The biggest share of support went to cross-cutting projects, mostly through multilateral channels.

138. Finland continued to provide support for technology development and transfer and capacity-building. Priority for technological support was given to projects on weather observation technology and systems in recipient countries. Over time, the focus has remained the same, although support is increasingly provided through multilateral channels. Priority for capacity-building support was given to adaptation projects and programmes of hydrometeorological institutions in Africa and Asia.

139. In its NC8 Finland 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 major vulnerabilities, including key areas and economic sectors. Finland provided a description of climate change vulnerabilities such as reduced food supply for reindeers; increased frequency of floods that reduce freshwater quality; negative impacts on fisheries due to invasive alien species and increased water temperatures; and damaged forests due to strong wind and loss of ground frost combined with increased numbers of insects. Finland has addressed adaptation matters through the adoption of the National Climate Change Adaptation Plan 2022, the Climate Change Act (2015) and the National Strategy for Adaptation to Climate Change (2005), which was updated with the National Adaptation Plan 2030 at the end of 2022.

140. In its NC8 Finland provided information on its activities relating to research and systematic observation. Finland provided information on its general policy and funding relating to research and systematic observation and both domestic and international activities. Through the Finnish Meteorological Institute, Finland is involved in several regional and global initiatives for climate monitoring and observation. Finland participates in the Integrated Carbon Observation System.

141. In its NC8 Finland provided information on its actions relating to education, training and public awareness. Education is supported at all levels through a variety of policies, programmes, initiatives and projects, including training programmes for national stakeholder groups and international partners. The Ministry of the Environment is responsible for

coordinating cooperation on climate change communication with the public. Media coverage of climate change has been extensive in Finland. A nationwide survey, the Climate Barometer, is conducted from time to time in order to monitor the public's awareness of and interest in climate change issues.

142. In the course of the review of Finland's NC8, the ERT formulated the following recommendation for Finland to improve its adherence to the UNFCCC reporting guidelines on NCs in its next NC: to improve the transparency of its reporting by:

(a) Providing an outline of the action taken to implement Article 4, paragraph 1(b), of the Convention with regard to adaptation that indicates the particular adaptation measures taken for the indicated vulnerabilities, on the basis of its developed policies and strategies (see issue 1 in table I.4);

(b) Providing consistent information between the text and tables on the support provided to non-Annex I Parties for mitigating their emissions and adapting to the adverse effects of climate change (see issue 1 in table I.3).

143. In the course of the review of Finland's BR5, the ERT formulated the following recommendation relating to adherence to the UNFCCC reporting guidelines on BRs: to improve the transparency of its reporting by providing consistent information between the text and tables on the support provided to non-Annex I Parties for mitigating their emissions and adapting to the adverse effects of climate change (see issue 1 in table II.3).

Annex I

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

Tables I.1–I.5 summarize the ERT assessment of adherence to the UNFCCC reporting guidelines on NCs for Finland's NC8.

Table I.1
Findings on national circumstances relevant to greenhouse gas emissions and removals from the review of the eighth national communication of Finland

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
1	Reporting requirement specified in paragraph 3 Issue type: transparency Assessment: encouragement	In the section of the NC8 on national circumstances, there are several errors in figures and inconsistencies between data provided in the text and those in the corresponding tables: (1) the increase in the area of settlements is stated as 15 per cent in the text, while table 2.1 indicates an increase of 23.1 per cent; (2) data in figures 2.16, 2.18 and 2.19 are incorrect; and (3) information in the text on shares of freight transport is incorrect. During the review, Finland indicated which figures were correct or provided updated information, as appropriate. The ERT encourages the Party to report accurate and consistent information in the text, tables and figures of its next NC.

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

Table I.2
Findings on greenhouse gas inventory information from the review of the eighth national communication of Finland

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
1	Reporting requirement specified in paragraph 5 Issue type: transparency Assessment: encouragement	Finland reported in the text of its NC8 that emissions from the energy sector were 34.6 Mt CO_2 eq in 2020, while in annex I to the NC8 and its 2022 NIR (table ES.2-1) the figure was reported as 34.3 Mt CO_2 eq. During the review, the Party clarified that 34.3 Mt CO_2 eq reported in annex I is the correct figure and is consistent with the GHG inventory in its most recent annual submission. The ERT encourages Finland to report in its next NC GHG inventory information that is consistent between the text and the tables.

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 Finland

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
1	Reporting requirement specified in paragraph 52 Issue type: transparency Assessment: recommendation	In the text of the NC8 the Asian Development Bank is cited as the top recipient of Finland's climate finance in 2019. However, the numerical figures in the CTF tables in annex II to the NC8 indicate that the top recipient was the African Development Bank, which received five times more funding in that year. During the review, Finland informed the ERT that this is a typographical error in the text of the NC8 and the information in the CTF tables is correct and accurate.

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
		The ERT recommends that Finland provide consistent information between the text and tables of its next NC on the support it has provided to assist non-Annex I Parties for mitigating their emissions and adapting to the adverse effects of climate change.

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

Table I.4
Findings on vulnerability assessment, climate change impacts and adaptation measures from the review of the eighth national communication of Finland

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
1	Reporting requirement specified in paragraph 46 Issue type: transparency Assessment: recommendation	The Party did not indicate in its NC8 which adaptation measures have been taken or considered to facilitate adequate adaptation to climate change with respect to the reported vulnerabilities to climate change in Finland and thus has not addressed Article 4, paragraph 1(b), of the Convention. During the review, Finland explained that many adaptation measures, such as flood risk management, preparedness for and response to extreme hydrometeorological events, prevention of forest damage, infrastructure resilience, etc., are initiated by policies and legislation, and that the reporting in Finland's NC8 focused on the policy level, providing an outline of action taken. Finland further explained that the information on the vulnerabilities being addressed is embedded in its adaptation policies and strategies. The ERT recommends that Finland include in its next NC an outline of the action taken to implement Article 4, paragraph 1(b), of the Convention with regard to adaptation, indicating the particular adaptation measures taken for the indicated vulnerabilities, on the basis of its developed policies and strategies.
2	Reporting requirement specified in paragraph 47 Issue type: transparency Assessment: encouragement	The Party did not report in its NC8 on the outcomes and effectiveness of monitored adaptation actions in Finland. During the review, Finland provided information on the outcomes and effectiveness of some of its implemented adaptation options. The ERT encourages Finland, where possible, to include information on the outcomes and effectiveness of monitored adaptation actions in its next NC.

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

Table I.5
Findings on research and systematic observation from the review of the eighth national communication of Finland

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
1	Reporting requirement specified in paragraph 65 Issue type: completeness Assessment: encouragement	Finland did not report in its NC8 on opportunities for and barriers to free and open international exchange of data and information or on action taken to overcome such barriers. During the review, Finland provided information on some of the barriers to exchange of data and information on research and observation activities, such as bottlenecks in data exchange with some developing countries arising from capacity issues. The ERT encourages Finland, in its next NC, to include information on opportunities for and barriers to free and open international exchange of data and information and report on action taken to overcome such barriers.

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

Annex II

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

The BR5 of Finland 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 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 under the Paris Agreement. Tables II.1–II.3 summarize the ERT assessment of adherence to the UNFCCC reporting guidelines on BRs for Finland's BR5.

Table II.1
Findings on greenhouse gas emissions and trends from the review of the fifth biennial report of Finland

No.	*Reporting requirement and issue type*	*Description of the finding with recommendation or encouragement*
1	Reporting requirement specified in paragraph 2	Finland reported in the text of its BR5 that emissions from the energy sector were 34.6 Mt CO_2 eq in 2020, while in its CTF table 1s3 and its 2022 NIR (table ES.2-1) the figure was reported as 34.3 Mt CO_2 eq.
	Issue type: transparency Assessment: encouragement	During the review, the Party clarified that 34.3 Mt CO_2 eq reported in the CTF tables is the correct figure and is consistent with the GHG inventory in its most recent annual submission.
		The ERT encourages Finland to report in its next annual submission GHG inventory information that is consistent between the text and tables.

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 projections reported in the fifth biennial report of Finland

No.	*Reporting requirement and issue type*	*Description of the finding with recommendation or encouragement*
1	Reporting requirement specified in paragraph 44	Finland reported inconsistent information on forest increment between its BR5 and CTF table 5. The increment of growing stock was reported as 78 to 103 million m^3 throughout the 1990–2020 reporting period in the NC8 and BR5 text, but as 81 to 106 million m^3 in CTF table 5 for the same time frame.
	Issue type: transparency Assessment: encouragement	During the review, Finland explained that the discrepancy came about because the NC8 and BR5 text was based on the average increment measured in the Party's eighth NFI and recent preliminary data from the Party's thirteenth NFI, while the figures in CTF table 5 were interpolated values based on data from the eight to the twelfth NFIs. The Party further clarified that the annual increment data were not used in making the projections but were included to illustrate the development of the growing stock of trees.
		The ERT encourages Finland in its next submission to increase the transparency of its reporting on projections by clearly distinguishing between multiple data sources when reporting information on key underlying assumptions and values of variables.

Note: 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. 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.

[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.

Table II.3
Findings on provision of financial, technological and capacity-building support to developing country Parties from the review of the fifth biennial report of Finland

No.	*Reporting requirement and issue type*	*Description of the finding with recommendation or encouragement*
1	Reporting requirement specified in paragraph 17 Issue type: transparency Assessment: recommendation	In the text of the BR5 the Asian Development Bank is cited as the top recipient of Finland's climate finance in 2019. However, the numerical figures in the CTF tables indicate that the top recipient was the African Development Bank, which received five times more funding in that year. During the review, Finland informed the ERT that this is a typographical error and the information in the CTF tables is correct and accurate. The ERT recommends that Finland provide consistent information between the text and tables of its next submission on the support it has provided to assist non-Annex I Parties for mitigating their emissions and adapting to the adverse effects of climate change.
2	Reporting requirement specified in paragraph 19 Issue type: transparency Assessment: encouragement	In the BR5 a reference for further information on cooperation delivered by private and public sector actors and civil society organizations was provided to "Sections 6.3.5 and 6.4", which do not exist. During the review, Finland informed the ERT that this is a typographical error. The reference should be to "NC8 Sections 8.35 and 8.4". The ERT encourages Finland to enhance the quality control for the production of the textual parts of its next submission in order to provide valid references for information related to private financial flows leveraged by bilateral climate finance.

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

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

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

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

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

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

"Compilation of economy-wide emission reduction targets to be implemented by Parties included in Annex I to the Convention". FCCC/SBSTA/2014/INF.6. Available at http://unfccc.int/resource/docs/2014/sbsta/eng/inf06.pdf.

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 Finland. Available at https://julkaisut.valtioneuvosto.fi/handle/10024/161977.

NC8 of Finland. 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 Finland submitted in 2020. FCCC/ARR/2020/FIN. Available at https://unfccc.int/documents/267950.

Report on the technical review of the BR4 of Finland. FCCC/TRR.4/FIN. Available at https://unfccc.int/documents/228514.

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 Finnish experts from relevant ministries and research institutes, as well as Statistics Finland, including additional

material. The following references were provided by Finland and may not conform to UNFCCC editorial style as some have been reproduced as received:

Finland's Partner Countries for Bilateral Development Cooperation: https://um.fi/bilateral-partner-countries.

Report on Development Policy Across Parliamentary Terms: https://julkaisut.valtioneuvosto.fi/handle/10024/163218.

Development Policy Results Report 2022: https://um.fi/web/kehityspolitiikan-tulosraportti-2022/frontpage.