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## **Report on the technical review of the third biennial report of Finland**

Developed country Parties were requested by decision 2/CP.17 to submit their third biennial report to the secretariat by 1 January 2018. This report presents the results of the technical review of the third 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”.

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## Abbreviations and acronyms

2006 IPCC Guidelines	<i>2006 IPCC Guidelines for National Greenhouse Gas Inventories</i>
AEA	annual emission allocation
AR4	Fourth Assessment Report of the Intergovernmental Panel on Climate Change
BR	biennial report
CH <sub>4</sub>	methane
CO <sub>2</sub>	carbon dioxide
CO <sub>2</sub> eq	carbon dioxide equivalent
CTF	common tabular format
ERT	expert review team
ESD	effort-sharing decision
EU	European Union
EU ETS	European Union Emissions Trading System
F-gas	fluorinated gas
GDP	gross domestic product
GHG	greenhouse gas
HFC	hydrofluorocarbon
IPCC	Intergovernmental Panel on Climate Change
IPPU	industrial processes and product use
LULUCF	land use, land-use change and forestry
NA	not applicable
NC	national communication
NF <sub>3</sub>	nitrogen trifluoride
non-Annex I Party	Party not included in Annex I to the Convention
non-ETS sectors	sectors not covered by the European Union Emissions Trading System
N <sub>2</sub> O	nitrous oxide
NO	not occurring
OECD	Organisation for Economic Co-operation and Development
OECD DAC	OECD Development Assistance Committee
PaMs	policies and measures
PFC	perfluorocarbon
SF <sub>6</sub>	sulfur hexafluoride
UNFCCC reporting guidelines on BRs	“UNFCCC biennial reporting guidelines for developed country Parties”
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 BR3<sup>1</sup> 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” (annex to decision 13/CP.20).
2. In accordance with the same decision, 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 19 to 24 March 2018 in Helsinki by the following team of nominated experts from the UNFCCC roster of experts: Mr. Sorin Deaconu (Romania), Mr. Raúl Jorge Garrido Vázquez (Cuba), Ms. Tugba Icmeli (Turkey), Ms. Traute Koether (Austria) and Ms. Songli Zhu (China). Ms. Icmeli and Ms. Zhu were the lead reviewers. The review was coordinated by Mr. Roman Payo (UNFCCC secretariat).

### B. Summary

4. The ERT conducted a technical review of the information reported in the BR3 of Finland in accordance with the UNFCCC reporting guidelines on BRs (annex I to decision 2/CP.17).

#### 1. Timeliness

5. The BR3 was submitted on 13 December 2017, before the deadline of 1 January 2018 mandated by decision 2/CP.17. The CTF tables were submitted on 13 December 2017.

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

6. Issues and gaps identified by the ERT related to the reported information are presented in table 1. The information reported by Finland in its BR3 mostly adheres to the UNFCCC reporting guidelines on BRs.

Table 1

**Summary of completeness and transparency of mandatory information reported by Finland in its third biennial report**

<i>Section of BR</i>	<i>Completeness</i>	<i>Transparency</i>	<i>Reference to description of recommendations</i>
GHG emissions and trends	Complete	Transparent	—
Assumptions, conditions and methodologies related to the attainment of the quantified economy-wide emission reduction target	Complete	Transparent	—
Progress in achievement of targets	Complete	Mostly transparent	Issue 1, table 9
Provision of support to developing country Parties	Complete	Transparent	—

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

<sup>1</sup> The BR submission comprises the text of the report and the CTF tables, which are both subject to the technical review.

# I. Technical review of the information reported in the third biennial report

## A. Information on greenhouse gas emissions and removals related to the quantified economy-wide emission reduction target

### 1. Technical assessment of the reported information

7. Total GHG emissions<sup>2</sup> including indirect CO<sub>2</sub> emissions and excluding emissions and removals from LULUCF decreased by 22.1 per cent between 1990 and 2015, whereas total GHG emissions including indirect CO<sub>2</sub> emissions and net emissions or removals from LULUCF decreased by 49.6 per cent over the same period. During the review, Finland indicated that preliminary data for 2016 show that total GHG emissions are 6.0 per cent higher than in 2015. Table 2 illustrates the emission trends by sector and by gas for Finland.

Table 2

Greenhouse gas emissions by sector and by gas for Finland for the period 1990–2015

	GHG emissions (kt CO <sub>2</sub> eq)					Change (%)		Share (%)	
	1990	2000	2010	2014	2015	1990–2015	2014–2015	1990	2015
<i>Sector</i>									
1. Energy	53 557.84	53 754.85	60 165.64	44 434.03	40 816.34	–23.8	–8.1	75.3	73.5
A1. Energy industries	18 969.25	22 137.73	30 943.60	19 611.06	16 225.40	–14.5	–17.3	26.7	29.2
A2. Manufacturing industries and construction	13 662.91	12 209.83	10 187.68	8 559.01	8 449.35	–38.2	–1.3	19.2	15.2
A3. Transport	12 101.30	12 127.53	12 717.75	11 052.97	11 110.95	–8.2	0.5	17.0	20.0
A4. and A5. Other	8 701.34	7 158.33	6 174.91	5 094.44	4 885.20	–43.9	–4.1	12.2	8.8
B. Fugitive emissions from fuels	123.03	121.42	141.70	116.56	145.44	18.2	24.8	0.2	0.3
C. CO <sub>2</sub> transport and storage	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	–	–	–	–
2. IPPU	5 370.16	5 827.36	6 260.15	5 921.01	6 076.18	13.1	2.6	7.6	10.9
3. Agriculture	7 525.30	6 466.33	6 576.22	6 510.80	6 480.97	–13.9	–0.5	10.6	11.7
4. LULUCF	–12 672.35	–21 709.98	–27 297.44	–28 336.47	–25 990.77	105.1	–8.3	NA	NA
5. Waste	4 671.95	3 850.03	2 583.25	2 206.60	2 133.72	–54.3	–3.3	6.6	3.8
6. Other	NO	NO	NO	NO	NO	NA	NA	NA	NA
Indirect CO <sub>2</sub>	165.38	103.97	68.66	53.35	52.00	–68.6	–2.5	NA	NA
<i>Gas</i>									
CO <sub>2</sub>	56 948.99	57 025.65	64 007.49	47 756.98	44 381.68	–22.1	–7.1	80.1	80.0
CH <sub>4</sub>	7 746.42	6 614.29	5 373.04	4 919.05	4 874.90	–37.1	–0.9	10.9	8.8
N <sub>2</sub> O	6 377.14	5 659.89	4 696.47	4 652.52	4 659.05	–26.9	0.1	9.0	8.4
HFCs	0.02	559.46	1 485.40	1 699.34	1 547.41	6 440 749.3	–8.9	0.00003	2.8
PFCs	0.21	13.23	1.06	10.30	6.62	3 095.2	–35.8	0.0003	0.01
SF <sub>6</sub>	52.48	26.06	21.79	34.25	37.55	–28.5	9.6	0.1	0.1
NF <sub>3</sub>	NO	NO	NO	NO	NO	NA	NA	NA	NA
<b>Total GHG emissions without LULUCF</b>	<b>71 125.26</b>	<b>69 898.57</b>	<b>75 585.25</b>	<b>59 072.44</b>	<b>55 507.21</b>	<b>–22.0</b>	<b>–6.0</b>	<b>100.0</b>	<b>100.0</b>

<sup>2</sup> In this report, the term “total GHG emissions” refers to the aggregated national GHG emissions expressed in terms of CO<sub>2</sub> eq excluding LULUCF, unless otherwise specified. Values in this paragraph are calculated based on the 2017 annual submission.

	GHG emissions (kt CO <sub>2</sub> eq)					Change (%)		Share (%)	
	1990	2000	2010	2014	2015	1990–2015	2014–2015	1990	2015
<b>Total GHG emissions with LULUCF</b>	<b>58 452.91</b>	<b>48 188.59</b>	<b>48 287.81</b>	<b>30 735.96</b>	<b>29 516.44</b>	<b>–49.5</b>	<b>–4.0</b>	<b>NA</b>	<b>NA</b>
<b>Total GHG emissions without LULUCF, including indirect CO<sub>2</sub></b>	<b>71 290.64</b>	<b>70 002.55</b>	<b>75 653.91</b>	<b>59 125.79</b>	<b>55 559.21</b>	<b>–22.1</b>	<b>–6.0</b>	<b>NA</b>	<b>NA</b>
<b>Total GHG emissions with LULUCF, including indirect CO<sub>2</sub></b>	<b>58 618.29</b>	<b>48 292.56</b>	<b>48 356.47</b>	<b>30 789.31</b>	<b>29 568.44</b>	<b>–49.6</b>	<b>–4.0</b>	<b>NA</b>	<b>NA</b>

Source: GHG emission data: Finland's 2017 annual submission.

8. The decrease in total emissions was driven mainly by the decrease in CO<sub>2</sub> emissions resulting from changes in the energy supply structure (including electricity imports and exports) and the climate; the decrease in CH<sub>4</sub> emissions due to improvements in the waste sector and the reduction in animal husbandry in the agriculture sector; and the decrease in N<sub>2</sub>O emissions due to the implementation of N<sub>2</sub>O abatement technology in nitric acid production in 2009 and the reduced nitrogen fertilization of agricultural fields.

9. The summary information provided on GHG emissions was consistent with the information reported in the 2017 annual submission.

10. 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. The changes in the arrangements since the BR2 include the enforcement of the role of Statistics Finland as the national entity through the adoption of the Climate Change Act in 2015. In addition, agreements between Statistics Finland and both ministries and expert organizations were updated in 2015 owing to the implementation of new guidelines, and the way in which Finland conducts the annual internal quality meeting for the GHG inventory was changed so that more time could be allocated for the assessment of significant changes and improvements.

## 2. Assessment of adherence to the reporting guidelines

11. The ERT assessed the information reported in the BR3 of Finland and identified an issue relating to transparency. The finding is described in table 3.

Table 3

### Findings on greenhouse gas emissions and trends from the review of the third biennial report of Finland

No.	Reporting requirement, issue type and assessment	Description of the finding with recommendation or encouragement
1	Reporting requirement specified in paragraph 2  Issue type: transparency  Assessment: encouragement	<p>The BR3 (chapter 2.2.1) reports on the significant decrease in GHG emissions from the energy sector despite the increase in energy consumption in this sector. However, the BR3 does not discuss the different emission trends in the subsectors, including manufacturing industries and construction, energy industries and category other sectors, where most of the reduction has taken place (as shown in BR3, figure 2.5).</p> <p>During the review, Finland provided quantitative information on energy supply (the share of power generation by fuel type in 1990 and the energy mix in 2015 and 1990) in energy industries and manufacturing industries and construction to further clarify the reduction trends observed in these two subsectors. The ERT noted that one of the main factors related to the emission reductions in manufacturing industries and construction is the well-developed forest industry, which provides an increasing amount of renewable energy from biomass to other manufacturing industries, and that this is a country-specific characteristic.</p> <p>The ERT encourages Finland to include in its next BR information on the factors underlying the emission trends in the energy subsectors that drive the overall trend in the energy sector.</p> <p>During the review, Finland indicated that it appreciates the encouragement but noted that it will continue to include information in future BRs on emission trends</p>

No.	Reporting requirement, issue type and assessment	Description of the finding with recommendation or encouragement
		consistent with the summary in the most recent inventory submission, that is, at the sectoral and not at the category level. The Party indicated that it would take the encouragement into account when updating the energy sector description in the NIR in its next inventory submission, as appropriate.

*Notes:* (1) Paragraph number listed under reporting requirement refers to the relevant paragraph of the UNFCCC reporting guidelines on BRs; (2) The reporting on the requirements not included in this table is considered to be complete, transparent and adhering to the UNFCCC reporting guidelines on BRs.

## **B. Assumptions, conditions and methodologies related to attainment of the quantified economy-wide emission reduction target**

### **1. Technical assessment of the reported information**

12. 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. The EU offered to move to a 30 per cent reduction target on the condition that other developed countries commit to a comparable target and developing countries contribute according to their responsibilities and respective capabilities under a new global climate change agreement.

13. 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<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, HFCs, PFCs and SF<sub>6</sub> using global warming potential 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. The EU generally allows its member States to use units from the Kyoto Protocol mechanisms as well as from other flexibility mechanisms defined in EU legislation for the purposes of complying with EU obligations, subject to a number of restrictions in terms of origin and type of project and up to an established limit. Companies can make use of such units to fulfil their requirements under the EU ETS.

14. The EU 2020 climate and energy package includes the EU ETS and the ESD (see chapter II.C.1 below). The EU ETS covers mainly point emissions sources in the energy, industry and aviation sectors. An EU-wide emissions cap has been put in place for the period 2013–2020 with the goal of reducing emissions by 21 per cent below the 2005 level by 2020. Emissions from non-ETS sectors are regulated through member State specific targets that add up to a reduction at the EU level of 10 per cent below the 2005 level by 2020.

15. Under the ESD, Finland has a target of reducing its total emissions by 16 per cent below the 2005 level by 2020 for non-ETS sectors. National emission targets for non-ETS sectors for 2020 have been translated into binding quantified AEAs for the period 2013–2020. European Commission decision 2017/1471 adjusted these AEAs taking into account the changes in coverage of the EU ETS from 2013 onward.<sup>3</sup> Finland's AEAs change following a linear path from 31,776,522 t CO<sub>2</sub> eq in 2013 to 28,513,533 t CO<sub>2</sub> eq in 2020, taking into consideration the adjustments based on the application of the 2006 IPCC Guidelines.

### **2. Assessment of adherence to the reporting guidelines**

16. The ERT assessed the information reported in the BR3 of Finland and recognized that the reporting is complete, transparent and adhering 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.

<sup>3</sup> European Commission decision 2017/1471 of 10 August 2017 amending decision 2013/162/EU of 26 March 2013 to revise member States' AEAs for the period 2017–2020.

## **C. Progress made towards the achievement of the quantified economy-wide emission reduction target**

### **1. Mitigation actions and their effects**

#### **(a) Technical assessment of the reported information**

17. Finland provided information on its package of PaMs implemented, adopted and planned, by sector and by gas, in order to fulfil its commitments under the Convention and its Kyoto Protocol. Finland reported on its policy context and legal and institutional arrangements put in place to implement its commitments and monitor and evaluate the effectiveness of its PaMs.

18. Finland provided information on a set of PaMs similar to those previously reported. Finland indicated that it had not made major changes since the previous submission to its institutional, legal, administrative and procedural arrangements used for domestic compliance, monitoring, reporting, archiving of information and evaluation of the progress made towards its target (BR3, chapter 4.6).

19. 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<sub>2</sub> emissions from cars and vans, the carbon capture and storage directive, and the general programmes for environmental conservation, namely the 7<sup>th</sup> Environment Action Programme and the clean air policy package.

20. In operation since 2005, the EU ETS is a cap-and-trade system that covers all significant energy-intensive installations (mainly large point emissions sources such as power plants and industrial facilities), which produce 40–45 per cent of the GHG emissions of the EU. It is expected that the EU ETS will guarantee that the 2020 target (a 21 per cent emission reduction below the 2005 level) will be achieved for sectors under the scheme. The third phase of the EU ETS started in 2013 and the system now includes aircraft operations (since 2012) as well as N<sub>2</sub>O emissions from chemical industries, PFC emissions from aluminium production and CO<sub>2</sub> emissions from industrial processes (since 2013).

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

22. Finland highlighted the EU-wide mitigation actions that are under development, such as the legislative proposals for effort sharing between the member States, the reform of the EU ETS and ESD, and the inclusion of the LULUCF sector for the first time in the EU's climate policy package.

23. Among the mitigation actions that are critical for Finland's contribution to attaining the EU-wide 2020 emission reduction target are increasing the share of renewable energy sources to 38 per cent of final energy consumption by 2020 and the share of biofuels in gasoline and diesel fuel to 10 per cent by 2020, and increasing energy efficiency.

24. Finland introduced national-level policies to achieve its targets under the ESD and domestic emission reduction targets. In 2017, the AEAs of the EU member States were further adjusted to take into account changes introduced by the implementation of the 2006 IPCC Guidelines for the emission levels in the inventory because these guidelines were applied to inventory reporting after the AEAs under the ESD had been agreed.<sup>4</sup>

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<sup>4</sup> European Commission decision 2017/1471 of 10 August 2017 amending decision 2013/162/EU of 26 March 2013 to revise member States' AEAs for the period from 2017 to 2020.



25. The key measures reported are related to the energy sector and include the EU ETS, increasing the share of renewable energy sources and implementing energy conservation measures. Table 4 provides a summary of the reported information on PaMs.

Table 4

**Summary of information on policies and measures reported by Finland**

<i>Sector</i>	<i>Key PaMs</i>	<i>Estimate of mitigation impact by 2020 (kt CO<sub>2</sub> eq)</i>	<i>Estimate of mitigation impact by 2025 (kt CO<sub>2</sub> eq)</i>	<i>Estimate of mitigation impact by 2030 (kt CO<sub>2</sub> eq)</i>
Policy framework and cross-sectoral measures	Implementation of the EU ETS in Finland			
Energy	Building regulation 2003–2010	1 660	1 660	1 660
Transport	Promotion of biofuel use in the transport sector	1 520	1 467	1 436
Renewable energy	Promotion of woodchips and other wood-based energy	7 629	8 609	9 934
	Renewed building regulation 2012	2 166	3 608	5 050
	Promotion of wind power	3 000	3 180	3 600
	Promotion of biogas in electricity and gas production	388	367	352
	Promotion of solar power	86	227	386
Energy efficiency	Voluntary energy efficiency agreements with municipalities and companies 1997–2007, 2008–2016 and 2017–2025	7 912	7 841	8 415
IPPU	Aggregated impact of the PaMs under the WEM scenario	1 821	2 259	2 763
Agriculture	Improving grassland management, improving management of organic soils, and afforestation	–	225	450
LULUCF	Improving grassland management, improving management of organic soils, and afforestation	–	570	1 140
Waste	Aggregated impact of the PaMs under the WEM scenario	2 870	3 166	3 361

*Note:* The estimates of mitigation impact are estimates of emissions of CO<sub>2</sub> or CO<sub>2</sub> eq avoided in a given year as a result of the implementation of mitigation actions.

**(b) Policies and measures in the energy sector**

26. **Energy supply.** Finland's main PaMs in the energy sector are the EU ETS, the increase in the proportion of renewable energy in energy consumption and energy conservation measures. The adopted measures for district heating and combined heat and power production will play an important role because buildings used 38 per cent of the final energy consumption in 2016. The effect of the PaMs in the energy sector is strongly influenced by external factors such as the weather (which influences electricity production from renewable sources in the Nordic-Baltic electricity market to which Finland is connected) and variations in the Nordic-Baltic electricity market (e.g. prices).

27. The National Energy and Climate Strategy for 2030 states that Finland will phase out the use of coal for energy by 2030. No new power plants burning hard or brown coal will be built, nor will Finland make any replacement investments based on coal. Once the existing plants, which are based on pulverized fuel combustion, have been decommissioned, coal will only be used as a backup fuel in exceptional situations.

28. **Renewable energy sources.** Finland aims to increase the share of renewable energy in final energy consumption to 38 per cent by 2020 (this target was reached in 2014 and the share was 39.3 per cent in 2015). This increase in the share has been achieved by reducing energy consumption and increasing the use of renewables. Wood-based fuels, liquid biofuels, wind power and heat pumps contribute most to the target.

29. **Energy efficiency.** The BR3 includes information on the advances in the established PaMs, such as the voluntary energy efficiency agreements with municipalities and private companies (e.g. on the energy efficiency of buildings, industrial processes and services),

which represented, in 2016, approximately 65 per cent of the total energy consumption in Finland. Voluntary energy audits are another important measure; the emission reduction achieved by the energy efficiency measures conducted on the basis of the proposals in the voluntary energy audits is estimated to be 0.33 Mt CO<sub>2</sub> per year by the end of 2020 and 0.28 Mt CO<sub>2</sub> per year by the end of 2025.

30. Finland assigns an important role to economic instruments such as taxation and subsidies to improve energy efficiency and to promote the development of domestic energy sources. Other measures include setting minimum standards, research, education and the dissemination of information.

31. **Residential and commercial sectors.** CO<sub>2</sub> emissions from the use of energy in buildings are mainly covered by the EU ETS. The energy used for space heating in residential, commercial and public buildings was 72 TWh in 2015 (25 per cent of the total end use of energy). Slightly less than 30 TWh of the energy used for space heating in 2015 was not covered by the EU ETS. The mitigation measures in this sector target both new and existing buildings, and the uses and maintenance of the building stock. In addition to PaMs in the building sector, energy use is affected by policy instruments for renewable energy, that is by changes in the prices of heat and electricity.

32. **Transport sector.** The projection made by Finland for the transport sector includes all measures that were in place in the sector to reduce emissions in June 2016. The measures are designed to achieve the target of the Climate Policy Programme for the Transport Sector and Finland's Long-term Climate and Energy Policy, a 50 per cent reduction in emissions in 2030 compared with the 2005 level. The measures also contribute to achieving the EU's target under the ESD.

33. The PaMs for transport include: promoting the use of biofuels; improving the energy efficiency of vehicles; and improving the energy efficiency of the transport system by promoting the choices of more environmentally friendly modes of transport and curbing the growth of vehicle-kilometres.

34. The BR3 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. As an EU member State, Finland is implementing the EU ETS for aviation for flights from Finland to other countries in the European Economic Area (EU, Iceland, Liechtenstein and Norway). In 2016, Finland issued 493,036 aviation emission allowances free of charge to aircraft operators administered by the Finnish Transport Safety Agency and sold 110,500 aviation emission allowances at the common auction platform. The Ministry of Transport and Communications is actively involved in EU policymaking to enhance the effectiveness of the EU ETS for aviation.

### (c) Policies and measures in other sectors

35. **Industrial processes.** GHG emissions from this sector were 11.0 per cent of total emissions (including indirect CO<sub>2</sub> emissions, excluding LULUCF) in 2015 and F-gas emissions (HFCs, PFCs and SF<sub>6</sub>) were 2.9 per cent of total emissions. HFC emissions have increased by 6,440,749.3 per cent since 1990. PFC emissions have declined since their peak in 1999 (35.69 kt CO<sub>2</sub> eq) but are still higher than in 1990 by 3,095.2 per cent. SF<sub>6</sub> emissions have declined since their peak in 1996 (54.16 kt CO<sub>2</sub> eq) but have increased continuously since the 2012 level (22.16 kt CO<sub>2</sub> eq), although they were in 2015 (37.55 kt CO<sub>2</sub> eq) still lower than in 1990 by 28.5 per cent. F-gas emissions from refrigeration and air-conditioning equipment are expected to decline owing to measures and technical changes leading to smaller charges and decreased leakage implemented under EU regulations. Key drivers for the decrease in F-gas emissions are the phase-down of HFCs that can be placed on the EU market and the ban on the use of HFCs in various applications, which will lead to the replacement of HFCs with other substances with lower global warming potentials in most applications. It is estimated that the emission reduction achieved by these additional measures will be 0.3 Mt CO<sub>2</sub> eq in 2030.

36. **Agriculture.** GHG emissions from this sector were 11.7 per cent of total emissions (including indirect CO<sub>2</sub> emissions, excluding LULUCF) in 2015. The objectives of

sustainable and multifunctional agriculture in Finland include reducing GHG emissions and assessing the need for adaptation measures. The EU Common Agricultural Policy plays an important role in the adopted PaMs in the sector. Annual CH<sub>4</sub> and N<sub>2</sub>O emissions from agriculture decreased by 7.6 and 9.0 per cent, respectively, over the period 1990–2015, mainly owing to a decrease in the livestock population and a decrease in nitrogen fertilization. Changes in agricultural policy and farming subsidies have had a significant influence on agricultural activities and hence on the emissions from this sector.

37. **LULUCF.** The LULUCF sector acts as a net sink in Finland. It can vary greatly from one year to the next, depending on the evolution of forestry production. For example, net removals during the period 1990–2015 range from 12.67 Mt CO<sub>2</sub> in 1990 to 38.00 Mt CO<sub>2</sub> eq in 2009. In 2015, the sector was a net sink of 25.99 Mt CO<sub>2</sub> eq. While Finland does not estimate the aggregated impact of mitigation actions, net removals from the LULUCF sector increased by 13.32 Mt CO<sub>2</sub> eq between 1990 and 2015.

38. **Waste management.** GHG emissions from the waste sector were 54.3 per cent lower in 2015 than in 1990 and will decrease further according to the WEM scenario projections. PaMs include the EU directive on landfills (directive 1999/31/EC) and the implementation of national legislation and strategies that aim at reducing the amount of waste generated and minimizing the amount of waste, especially organic waste, delivered to landfill. For example, Decree No. 331/2013 on landfills sets 10 per cent as the maximum total organic carbon in waste landfilled from 2016 (except building waste, where this limit applies from 2020). The estimated aggregated impact of the PaMs is a reduction of 2.87 Mt CO<sub>2</sub> and 3.36 Mt CO<sub>2</sub> in emissions for 2020 and 2030, respectively.

39. **Urban structure and land use.** Finland reported important measures in urban development to reduce emissions from buildings (residential, commercial and industrial) and transport. For example, building sufficient public transportation and networks of pedestrian and bicycle lanes, and directing construction of new buildings to areas with existing services and transport networks. In land-use planning, Finland facilitates the development of wind power potential by favouring the construction of wind power infrastructure in large units at a sufficient distance from permanent housing.

**(d) Response measures**

40. Finland reported on the assessment of the economic and social consequences of response measures (BR3, chapter 6.3). Finland explained that it strives to implement its commitments under the Kyoto Protocol in such a way that social, environmental and economic impacts on other countries, especially on developing countries, are minimized. Finland supports developing countries by helping them to build their capacities and develop their economic infrastructure, thus helping them diversify their economies and improve energy production. Finland has also consistently and in the long term worked to reform fossil fuel subsidies for both climate and wider environmental, social and economic benefits.

**(e) Assessment of adherence to the reporting guidelines**

41. The ERT assessed the information reported in the BR3 of Finland and recognized that the reporting is complete, transparent and adhering 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.

**2. Estimates of emission reductions and removals and the use of units from market-based mechanisms and land use, land-use change and forestry**

**(a) Technical assessment of the reported information**

42. For 2014 Finland reported in CTF table 4 annual total GHG emissions excluding LULUCF of 59,125.79 kt CO<sub>2</sub> eq, which is 17.1 per cent below the 1990 level. In 2014 emissions from non-ETS sectors relating to the target under the ESD amounted to 30,146.83 kt CO<sub>2</sub> eq and were 3.6 per cent lower than the AEA allocation for that year (31,288.40 kt CO<sub>2</sub> eq).

43. For 2015 Finland reported in CTF table 4 annual total GHG emissions excluding LULUCF of 55,559.21 kt CO<sub>2</sub> eq, which is 22.1 per cent below the 1990 level. In 2015 emissions from non-ETS sectors relating to the target under the ESD amounted to 29,886.48 kt CO<sub>2</sub> eq and were 3.0 per cent lower than the AEA allocation for that year (30,800.27 kt CO<sub>2</sub> eq).

44. On its use of units from LULUCF activities, Finland reported in CTF tables 4 and 4(a) that in 2014 and 2015 it did not use units to offset its total GHG emissions (reported as zero). Finland reported that even though it has a Kyoto Protocol units purchase programme, which is expected to deliver 4 Mt until 2020, the use of units for compliance in the second commitment period has not yet been decided. Table 5 illustrates Finland's total GHG emissions, the contribution of LULUCF and the use of units from market-based mechanisms to achieve its target.

Table 5

**Summary of information on the use of units from market-based mechanisms and land use, land-use change and forestry by Finland to achieve its target**

<i>Year</i>	<i>Emissions excluding LULUCF (kt CO<sub>2</sub> eq)</i>	<i>Contribution of LULUCF (kt CO<sub>2</sub> eq)<sup>a</sup></i>	<i>Emissions including contribution of LULUCF (kt CO<sub>2</sub> eq)</i>	<i>Use of units from market-based mechanisms (kt CO<sub>2</sub> eq)</i>
1990	71 290.64	NA	NA	NA
2010	75 653.91	NA	NA	NA
2011	67 706.40	NA	NA	NA
2012	62 389.34	NA	NA	NA
2013	63 195.34	NA	NA	0
2014	59 125.79	NA	NA	0
2015	55 559.21	NA	NA	0

*Sources:* Finland's BR3 and CTF tables 1, 4, 4(a)I, 4(a)II and 4(b).

<sup>a</sup> The EU's unconditional commitment to reduce GHG emissions by 20 per cent below the 1990 level by 2020 does not include emissions/removals from LULUCF.

45. In assessing the progress towards the achievement of the 2020 target, the ERT noted that Finland's emission reduction target for non-ETS sectors is 16 per cent below the 2005 level (see para. 15 above). As discussed above (see paras. 42 and 43), Finland's emissions from non-ETS sectors for 2014 and 2015 were 3.6 and 3.0 per cent, respectively, below the AEA allocation under the ESD.

46. The ERT noted that Finland is making progress towards its emission reduction target by implementing mitigation actions that are delivering significant emission reductions to comply with and stay below the annual AEAs for each year of the period remaining until 2020. On the basis of the results of the projections (see para. 62 below), the ERT also noted that the Party is making progress towards achieving its target under the Convention.

**(b) Assessment of adherence to the reporting guidelines**

47. The ERT assessed the information reported in the BR3 of Finland and recognized that the reporting is complete, transparent and adhering 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. Projections overview, methodology and results**

**(a) Technical assessment of the reported information**

48. Finland reported updated projections for 2020 and 2030 relative to actual inventory data for 2015 under the WEM scenario. The WEM scenario reported by Finland includes implemented and adopted PaMs until late 2016.

49. In addition to the WEM scenario, Finland reported the WAM scenario in its BR3 and CTF tables 6(b) and 6(c). The WAM scenario includes planned PaMs. Finland reported that the scenarios are based on the National Energy and Climate Strategy for 2030 (presented by the Government in November 2016) and the Medium-term Climate Change Policy Plan (approved in September 2017). Finland also reported that most of the measures included in the WAM scenario of the NC6 have been implemented and are part of the WEM scenario in the BR3. Finland provided a definition of its scenarios, explaining that its WEM scenario includes policies such as the EU ETS, the promotion of renewable energy, the energy audit programme, energy efficiency improvement, the EU F-gas regulation, the EU Common Agricultural Policy, the National Forest Strategy 2025 and the Waste Act,<sup>5</sup> while its WAM scenario includes the promotion of “nearly zero-energy” buildings, the expansion of the use of biofuels in the transport sector, criteria for public procurement of equipment containing F-gases, the intensification of long-term grass cultivation, and afforestation. The definitions indicate that the scenarios were prepared according to the UNFCCC reporting guidelines on BRs. The ERT noted that Finland did not include a WOM scenario.

50. 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<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, PFCs, HFCs and SF<sub>6</sub> for 2016–2030. The projections are also provided in an aggregated format for each sector as well as for a Party total using global warming potential values from the AR4.

51. Finland did not report emission projections for indirect GHGs such as carbon monoxide, nitrogen oxides, non-methane volatile organic compounds or sulfur oxides. During the review, the Party clarified that indirect GHGs are not significant emission sources, although they are included in the national total for historical emissions, and that indirect GHGs comprised 0.1–0.2 per cent of total GHG emissions, excluding LULUCF, for the period 1990–2015.

52. Emission projections related to fuel sold to ships and aircraft engaged in international transport were reported separately and were not included in the totals. Finland reported on factors and activities affecting emissions for each sector, stating that the annual growth rate of international marine transportation and aviation is estimated to be 2.0 per cent and 3.0 per cent by 2030, respectively, without taking into consideration PaMs aiming at improving energy efficiency and increasing the use of alternative fuels. During the review, the Party clarified that the fuel sold to ships and aircraft is strongly affected by fuel prices and differences in fuel prices in different countries and, therefore, projections are difficult to make.

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

53. The methodology used for the preparation of the projections is very similar to that used for the preparation of the emission projections reported in the BR2. Model development and updates have been made (e.g. to ensure consistency with inventory methods that have changed).

54. Finland reported the variables and assumptions in CTF table 5. To prepare its projections, Finland relied on the following key assumptions:

(a) Population will grow steadily, up to 5.63, 5.75 and 5.85 million in 2020, 2025 and 2030, respectively;

(b) The annual growth of GDP during the period 2016–2020 is 1.6 per cent, and during the period 2020–2030, 2.6 per cent. The GDP drivers from 2020 are expected to be machinery and equipment manufacturing, forest industries (e.g. pulp and paper) and financial and insurance services;

(c) The international fuel prices are those from the International Energy Agency’s *World Energy Outlook 2015*.<sup>6</sup>

<sup>5</sup> Act. No. 646/2011, amendments up to 528/2014 included.

<sup>6</sup> <https://webstore.iea.org/world-energy-outlook-2015>.

55. The assumptions were updated on the basis of the most recent economic developments, particularly the upward revision of the annual GDP growth rate for 2020–2030: 1.7 per cent in the BR2 (table 5.1) but 2.6 per cent in the BR3 (p.76).

56. In its BR2 Finland indicated that one of the aims of the Government was to improve self-sufficiency in terms of the nation's electricity supply and that, in the projections, it was assumed that electricity net imports would decrease significantly from 2014. However, in the BR3, Finland reported that the recent increased integration of the Nordic-Baltic electricity market (to which Finland belongs) means that self-sufficiency in electricity supply is no longer a feasible aim or a reasonable assumption.

57. Finland provided information on the changes in the assumptions, methodologies, models and approaches used and on the key variables and assumptions used in the preparation of the projection scenarios since the BR2. To explain the changes, Finland provided supporting documentation during the review (e.g. the Medium-term Climate Change Policy Plan finalized during 2017). The ERT noted that data for 2015 are listed as a projection in CTF table 5. During the review, the Party clarified that the format of the CTF tables could not be changed by the Party and confirmed that the 2015 data are historical and not projected.

58. The ERT noted that more information on the sectoral assumptions, key factors and activity data by sector was provided in CTF table 5 in the BR2 than in CTF table 5 in the BR3. During the review, Finland explained that, compared with the BR2, it reduced the data included in CTF table 5 as it considered that the key parameters and assumptions were described in the text and other tables included in the BR3. The Party also explained that economic growth by sector is not included in the BR3 text or CTF table 5 because emission trends have been decoupled from economic trends. The Party noted that the level of detail for reporting activity data used in the calculation of the projections is not clearly stated in the UNFCCC reporting guidelines on BRs.

59. Sensitivity analyses were conducted for the WEM scenario by varying the economic growth of industry, services and the building sector, although no sensitivity analysis was made for the transport sector (BR3, p.74). If the annual growth rate were 1 percentage point lower than the rate assumed in the WEM scenario, GHG emissions in 2030 would be 4 Mt CO<sub>2</sub> eq lower than in the WEM projection, and most of the emission reductions would take place in the EU ETS sector (only 0.4 Mt CO<sub>2</sub> eq would be reduced in the non-ETS sectors).

### (c) Results of projections

60. The projected emission levels under different scenarios, and information on the quantified economy-wide emission reduction target, are presented in table 6 and the figure below.

Table 6

#### Summary of greenhouse gas emission projections for Finland

	<i>GHG emissions (kt CO<sub>2</sub> eq per year)</i>	<i>Changes in relation to base-year<sup>a</sup> level (%)</i>	<i>Changes in relation to 1990 level (%)</i>
Quantified economy-wide emission reduction target under the Convention <sup>b</sup>	NA	NA	NA
Inventory data 1990 <sup>c</sup>	71 290.64	–0.1	NA
Inventory data 2015 <sup>c</sup>	55 559.21	–22.1	–22.1
WEM projections for 2020 <sup>d</sup>	56 031	–21.5	–21.4
WAM projections for 2020 <sup>d</sup>	55 920	–21.6	–21.6
WEM projections for 2030 <sup>d</sup>	48 493	–32.0	–32.0
WAM projections for 2030 <sup>d</sup>	43 810	–38.6	–38.5

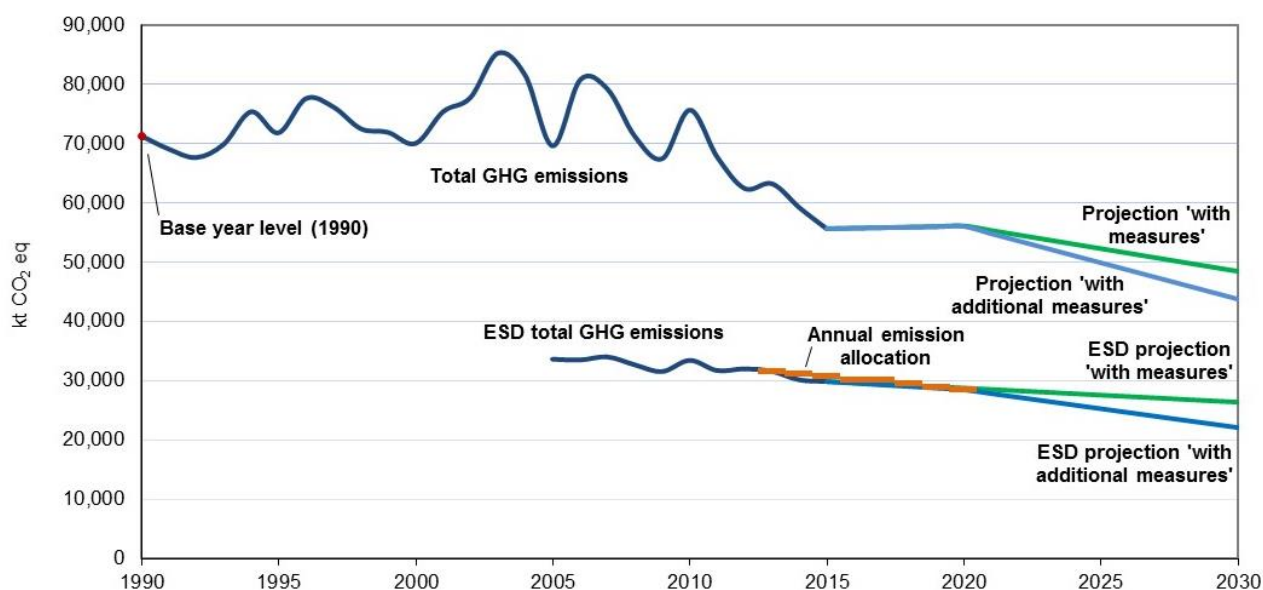
<sup>a</sup> “Base year” in this column refers to the base year used for the target under the Kyoto Protocol.

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

<sup>c</sup> From Finland's BR3 CTF table 6.

<sup>d</sup> From Finland's BR3.

## Greenhouse gas emission projections reported by Finland



Sources: (1) data for the years 1990–2015: Finland’s 2017 annual inventory submission; total GHG emissions excluding LULUCF; (2) data for the years 2016–2030: Finland’s BR3; total GHG emissions excluding LULUCF.

61. Finland’s total GHG emissions excluding LULUCF in 2020 and 2030 are projected to be 56,031 and 48,493 kt CO<sub>2</sub> eq, respectively, under the WEM scenario, which represents a decrease of 21.4 and 32.0 per cent, respectively, below the 1990 level. Under the WAM scenario, emissions in 2020 and 2030 are projected to be lower than those in 1990 by 21.6 and 38.5 per cent and amount to 55,920 and 43,810 kt CO<sub>2</sub> eq, respectively. The 2020 projections suggest that Finland will continue contributing to the achievement of the EU target under the Convention.

62. Finland’s target for non-ETS sectors is to reduce its total emissions by 16.0 per cent below the 2005 level by 2020. Finland’s AEAs, which correspond to its national emission target for non-ETS sectors, change linearly from 31,776,522 t CO<sub>2</sub> eq in 2013 to 28,513,533 t CO<sub>2</sub> eq for 2020 (including adjustments resulting from the implementation of the 2006 IPCC Guidelines, as shown in table 4.1 of the NC7). According to the projections under the WEM scenario, emissions from non-ETS sectors are estimated to reach 28.8 Mt CO<sub>2</sub> eq by 2020. Under the WAM scenario, Finland’s emissions from non-ETS sectors in 2020 are projected to be 28.5 Mt CO<sub>2</sub> eq. The projected level of emissions for the non-ETS sectors under the WEM scenario is 1.0 per cent above the AEAs for 2020 and, under the WAM scenario, 0.05 per cent below. The ERT noted that this suggests that Finland expects to meet its ESD target under the WAM scenario.

63. In addition to its target for non-ETS sectors, under the EU climate and energy package, Finland is also required to achieve a domestic target of a 38 per cent share for renewable energy sources in final energy consumption by 2020 and a 50 per cent share by 2030, and to limit the final energy consumption to 310 TWh in 2020. The projections indicate that Finland expects to meet its domestic targets. Information provided during the review shows that the share of renewable energy will increase to over 40 per cent in both the WEM and the WAM scenario in 2020, and increase to 49.8 per cent in 2030 under the WAM scenario. The final energy consumption would be 311 TWh in 2020 (WEM scenario) and generally remain stable during the 2020s.

64. Finland presented the WEM and WAM scenarios by sector for 2020 and 2030, as summarized in table 7.

Table 7

**Summary of greenhouse gas emission projections for Finland presented by sector**

Sector	GHG emissions and removals (kt CO <sub>2</sub> eq)					Change (%)			
	1990	2020		2030		1990–2020		1990–2030	
		WEM	WAM	WEM	WAM	WEM	WAM	WEM	WAM
Energy (not including transport)	41 457	30 678	30 678	24 464	22 957	–26.0	–26.0	–41.0	–44.6
Transport	12 101	10 763	10 654	10 044	7 194	–11.1	–12.0	–17.0	–40.6
Industry/industrial processes	5 370	6 349	6 347	6 493	6 169	18.2	18.2	20.9	14.9
Agriculture	7 525	6 611	6 611	6 378	6 378	–12.1	–12.1	–15.2	–15.2
LULUCF	–12 672	–10 644	–10 644	–4 221	–5 361	–16.0	–16.0	–66.7	–57.7
Waste	4 672	1 629	1 629	1 112	1 112	–65.1	–65.1	–76.2	–76.2
Other (specify)	NO	NO	NO	NO	NO	NO	NO	NO	NO
<b>Total GHG emissions without LULUCF</b>	<b>71 291</b>	<b>56 031</b>	<b>55 920</b>	<b>48 493</b>	<b>43 810</b>	<b>–21.4</b>	<b>–21.6</b>	<b>–32.0</b>	<b>–38.5</b>

Sources: (1) GHG emission data: Finland's 2017 annual inventory submission; (2) WEM and WAM projections: Finland's BR3.

65. According to the projections reported for 2020 under the WEM scenario, the most significant emission reductions are expected to occur in the energy sector (excluding transport) and the waste sector, amounting to projected reductions of 10.78 Mt CO<sub>2</sub> eq (26.0 per cent) and 3.0 Mt CO<sub>2</sub> eq (65.1 per cent) between 1990 and 2020, respectively. However, during the same period, emissions from IPPU are projected to increase by 1.0 Mt CO<sub>2</sub> eq (18.2 per cent). The pattern of projected emissions reported for 2030 under the same scenario remains the same. The most significant emission reductions are also expected to occur in the energy sector (excluding transport) and the waste sector, amounting to projected reductions of 17.0 Mt CO<sub>2</sub> eq (41.0 per cent) and 3.0 Mt CO<sub>2</sub> eq (76.2 per cent) between 1990 and 2030, respectively. Emissions from IPPU are projected to increase by 1.1 Mt CO<sub>2</sub> eq (20.9 per cent) during the same period.

66. Under the WEM scenario, the sink effect of the LULUCF sector is expected to decrease by 16.0 and 66.7 per cent for 2020 and 2030, respectively, compared with the 1990 level. Under the WAM scenario, the sink effect of the LULUCF sector for 2020 is the same as under the WEM scenario but is expected to increase for 2030 from –4.22 Mt CO<sub>2</sub> eq to –5.36 Mt CO<sub>2</sub> eq.

67. Additional measures, to be implemented in the 2020s or by 2030 at the latest, are considered under the WAM scenario. Compared with the WEM scenario, an additional emission reduction of 4.7 Mt CO<sub>2</sub> eq would be achieved in 2030. Over half of the additional reduction would come from the transport sector (2.8 Mt CO<sub>2</sub> eq), mainly as a result of three PaMs: promoting the use of biofuel, improving the energy efficiency of vehicles and improving the energy efficiency of the transport system (contributing 1.5, 1.0 and 0.3 Mt CO<sub>2</sub> eq, respectively, to the additional reduction). In addition, the “nearly zero-energy” regulation for new buildings that will enter into force in 2018 and an obligation to blend 10 per cent bio-liquid into light fuel used for the heating of buildings will contribute to the additional reduction under the WAM scenario.

68. Finland presented the WEM and WAM scenarios by gas for 2020 and 2030, as summarized in table 8.



Table 8

**Summary of greenhouse gas emission projections for Finland presented by gas**

Gas	GHG emissions and removals (kt CO <sub>2</sub> eq)					Change (%)			
	1990	2020		2030		1990–2020		1990–2030	
		WEM	WAM	WEM	WAM	WEM	WAM	WEM	WAM
CO <sub>2</sub>	57 114 <sup>a</sup>	45 392	45 284	39 157	34 803	–20.3	–20.5	–31.2	–38.9
CH <sub>4</sub>	7 746	4 498	4 498	3 817	3 817	–41.9	–41.9	–50.7	–50.7
N <sub>2</sub> O	6 377	4 757	4 757	4 727	4 723	–25.4	–25.4	–25.9	–25.9
HFCs	0.02	1 343	1 341	751	426	6 717 200.0	6 706 050.0	3 752 450.0	2 132 250.0
PFCs	0.2	4	4	4	3	1 681.0	1 681.0	1 576.2	1 385.7
SF <sub>6</sub>	52	36	36	38	38	–31.5	–31.5	–27.0	–27.0
NF <sub>3</sub>	NO	NO	NO	NO	NO	NA	NA	NA	NA
<b>Total GHG emissions without LULUCF</b>	<b>71 291</b>	<b>56 031</b>	<b>55 920</b>	<b>48 493</b>	<b>43 810</b>	<b>–21.4</b>	<b>–21.6</b>	<b>–32.0</b>	<b>–38.5</b>

Sources: (1) GHG emission data: Finland's 2017 annual inventory submission; (2) WEM and WAM projections: Finland's BR3.

<sup>a</sup> Emissions including indirect CO<sub>2</sub> emissions.

69. For 2020 the most significant reductions are projected for CO<sub>2</sub> and CH<sub>4</sub> emissions: 11.6 Mt CO<sub>2</sub> (20.3 per cent) and 3.2 Mt CO<sub>2</sub> eq (41.9 per cent) between 1990 and 2020, respectively. However, F-gas emissions are projected to increase by 1.3 Mt CO<sub>2</sub> eq (25 times higher than in 1990) in the same period, driven mainly by HFC emissions.

70. The pattern of projected emissions reported for 2030 under the WEM scenario is similar to that for 2020. The most significant reductions are also expected to occur for CO<sub>2</sub> and CH<sub>4</sub> emissions: 17.8 Mt CO<sub>2</sub> (31.2 per cent) and 3.9 Mt CO<sub>2</sub> eq (50.7 per cent) between 1990 and 2030, respectively. However, the trend of F-gas emissions changes in the period 2020–2030 compared with the period 1990–2020; in 2030, these emissions are projected to be higher than in 1990 (by 0.7 Mt CO<sub>2</sub> eq, or 14 times higher) but lower than in 2020 (by 0.6 Mt CO<sub>2</sub> eq, or 46.5 per cent lower).

71. If additional measures are considered (i.e. under the WAM scenario), as in the WEM scenario, the most significant emission reductions are expected for CO<sub>2</sub> and CH<sub>4</sub> (reductions of 22.1 and 3.9 Mt CO<sub>2</sub> eq between 1990 and 2030, respectively), and the increasing trend of F-gas emissions for the period 1990–2020 changes to a decreasing trend for the period 2020–2030, although emissions in 2030 are still expected to be nine times higher than in 1990.

72. The ERT noted the updated assumption on annual growth rate of GDP during the 2020s does not trigger an incremental increase of overall emissions in that period. The projected emissions in 2030 are 49.8 Mt CO<sub>2</sub> eq under the WEM scenario in the BR2, whereas this value is 48.5 Mt CO<sub>2</sub> eq in the BR3. During the review, the Party clarified that although the Government of Finland's expectation of economic growth after 2020 is higher than the assumption used in the BR2, the starting level is lower owing to the prolonged recession. As a result, the economy is expected to reach the same level as in the projection in the BR2 by around 2030. Further, the new mitigation PaMs and optimized energy mix would offset the extra emissions that will possibly be caused by faster GDP growth. The ERT also noted that the energy intensity of Finland is projected to grow from 1.94 to 2.03 TWh/billion 2010 EUR between 2015 and 2020 (an increase of 4.3 per cent), although the emission intensity in terms of GHG emissions per GDP unit will decline by about 6.1 per cent during the same period. During the review, Finland clarified the information in the BR3 by explaining that the timber, pulp and paper, and metal production industries, which are energy intensive, have a relatively important role in economic recovery, and also that the export of pulp has increased recently and several new investments in pulp production are in the pipeline and under consideration.

**(d) Assessment of adherence to the reporting guidelines**

73. The ERT assessed the information reported in the BR3 of Finland and identified issues relating to completeness and transparency. The findings are described in table 9.

Table 9

**Findings on greenhouse gas emission projections reported in the third biennial report of Finland**

No.	Reporting requirement, issue type and assessment	Description of the finding with recommendation or encouragement
1	Reporting requirement <sup>a</sup> specified in paragraph 48  Issue type: transparency  Assessment: recommendation	Finland provided detailed information on the projected values for more than 25 key variables for the energy, IPPU, agriculture, LULUCF and waste sectors in CTF table 5 of its BR2. However, CTF table 5 in the BR3 includes information on just four key variables (GDP, EU ETS carbon price and prices for electricity coal and crude oil).  During the review, Finland explained that a table on economic growth by sector (such as CTF table 5 in the BR3) is no longer as relevant for the projections, because emission trends have been decoupled from economic trends. The Party indicated that other summary information is included in the text of the BR3 and in other CTF tables, and the Party provided factors and activities for the waste (solid waste disposal volume) and the agriculture (number of livestock raised and area of crop planting) sectors and additional activity data for the transport sector (basic and reduced mileages). The ERT noted the significant impact of the well-developed forest industry on the emission trend by providing increasing amounts of renewable energy.  The ERT recommends that Finland provide information on factors and activities for the key variables and assumptions for emission projections for all sectors in CTF table 5 or in the text and tables in the BR, including the assumptions for the forest industry and the renewable energy that it produces, to allow readers to gain a better understanding of the trends for all sectors.
2	Reporting requirement <sup>a</sup> specified in paragraph 28  Issue type: completeness  Assessment: encouragement	Finland did not include a WOM scenario in its BR3.  During the review, the Party clarified that the WOM scenario is not applicable to Finland's national circumstances because mitigation PaMs have been implemented since the 1970s; therefore, any WOM scenario created on the basis of previous climate and energy strategies (e.g. 2013, 2008 or 2005) would be very complicated and require significant effort, particularly in predicting industrial structure.  The ERT encourages Finland to explain in its next BR why reporting the WOM scenario is not possible.
3	Reporting requirement <sup>a</sup> specified in paragraph 35  Issue type: completeness  Assessment: encouragement	The ERT noted the Party did not report emission projections for indirect GHGs, although Finland estimates and reports these in its GHG inventory and includes them in the calculation of the base-year historical emissions.  During the review, Finland clarified that the emissions of indirect GHGs are not significant (less than 0.1 per cent of the total emissions for 2015, and 0.1–0.2 per cent for the period 1990–2015).  The ERT encourages Finland to include in its next BR emission projections for indirect GHGs.
4	Reporting requirement <sup>a</sup> specified in paragraph 34  Issue type: transparency  Assessment: encouragement	The ERT noted that estimates for projected emissions for the ETS and non-ETS sectors are provided in the BR3 in a figure but not in tabular format.  During the review, Finland provided these emissions in tabular format for the ETS and non-ETS sectors for both the WEM and the WAM scenario. The projections under the WEM scenario indicate that the non-ETS emissions will decrease by 15.0 and 22.1 per cent in 2020 and 2030, respectively; and under the WAM scenario the non-ETS emissions will decrease by 15.9 per cent and 34.8 per cent in 2020 and 2030, respectively. Updated emissions for the ETS and non-ETS sectors for 2005 were also provided during the review.  The ERT encourages Finland to report in its next BR the projected emissions for the ETS and non-ETS sectors in all scenarios in tabular format, together with updated historical emissions for the ETS and non-ETS sectors, in order to track the reduction progress in a more transparent manner.

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

<sup>a</sup> Paragraph number listed under reporting requirement refers to the relevant paragraph of the UNFCCC reporting guidelines on NCs.

## **D. Provision of financial, technological and capacity-building support to developing country Parties**

### **1. Approach and methodologies used to track support provided to non-Annex I Parties**

#### **(a) Technical assessment of the reported information**

74. In the BR3 Finland reported information on the provision of financial, technological and capacity-building support required under the Convention.

75. Finland provided details on what “new and additional” support it has provided and clarified how this support is “new and additional”. Finland’s definition for new and additional financial resources is to use 2009 as the baseline year. Total Finnish climate funding (grants) in 2009 was EUR 26.8 million; therefore, anything above EUR 26.8 million each year is considered new and additional. The approach used for reporting on new and additional resources has not changed since the BR2.

76. Finland reported the financial support that it has provided to non-Annex I Parties, distinguishing between support for mitigation and adaptation activities and recognizing the capacity-building elements of such support. It explained how it tracks finance for adaptation and mitigation using the Rio markers, which were developed for OECD DAC and are publicly available in the OECD DAC Creditor Reporting System. The Rio markers facilitate the tracking of adaptation- and mitigation-related (and also biodiversity and desertification) finance. The methodology used for preparing information on international climate support is explained in the BR3 (chapter 6.2).

77. Finland provided an explanation of how it defined funds as being climate-specific and how it tracked finance for adaptation and mitigation in the documentation box of CTF tables 7\_2015 only.

78. The BR3 includes information on the national approach to tracking the provision of support, indicators, delivery mechanisms used and allocation channels tracked. The methodology used by Finland to track finance for adaptation and mitigation has not changed since the BR2. Compared with the BR2, the BR3 provides additional information regarding multilateral development banks: Finland uses a similar approach for these as is used by the OECD when calculating imputed multilateral contributions.

79. Finland described the methodology and underlying assumptions used for collecting and reporting information on financial support, including the guidelines used (BR3, chapter 6.2).

80. Finland used the OECD DAC Rio markers for climate change mitigation and climate change adaptation to track climate finance (BR3, chapter 6.2). Finland marked some activities as both mitigation and adaptation. During the review, the Party explained how the type of contribution or climate change action is determined on the basis of the two Rio markers ‘climate change mitigation’ and ‘climate change adaptation’, and also explained the application of coefficients for activities where climate change adaptation or mitigation is not the fundamental driver for the activity but a significant component, in which case only a part of the project is classified as climate-related development finance. The ERT invites Finland to provide more information regarding the classification methodology behind activities marked as both mitigation and adaptation in the next BR.

#### **(b) Assessment of adherence to the reporting guidelines**

81. The ERT assessed the information reported in the BR3 of Finland and identified issues relating to transparency. The findings are described in table 10.

Table 10

**Findings on the approach and methodologies used to track support provided to non-Annex I Parties from the review of the third biennial report of Finland**

No.	Reporting requirement, issue type and assessment	Description of the finding with recommendation or encouragement
1	Reporting requirement specified in paragraph 13  Issue type: transparency  Assessment: encouragement	Finland provided relevant information on support (e.g. the definition of support for adaptation and mitigation) in the documentation box to CTF table 7_2015. However, this information is not included in CTF table 7_2016.  The ERT encourages Finland to ensure that CTF tables include the same supporting information, such as the definition of support for adaptation and mitigation, in all relevant year-specific CTF tables.
2	Reporting requirement specified in paragraph 14  Issue type: transparency  Assessment: encouragement	Finland provided almost all the figures in the BR3 in euros. The ERT identified only one instance of conversion from euros to United States dollars, in the custom footnote to CTF table 7_2015, namely “OECD/DAC exchange rates for 2015 and 2016 are used to calculate USD amount”.  The ERT encourages Finland to provide relevant information, such as source and date of exchange rate as well as the exchange rate value, in the BR and in CTF tables 7, 7(a) and 7(b) for all years.

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

## 2. Financial resources

### (a) Technical assessment of the reported information

82. Finland reported information on the provision of financial support required under the Convention, including on financial support provided, committed and pledged, allocation channels and annual contributions.

83. Finland indicated what “new and additional” financial resources it has provided pursuant to Article 4, paragraph 3, of the Convention and clarified how it has determined such resources as being “new and additional”. The approach to the reporting of new and additional resources has not changed since the BR2.

84. Finland described how its resources address the adaptation and mitigation needs of non-Annex I Parties. It also described how those resources assist non-Annex I Parties to mitigate and adapt to the adverse effects of climate change, facilitate economic and social response measures, and contribute to technology development and transfer and capacity-building related to mitigation and adaptation. Finland reported information on the assistance that it has provided to developing country Parties that are particularly vulnerable to the adverse effects of climate change to help them to meet the costs of adaptation to those adverse effects.

85. With regard to the most recent financial contributions aimed at enhancing the implementation of the Convention by developing countries, Finland reported that its climate finance has been allocated on the basis of: (1) Finland’s Development Policy Programme, a government decision-in-principle of 16 February 2012;<sup>7</sup> and (2) Finland’s *Government Report on Development Policy: One World, Common Future – Towards Sustainable Development*, a government report to the Finnish Parliament of 4 February 2016.<sup>8</sup> The principles underlying the allocation of climate finance include democratic ownership and

<sup>7</sup> <http://www.ulkoasiainministerio.fi/public/download.aspx?ID=97374&GUID={A708126D-F09D-4608-B420-C00E12E46385}>.

<sup>8</sup> <http://www.ulkoasiainministerio.fi/public/download.aspx?ID=155593&GUID={6E4F9704-3A6B-4207-977D-0FBC44E084AF}>.

accountability, a focus on the least developed countries, the sustainable management of natural resources, environmental protection and gender equality. Detailed project planning for funding is undertaken only after consulting with the recipient partner countries on their needs and priorities. During the review, Finland provided further information on the assumptions used to report information on finance. Support for sustainable development is the underlying assumption of Finland's assistance to developing countries. When supporting sustainable development in developing countries, Finland strives to enhance climate sustainability by using opportunities for supporting adaptation as a necessary part of long-term development, and by facilitating low-emission development pathways for developing countries. Table 11 includes some of the information reported by Finland on its provision of financial support.

Table 11

**Summary of information on provision of financial support by Finland in 2015–2016**

(Millions of United States dollars)

<i>Allocation channel of public financial support</i>	<i>Year of disbursement</i>	
	<i>2015</i>	<i>2016</i>
Official development assistance	1 308.36	1 060.00
Climate-specific contributions through multilateral channels, including:	46.03	2.47
Global Environment Facility	4.45	2.47
Least Developed Countries Fund	1.77	0
Special Climate Change Fund	1.00	0
Adaptation Fund	0	0
Green Climate Fund	38.49	0
UNFCCC Trust Fund for Supplementary Activities	0.32	0
Multilateral institutions, including regional development banks	29.08	12.55
United Nations bodies	10.20	3.56
Other (Nordic Development Fund)	3.86	NA
Climate-specific contributions through bilateral, regional and other channels	42.73	29.02
Other	0	0

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

86. Finland reported on its climate-specific public financial support, totalling USD 128.04 million in 2015 and USD 47.59 million in 2016. The Finnish Government considers it important that businesses promote sustainable development in their undertakings. In this context the Government has decided to use around EUR 530 million during the period 2016–2019 as investment funding to support programmes and projects that align with Finnish development policy, especially those related to climate change mitigation and adaptation and creating sustainable jobs and livelihoods in the private sector. The first allocation (EUR 130 million) from this package was made to Finnfund in 2016.<sup>9</sup> During the reporting period, Finland supported carbon market capacity in various developing countries through a EUR 4.1 million contribution to the World Bank's Partnership for Market Readiness. The ERT noted that Finland reported in CTF table 7(b) its bilateral support allocated to Parties included in Annex I to the Convention in 2015 and 2016. Information on financial support from the

<sup>9</sup> Finnfund is a development finance company that promotes sustainable development by providing long-term risk capital for private projects in developing countries and the Russian Federation. The State of Finland owns 93.8 per cent of the company. More information is available at [www.finnfund.fi/en\\_GB/](http://www.finnfund.fi/en_GB/).

public sector provided through multilateral and bilateral channels and the allocation of that support by priority is presented in table 12.

Table 12

**Summary of information on channels of financial support used in 2015–2016 by Finland**

(Millions of United States dollars)

<i>Allocation channel of public financial support</i>	<i>Year of disbursement</i>				<i>Share (%)</i>	
	<i>2015</i>	<i>2016</i>	<i>Difference</i>	<i>Change (%)</i>	<i>2015</i>	<i>2016</i>
Support through bilateral and multilateral channels allocated for:						
Mitigation	21.04	12.03	–9.01	–42.8	16.4	25.3
Adaptation	13.18	6.35	–6.83	–51.8	10.3	13.3
Cross-cutting	93.82	29.21	–64.61	–68.9	73.3	61.4
Other	0.00	0.00	–	–	–	–
<b>Total</b>	<b>128.04</b>	<b>47.59</b>	<b>–80.45</b>	<b>–62.8</b>	<b>100.0</b>	<b>100.0</b>
Detailed information by type of channel						
Multilateral channels:						
Mitigation	4.66	2.47	–2.20	–47.1	5.5	13.3
Adaptation	2.86	0.33	–2.53	–88.4	3.4	1.8
Cross-cutting	77.79	15.77	–62.02	–79.7	91.2	84.9
Other	0.00	0.00	–	–	–	–
<b>Total</b>	<b>85.31</b>	<b>18.57</b>	<b>–66.74</b>	<b>–78.2</b>	<b>100.0</b>	<b>100.0</b>
Bilateral channels:						
Mitigation	16.38	9.56	–6.82	–41.6	38.3	33.0
Adaptation	10.32	6.02	–4.30	–41.6	24.1	20.7
Cross-cutting	16.03	13.44	–2.59	–16.2	37.5	46.3
Other	0.00	0.00	–	–	–	–
<b>Total</b>	<b>42.73</b>	<b>29.02</b>	<b>–13.71</b>	<b>–32.1</b>	<b>100.0</b>	<b>100.0</b>
Multilateral compared with bilateral channels:						
Multilateral	85.31	18.57	–66.74	–78.2	66.6	39.0
Bilateral	42.73	29.02	–13.71	–32.1	33.4	61.0
<b>Total</b>	<b>128.04</b>	<b>47.59</b>	<b>–80.45</b>	<b>–62.8</b>	<b>100.0</b>	<b>100.0</b>

Source: CTF tables 7, 7(a) and 7(b) of the BR3 of Finland.

87. The BR3 includes detailed information on the financial support provided through multilateral, bilateral and regional channels in 2015 and 2016. More specifically, Finland contributed through multilateral channels, as reported in the BR3 and in CTF table 7(a), USD 85.31 million and USD 18.57 million for 2015 and 2016, respectively. It decreased its contributions significantly (by 78.2 per cent) from 2015 to 2016. The contributions were made to specialized multilateral climate change funds, such as the Least Developed Countries Fund, the Special Climate Change Fund and the Green Climate Fund.

88. The BR3 and CTF table 7(b) also include detailed information on the total financial support provided through bilateral channels, amounting to USD 42.73 million and USD 29.02 million in 2015 and 2016, respectively. Finland has decreased its contributions by 32.1 per cent from 2015 to 2016.

89. The BR3 provides information on the types of support provided. In terms of the focus of public financial support, as reported in CTF table 7 for 2015, the shares of the total public financial support allocated for mitigation, adaptation and cross-cutting projects were 16.4, 10.3 and 73.3 per cent, respectively. In addition, 66.6 per cent of the total public financial

support was allocated through multilateral channels and 33.4 per cent through bilateral, regional and other channels. In 2016, the shares of total public financial support allocated for mitigation, adaptation and cross-cutting projects were 25.3, 13.3 and 61.4 per cent, respectively. Furthermore, 39 per cent of the total public financial support was allocated through multilateral channels and 61 per cent through bilateral, regional and other channels.

90. The ERT noted that in 2015 the majority of financial contributions (91.2 per cent) made through multilateral channels was allocated to activities that are cross-cutting across mitigation and adaptation. Some funds were allocated for mitigation activities (5.5 per cent) and adaptation activities (3.4 per cent), as reported in CTF table 7(a). In 2016, the majority of financial contributions (84.9 per cent) made through multilateral channels was allocated to activities that are cross-cutting across mitigation and adaptation. Some funds were allocated for mitigation activities (13.3 per cent) and adaptation activities (1.8 per cent), as reported in CTF table 7(a).

91. The ERT noted that in 2015 about 75 per cent of financial contributions made through bilateral channels was allocated to activities that are cross-cutting across mitigation and adaptation (37.5 per cent) and for mitigation activities (38.3 per cent). The other funds were allocated for adaptation activities (24.1 per cent), as reported in CTF table 7(b). The corresponding allocations for 2015 were directed mostly to agriculture, energy, forestry and water and sanitation. In 2016, about 75 per cent of financial contributions made through bilateral channels was allocated to activities that are cross-cutting across mitigation and adaptation (46.3 per cent) and for mitigation activities (33.0 per cent). The other funds were allocated for adaptation activities (20.7 per cent), as reported in CTF table 7(b). The corresponding allocations for 2016 were directed mostly to agriculture, energy, forestry and water and sanitation.

92. CTF tables 7(a) and 7(b) include information on the types of financial instrument used in the provision of assistance to developing countries, which include grants, equity and interest subsidies. The ERT noted that predominantly grants were provided.

93. In the BR3 Finland clarified that private finance is mainly provided for renewable energy projects and projects seeking to prevent deforestation, support energy efficiency and promote adaptation to climate change. The Party also reported on how it promotes the provision of financial support for adaptation and mitigation to developing countries from the private sector through public funds, for example through Finnfund and the Nordic Development Fund.

94. Finland reported on the difficulty in collecting information and reporting on private financial flows owing to the lack of appropriate data collection systems and confidentiality clauses related to some private sector data. Therefore, Finland does not estimate or report regularly on the climate-related private finance mobilized.

**(b) Assessment of adherence to the reporting guidelines**

95. The ERT assessed the information reported in the BR3 of Finland and recognized that the reporting is complete, transparent and adhering 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. Technology development and transfer**

**(a) Technical assessment of the reported information**

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

97. The ERT took note of the information provided in CTF table 8 on recipient countries, target areas, measures and focus sectors of technology transfer programmes. Finland provided an overview of financed renewable energy projects and forestry-related projects.

Finland also promotes business-to-business partnerships in environmentally sound technologies. Finland's development policy and development cooperation efforts promote an inclusive green economy through the establishment of public-private partnerships.

98. The ERT noted that Finland reported on its PaMs as well as success and failure stories in relation to technology transfer, and in particular on measures taken to promote, facilitate and finance the transfer and deployment of climate-friendly technologies. The BR3 includes a reference to NC7 table 7.6 where the success factors are reported. Finland reported having local partners in project management, providing continuous capacity-building and training, using demand-driven funding, facilitating the participation of other investors for the scaling up of projects and establishing links with the host's national decision-making entities as some of the factors that led to success.

99. The ERT noted that Finland has several long-term partner countries, with which cooperation is based on country programmes that are prepared in consultation with the partners and that build on their national development plans. With regard to the provision of technology transfer support, Finland prioritized, inter alia, adaptation activities that focus on capacity-building and business development, investment preparation in relation to renewable energy and energy efficiency, hydro-meteorological services and the design of national forest monitoring systems and national forest inventories. Finland also provided support to regional programmes in Southern and Eastern Africa, the Andean region, Central America, Indonesia and the Mekong region.

100. 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.

**(b) Assessment of adherence to the reporting guidelines**

101. The ERT assessed the information reported in the BR3 of Finland and recognized that the reporting is complete, transparent and adhering 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.

**4. Capacity-building**

**(a) Technical assessment of the reported information**

102. In the BR3 and CTF table 9 Finland supplied information on how it has provided capacity-building support for mitigation, adaptation and technology that responds to the existing and emerging needs identified by non-Annex I Parties. Finland described individual measures and activities related to capacity-building support in textual and tabular format. Examples include: capacity-building on environmental law and diplomacy (the "Course on multilateral environmental agreements"); capacity and governance strengthening, enhancing negotiation capacity and the regional network and knowledge platform (Southeast Asia Climate Change Network project); and capacity-building to design and implement gender-responsive climate change policies, strategies and programmes (the Global Gender and Climate Alliance).

103. Finland reported that it supported climate-related capacity development activities relating to adaptation, research and systematic observation, as well as education and training. Finland also reported that it responded to the existing and emerging capacity-building needs of non-Annex I Parties by following the principles of national ownership, stakeholder participation, country-driven demand and cooperation between donors. Furthermore, Finland explained that it has been very active in the field of meteorological cooperation, supporting capacity-building programmes for hydro-meteorological services, especially in the Pacific region.

104. Since 2004, Finland has funded an international course on environmental law and diplomacy. The "Course on multilateral environmental agreements" is organized annually by the University of Eastern Finland in cooperation with the United Nations Environment



Programme and partners in developing countries.<sup>10</sup> The course strengthens the capacity of developing countries to participate in negotiations on multilateral environmental agreements and especially their capacity to participate in the decision-making, monitoring and evaluation of the implementation of environmental agreements, including the Convention.

105. Since 2008, Finland has also been strengthening the capacity and role of women in climate negotiations and mainstreaming the gender perspective in global climate policy through the Women Delegates Fund. Project activities implemented by the Global Gender and Climate Alliance include participating in meetings under the UNFCCC process, supporting directly the secretariat, providing technical support to Parties and stakeholders, and incorporating gender equality and women's empowerment criteria in climate finance mechanisms.

106. Since 2011, a project on cooperation between Finland and the South Centre has assisted developing countries at the national level in their preparations for engagement in national and international climate change policies and actions, and at the international level in engaging constructively and effectively in developing and shaping the international policy framework of cooperation in addressing the global climate crisis. The project has also strengthened sustainable development globally and in developing countries.

#### (b) Assessment of adherence to the reporting guidelines

107. The ERT assessed the information reported in the BR3 of Finland and identified an issue relating to transparency. The finding is described in table 13.

Table 13

#### Findings on capacity-building from the review of the third biennial report of Finland

No.	Reporting requirement, issue type and assessment	Description of the finding with recommendation or encouragement
1	Reporting requirement specified in paragraph 23  Issue type: transparency  Assessment: encouragement	Finland reported in chapter 6.5 of the BR3 and in CTF table 9 information on its provision of capacity-building support by providing a number of specific, relevant examples. The ERT noted that some of the information provided in the BR3 is not completely consistent with the information provided in CTF table 9. For example, the BR3 (p.90) reports that the capacity-building project of Finland and the South Centre ran from 2011 to 2013 with total support of EUR 700,000 and that the cooperation continued from 2014 for three years, but it does not include information on the financial support from 2014. CTF table 9 reports that that project had a budget of EUR 700,000 per year for a period of three years (1 March 2014 to 28 February 2017).  The ERT encourages Finland to provide consistent information for the examples of capacity-building support between the BR and CTF table 9, noting that one of the reporting elements (BR or CTF table 9) may provide additional information on the examples provided, as relevant for the reporting period.

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

### III. Conclusions and recommendations

108. The ERT conducted a technical review of the information reported in the BR3 and CTF tables of Finland in accordance with the UNFCCC reporting guidelines on BRs. The ERT concludes that the reported information mostly adheres to the UNFCCC reporting guidelines on BRs and provides 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; progress made by Finland in achieving its target; and the Party's provision of support to developing country Parties.

109. Finland's total GHG emissions, including indirect CO<sub>2</sub> emissions and excluding LULUCF, covered by its quantified economy-wide emission reduction target were estimated to be 22.1 per cent below their 1990 level, whereas total GHG emissions including indirect

<sup>10</sup> <https://www.uef.fi/web/unep>.

CO<sub>2</sub> emissions and including LULUCF were 49.6 per cent below their 1990 level in 2015. Emission decreases were driven by the decrease in CO<sub>2</sub> emissions due to changes in the energy supply structure (including electricity imports and exports), which outweighed the 9.9 per cent population increase and the 48.2 per cent GDP increase.

110. Under the Convention, Finland committed to contributing to the achievement of the joint EU quantified economy-wide emission reduction target of a 20 per cent reduction in emissions below the 1990 level by 2020. The target covers all sectors and CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, HFCs, PFCs and SF<sub>6</sub>, expressed using global warming potential values from the AR4. Emissions and removals from the LULUCF sector are not included. The EU generally allows its member States to use units from the Kyoto Protocol mechanisms and from other flexibility mechanisms defined in EU legislation for the purposes of complying with EU obligations, up to an established limit and subject to a number of restrictions on the origin and the type of project. Companies can make use of such units to fulfil their requirements under the EU ETS.

111. Under the ESD, Finland has a target of reducing its emissions by 16 per cent below the 2005 level by 2020. In the BR3, Finland reported on its progress in achieving the AEAs in 2013–2016 and the revised AEAs for 2017–2020. Finland's AEAs (its national emission target for non-ETS sectors) change linearly from 31,776,522 t CO<sub>2</sub> eq in 2013 to 28,513,533 t CO<sub>2</sub> eq for 2020. The ESD projections for 2020 under the WEM scenario are 1.0 per cent above the AEAs for 2020 and, under the WAM scenario, 0.05 per cent below. The ERT noted that this suggests that Finland expects to meet its ESD target under the WAM scenario.

112. Finland's main policy frameworks relating to energy and climate change are the National Energy and Climate Strategy for 2030 and the Medium-term Climate Change Policy Plan. Both documents take into account the EU ETS and the ESD. The mitigation actions with the most significant mitigation impact are related to the energy sector and include the EU ETS, increasing the share of renewable energy sources and implementing energy conservation measures.

113. For 2015 Finland reported in CTF table 4 total GHG emissions excluding LULUCF of 55,559.21 kt CO<sub>2</sub> eq. Finland reported on its use of units from market-based mechanisms to achieve its target and indicated that in 2014 and 2015 it did not use units to offset any of its total GHG emissions.

114. The GHG emission projections provided by Finland in the BR3 correspond to the WEM and WAM scenarios. Total GHG emissions excluding LULUCF in 2020 and 2030 are projected to be 56,031 and 48,493 kt CO<sub>2</sub> eq, respectively, under the WEM scenario, which represents a decrease of 21.4 and 32.0 per cent, respectively, below the 1990 level. Under the WAM scenario, emissions in 2020 and 2030 are projected to be lower than those in 1990 by 21.6 and 38.5 per cent and amount to 55,920 and 43,810 kt CO<sub>2</sub> eq, respectively.

115. On the basis of the reported information, the ERT concludes that Finland will continue making contributions to the EU 2020 target of a 20 per cent emission reduction from the 1990 level under the WEM and WAM scenarios and that the Party expects to meet its ESD target under the WAM scenario.

116. The ERT noted that Finland is making progress towards its emission reduction target by implementing mitigation actions that deliver significant emission reductions.

117. Finland continues to provide climate financing to developing countries in line with its climate finance programmes Development Policy Programme and the *Government Report on Development Policy: One World, Common Future – Towards Sustainable Development*. Finland provided more support for mitigation than for adaptation in 2015 and 2016. The biggest share of support went to projects on agriculture, energy, forestry and water and sanitation.

118. In the course of the review, the ERT formulated the following recommendation for Finland to improve its adherence to the UNFCCC reporting guidelines on BRs in its next BR:<sup>11</sup> improving the transparency of its reporting by providing information on factors and activities for the key variables and assumptions for emission projections for all sectors (see table 9, issue 1).

<sup>11</sup> The recommendations are given in full in the relevant chapters of this report.

## Annex

### Documents and information used during the review

#### A. Reference documents

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

BR3 of Finland. Available at [http://unfccc.int/files/national\\_reports/biennial\\_reports\\_and\\_iar/submitted\\_biennial\\_reports/application/pdf/03164295\\_finland-br3-1-fi\\_br3\\_tk\\_2017-12-13.pdf](http://unfccc.int/files/national_reports/biennial_reports_and_iar/submitted_biennial_reports/application/pdf/03164295_finland-br3-1-fi_br3_tk_2017-12-13.pdf).

BR3 CTF tables of Finland. Available at [http://unfccc.int/files/national\\_reports/biennial\\_reports\\_and\\_iar/submitted\\_biennial\\_reports/application/vnd.openxmlformats-officedocument.spreadsheetml.sheet/03164295\\_finland-br3-1-fin\\_2018\\_v1.0.xlsx](http://unfccc.int/files/national_reports/biennial_reports_and_iar/submitted_biennial_reports/application/vnd.openxmlformats-officedocument.spreadsheetml.sheet/03164295_finland-br3-1-fin_2018_v1.0.xlsx).

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

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

NC7 of Finland. Available at [http://unfccc.int/files/national\\_reports/annex\\_i\\_natcom/submitted\\_natcom/application/pdf/952371\\_finland-nc7-1-fi\\_nc7\\_final.pdf](http://unfccc.int/files/national_reports/annex_i_natcom/submitted_natcom/application/pdf/952371_finland-nc7-1-fi_nc7_final.pdf).

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

#### Other

IPCC. 2006. *2006 IPCC Guidelines for National Greenhouse Gas Inventories*. S Eggleston, L Buendia, K Miwa, et al. (eds.). Hayama, Japan: Institute for Global Environmental Strategies. Available at <http://www.ipcc-nggip.iges.or.jp/public/2006gl>.

#### B. Additional information provided by the Party

Responses to questions during the review were received from Finnish experts from various ministries, research institutes and Statistics Finland, including additional material. The following documents<sup>1</sup> were provided by Finland:

Government Report on the National Energy and Climate Strategy for 2030. Available at <http://tem.fi/documents/1410877/2769658/Government+report+on+the+National+Energy+and+Climate+Strategy+for+2030/0bb2a7be-d3c2-4149-a4c2-78449ceb1976/Government+report+on+the+National+Energy+and+Climate+Strategy+for+2030.pdf>.

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<sup>1</sup> Reproduced as received from the Party.