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## Report of the technical review of the second biennial report of Finland

According to decision 2/CP.17, developed country Parties are requested to submit their second biennial report by 1 January 2016, that is, two years after the due date for submission of a full national communication. This report presents the results of the technical review of the second 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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## **I. Introduction and summary**

### **A. Introduction**

1. This report covers the centralized technical review of the second biennial report (BR2)<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). In accordance with the same decision, a draft version of this report was communicated to the Government of Finland, which provided comments that were considered and incorporated, as appropriate, into this final version of the report.

2. The review took place from 7 to 12 March 2016 in Bonn, Germany, and was conducted by the following team of nominated experts from the UNFCCC roster of experts: Mr. Xiang Gao (China), Mr. Fredrick Kossam (Malawi), Mr. Budit Limmeechokchai (Thailand), Mr. Nicolo Macaluso (Canada), Mr. Khanyisa Brian Mantlana (South Africa), Mr. Dylan Muggeridge (New Zealand), Ms. Gherghita Nicodim (Romania), Mr. Marcelo Rocha (Brazil), Mr. Christoph Streissler (Austria) and Mr. Alexander Zahar (Australia). Mr. Gao and Mr. Streissler were the lead reviewers. The review was coordinated by Ms. Ruta Bubniene and Ms. Veronica Colerio (UNFCCC secretariat).

### **B. Summary**

3. The expert review team (ERT) conducted a technical review of the information reported in the BR2 of Finland in accordance with the “UNFCCC biennial reporting guidelines for developed country Parties” (hereinafter referred to as the UNFCCC reporting guidelines on BRs). During the review, Finland provided additional relevant information pertaining to: the quantified economy-wide emission reduction target; the progress made towards the achievement of the target; and the provision of financial, technological and capacity-building support.

#### **1. Timeliness**

4. The BR2 was submitted on 17 December 2015, before the deadline of 1 January 2016 mandated by decision 2/CP.17. The common tabular format (CTF) tables were submitted on 17 December 2015.

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

5. Issues and gaps related to the reported information identified by the ERT are presented in table 1 below. The information reported by Finland in its BR2 is mostly in adherence with the UNFCCC reporting guidelines on BRs as per decision 2/CP.17.

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<sup>1</sup> The biennial report submission comprises the text of the report and the common tabular format (CTF) tables. Both the text and the CTF tables are subject to the technical review.

Table 1

**Summary of completeness and transparency issues related to mandatory reported information in the second biennial report of Finland**

<i>Section of the biennial report</i>	<i>Completeness</i>	<i>Transparency</i>	<i>Paragraphs with recommendations</i>
Greenhouse gas emissions and trends	Complete	Transparent	
Assumptions, conditions and methodologies related to the attainment of the quantified economy-wide emission reduction target	Complete	Mostly transparent	21
Progress in achievement of targets	Complete	Transparent	
Provision of support to developing country Parties	Complete	Mostly transparent	61, 69, 80

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

## II. Technical review of the reported information

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

6. Finland has provided a summary of information on greenhouse gas (GHG) emission trends for the period 1990–2013 in its BR2 and CTF tables 1 and 1(a)–(d). The BR2 makes reference to the national inventory arrangements, which are explained in more detail in the national inventory report (NIR) included in Finland’s 2015 annual inventory submission (chapter 1.2). The national inventory arrangements were established in accordance with the reporting requirements related to national inventory arrangements contained in the “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” that are required by paragraph 3 of the UNFCCC reporting guidelines on BRs. Further, Finland provided information on changes in the national inventory arrangements since its first biennial report (BR1). Since the submission of the BR1, only minor changes have been made to the national GHG inventory preparation arrangements (see para. 20 below).

7. The information reported in the BR2 on emission trends is consistent with that reported in the 2015 annual inventory submission of Finland. To reflect the most recently available data, Finland’s 2015 annual inventory submission has been used as the basis for discussion in chapter II.A of this review report.

8. Total GHG emissions<sup>2</sup> excluding emissions and removals from land use, land-use change and forestry (LULUCF) and including indirect carbon dioxide (CO<sub>2</sub>) emissions decreased by 11.6 per cent between 1990 and 2013, whereas total GHG emissions including net emissions and removals from LULUCF and indirect CO<sub>2</sub> emissions decreased

<sup>2</sup> In this report, the term “total GHG emissions” refers to the aggregated national GHG emissions expressed in terms of carbon dioxide equivalent excluding land use, land-use change and forestry, unless otherwise specified. Values in this paragraph are calculated based on the 2015 annual inventory submission.

by 23.1 per cent over the same period.<sup>3</sup> The decrease in the total GHG emissions can be attributed mainly to CO<sub>2</sub> emissions, which decreased by 9.2 per cent (excluding LULUCF) between 1990 and 2013. Over the same period, emissions of methane (CH<sub>4</sub>) decreased by 33.8 per cent, while emissions of nitrous oxide (N<sub>2</sub>O) decreased by 27.8 per cent. The combined fluorinated gases (F-gases), such as perfluorocarbons (PFCs), hydrofluorocarbons (HFCs) and sulphur hexafluoride (SF<sub>6</sub>), increased by 2,924.0 per cent over the same period.

9. The decreasing trend in CO<sub>2</sub> emissions can be attributed mainly to the development of the energy supply and demand structure; however, the trend was also impacted by significant fluctuations as a result of national economic development and climate conditions, which influenced heating energy demand on the one hand, and hydropower generation in the Nordic countries on the other. CH<sub>4</sub> emissions show a more constant decreasing trend, which is mainly due to improvements in waste treatment and to the decreasing number of animals in husbandry. The biggest contribution to the reduction in the trend of N<sub>2</sub>O emissions stems from the implementation of N<sub>2</sub>O abatement technology in nitric acid production. The key driver for the considerable increase in emissions of F-gases is the substitution of ozone-depleting substances with F-gases in many applications.

10. The ERT noted that, during the period 1990–2013, Finland's gross domestic product (GDP) per capita increased by 35.9 per cent, while GHG emissions per GDP unit and GHG emissions per capita decreased by 40.2 and 18.7 per cent, respectively. Since 2009, Finland has experienced several years of economic recession; however, the economy is expected to recover, with an estimated GDP growth rate of 1.7–1.8 per cent per annum over the next decade. Table 2 below illustrates the emission trends by sector and some of the economic indicators relevant to GHG emissions for Finland.

Table 2

**Greenhouse gas emissions by sector and some indicators relevant to greenhouse gas emissions for Finland for the period 1990–2013**

Sector	GHG emissions (kt CO <sub>2</sub> eq)					Change (%)		Share by sector (%)	
	1990	2000	2010	2012	2013	1990–2013	2012–2013	1990	2013
1. Energy	53 586.29	53 933.07	60 043.13	47 617.67	48 358.52	–9.8	1.6	75.4	76.8
A1. Energy industries	18 968.04	22 281.94	30 632.52	20 723.17	22 066.78	16.3	6.5	26.7	35.0
A2. Manufacturing industries and construction	13 681.38	12 228.17	10 161.70	8 693.42	8 661.65	–36.7	–0.4	19.3	13.8
A3. Transport	12 101.28	12 127.26	12 718.29	12 212.28	12 098.79	0.0	–0.9	17.0	19.2
A4.–A5. Other	8 712.56	7 174.28	6 388.80	5 845.01	5 411.10	–37.9	–7.4	12.3	8.6
B. Fugitive emissions from fuels	123.03	121.42	141.80	143.79	120.19	–2.3	–16.4	0.2	0.2
C. CO <sub>2</sub> transport	NO	NO	NO	NO	NO	NA	NA	NA	NA

<sup>3</sup> Finland has elected to include indirect emissions in the total GHG emissions when reporting on progress made towards the target, as presented in CTF table 4; therefore, for consistency reasons, the ERT chose to present the aggregate findings on progress made towards the target using the totals including indirect emissions.

Sector	GHG emissions (kt CO <sub>2</sub> eq)					Change (%)		Share by sector (%)	
	1990	2000	2010	2012	2013	1990–2013	2012–2013	1990	2013
and storage									
2. IPPU	5 350.83	5 799.88	6 557.65	5 978.35	5 960.45	11.4	–0.3	7.5	9.5
3. Agriculture	7 455.57	6 403.44	6 521.27	6 316.56	6 337.75	15.0	0.3	10.5	10.1
4. LULUCF	–15 798.84	–24 524.54	–26 678.83	–27 873.56	–20 379.72	29.0	–26.9	NA	NA
5. Waste	4 673.24	3 853.82	2 585.24	2 453.37	2 332.18	50.1	–4.9	6.6	3.7
6. Other	NO	NO	NO	NO	NO	NA	NA	NA	NA
Indirect CO <sub>2</sub>	261.57	154.49	95.95	83.11	80.40	–69.3	–3.3	NA	NA
<b>Total GHG emissions without LULUCF</b>	<b>71 065.93</b>	<b>69 990.22</b>	<b>75 707.28</b>	<b>62 365.95</b>	<b>62 988.90</b>	<b>–11.4</b>	<b>1.0</b>	<b>100.0</b>	<b>100.0</b>
<b>Total GHG emissions with LULUCF</b>	<b>55 267.09</b>	<b>45 465.68</b>	<b>49 028.45</b>	<b>34 492.40</b>	<b>42 609.18</b>	<b>–22.9</b>	<b>23.5</b>	<b>NA</b>	<b>NA</b>
<b>Total GHG emissions without LULUCF, including indirect CO<sub>2</sub></b>	<b>71 327.50</b>	<b>70 144.72</b>	<b>75 803.23</b>	<b>62 449.07</b>	<b>63 069.30</b>	<b>–11.6</b>	<b>1.0</b>	<b>NA</b>	<b>NA</b>
<b>Total GHG emissions with LULUCF, including indirect CO<sub>2</sub></b>	<b>55 528.66</b>	<b>45 620.18</b>	<b>49 124.40</b>	<b>34 575.51</b>	<b>42 689.58</b>	<b>–23.1</b>	<b>23.5</b>	<b>NA</b>	<b>NA</b>
<i>Indicators</i>									
GDP per capita (thousands 2011 USD using PPP)	28.60	34.52	39.42	39.49	38.87	35.9	1.6	NA	NA
GHG emissions without LULUCF per capita (t CO <sub>2</sub> eq)	14.25	13.52	14.12	11.52	11.58	–18.7	0.5	NA	NA
GHG emissions without LULUCF per GDP unit (kg CO <sub>2</sub> eq per 2011 USD using PPP)	0.50	0.39	0.36	0.29	0.30	–40.2	2.1	NA	NA

Sources: (1) GHG emission data: Finland's 2015 annual inventory submission; (2) GDP per capita data: World Bank.

Note: The ratios per capita and per GDP unit as well as the changes in emissions and the shares by sector are calculated relative to total GHG emissions without LULUCF using the exact (not rounded) values, and may therefore differ from the ratio calculated with the rounded numbers provided in the table.

Abbreviations: GDP = gross domestic product, GHG = greenhouse gas, IPPU = industrial processes and product use, LULUCF = land use, land-use change and forestry, NA = not applicable, NO = not occurring, PPP = purchasing power parity.

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

11. In its BR2 and CTF tables 2(a)–(f), Finland described its quantified economy-wide emission reduction target. Finland also referred to document FCCC/AWGLCA/2012/MISC.1, which contains additional information on the joint European Union (EU) target, including the associated conditions and assumptions. CTF tables 2(a)–(f) contain the required information in relation to the description of the Party's emission reduction target, such as: the base year for all gases (CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, PFCs, HFCs and SF<sub>6</sub> (treating PFCs and HFCs collectively in each case) is 1990; the Party is aiming to achieve an emission reduction of 20 per cent below the base year level by 2020; the global warming potential (GWP) values are taken from the Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report (AR4); all sectors defined in the common reporting format tables are included, except for the LULUCF sector; and the use of market-based mechanisms under the Convention is reported as not applicable (“NA”) (see paras. 13 and 35 below).

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. In the context of the negotiations for a new global climate change agreement, the EU offered to move to a 30 per cent reduction on the condition that other developed countries commit to a comparable target and developing countries contribute according to their responsibilities and respective capabilities.

13. The target for the EU and its member States is formalized in the EU 2020 climate and energy package. The EU generally allows its member States to use units from the Kyoto Protocol mechanisms as well as new market mechanisms for compliance purposes, 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 Emissions Trading System (EU ETS).

14. The EU 2020 climate and energy package includes the EU ETS directive and the effort-sharing decision (ESD) (see chapter II.C.1 below). Further information on this package is provided in chapter 3.1 of the BR2. The EU ETS covers mainly large point emissions sources in the energy and industry and aviation sectors. For the period 2013–2020, an EU-wide cap has been put in place, with the goal of reducing emissions by 21 per cent below the 2005 level by 2020 (or by 1.74 per cent annually, starting from the average level of allowances issued by member States for the second EU ETS trading period (2008–2012)).

15. The ESD covers the emissions from all sources not covered by the EU ETS. The ESD establishes binding annual emission allocations (AEAs) for EU member States for the period 2013–2020, leading to an aggregate emission reduction at the EU level of 10 per cent below the 2005 level by 2020. Finland has a target to reduce its emissions from sectors covered by the ESD (non-ETS sectors) by 16 per cent below the 2005 level by 2020. The AEAs change following a linear path; in absolute terms, this means that under the ESD, Finland has to reduce emissions from 31,776.52 kt of carbon dioxide equivalent (CO<sub>2</sub> eq) in 2013 to 28,359.63 kt CO<sub>2</sub> eq by 2020.<sup>4</sup>

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<sup>4</sup> European Commission decision 2013/162/EU of 26 March 2013 “on determining member States’ annual emission allocations for the period from 2013 to 2020 pursuant to Decision No. 406/2009/EC of the European Parliament and of the Council” and European Commission implementing decision 2013/634/EU of 31 October 2013 “on the adjustments to member States’ annual emission allocations

16. Compared with the BR1, the definition of the emission reduction target has changed. In the BR2, the base year for F-gases is 1990 instead of 1995. It is estimated that this change, together with the recalculation of Finland's emissions in the base year for sectors covered by the ESD due to the application of the *2006 IPCC Guidelines for National Greenhouse Gas Inventories*, will require an additional GHG emission reduction effort of almost 2 percentage points by 2020.

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

17. This chapter provides information on the review of the reporting by Finland on the progress made in reducing emissions in relation to the target, mitigation actions taken to achieve its target, and the use of units from market-based mechanisms and LULUCF.

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

18. In its BR2 and CTF table 3, Finland reported on its progress in the achievement of its target and the mitigation actions implemented and planned since its sixth national communication (NC6) and BR1 to achieve its target. Finland has provided information on mitigation actions introduced to achieve its target. The BR2 includes information on mitigation actions organized by sector and by gas. Further information on the mitigation actions related to Finland's target is provided in chapter 4 of the BR2.

19. The ministries responsible for the implementation of mitigation actions produce the data needed for international reporting on the content, enforcement and effects of the climate and energy policy. Based on these data, Statistics Finland compiles national reports and submits them to the UNFCCC secretariat and to the European Commission.

20. This report highlights the changes made since the publication of Finland's NC6 and BR1. In its BR2, Finland provided information on changes in its domestic institutional arrangements, including institutional, legal, administrative and procedural arrangements used for domestic compliance, monitoring, reporting, archiving of information and evaluation of the progress made towards its target. The first main change was to the legal powers of Statistics Finland, which is the national entity with overall responsibility for compiling and finalizing GHG inventory reports and submitting them to the UNFCCC secretariat. In 2015, the role of Statistics Finland was reinforced by the provisions of the Climate Change Act, which entered into force on 1 June 2015 (see para. 27 below). The second main change was the establishment of the Natural Resources Institute Finland, which became operational on 1 January 2015. The Institute is responsible for the estimation of GHG emissions and removals in the agriculture and LULUCF sectors. Those responsibilities previously lay with MTT Agrifood Research Finland and the Finnish Forest Research Institute.

21. Finland reported in CTF table 3 the estimated effects of several mitigation actions; however, the mitigation effects and other information for some mitigation actions were reported as "NA". During the review, Finland provided additional information, including the status and the starting year of implementation, and elaborating on the reasons why it did not report the estimated effects of all mitigation actions. The ERT recommends that Finland report the mitigation effects of all mitigation actions and improve the transparency of its reporting in the next biennial report (BR) and CTF tables by reporting the estimated effects of individual mitigation actions, to the extent possible, and by including explanations of the

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for the period from 2013 to 2020 pursuant to Decision No. 406/2009/EC of the European Parliament and of the Council".



reasons for not reporting the estimated effects of individual mitigation actions, for example that certain mitigation actions are analysed as a package with respect to their mitigation effects. This information could be provided either in the BR or in the footnotes to CTF table 3.

22. In its BR2, Finland provided, to the extent possible, detailed information on the assessment of the economic and social consequences of its response measures, in chapters 4.2 (“Mitigation benefits other than greenhouse gas reduction”), 5.5 (“Economic impacts”) and 6.3 (“Finance”). Finland reported that, according to its latest strategic environmental impact assessment, the measures for reducing GHG emissions included in the National Energy and Climate Strategy should have an overall positive impact on the natural environment. A modelling study conducted in May 2014 on the impact of the EU 2030 climate and energy framework on Finland’s national economy<sup>5</sup> revealed a modest damping effect on economic growth. Further detail on Finland’s assessment of the economic and social consequences of its response measures is contained in its NC6 (chapter 6.3.1) and in its 2015 NIR (chapter 15). In its BR2, Finland acknowledges that a significant expansion of small-scale wood burning could have negative health impacts and would contribute to global warming through black carbon emissions.

23. The BR2 does not include information on the domestic arrangements established for the process of self-assessment of compliance with emission reductions. During the review, in response to a question raised by the ERT, Finland provided additional information, in which it stated that it had not reported such information as it is not a mandatory requirement according to the UNFCCC reporting guidelines on BRs. Finland explained that it had instead focused its limited resources on providing information on the obligatory reporting requirements specified in the UNFCCC reporting guidelines on BRs.

24. For the purposes of completeness, the ERT encourages Finland to report in its next BR, to the extent possible, on the items covered in paragraph 24 of the UNFCCC reporting guidelines on BRs. For example, if a Party has in place a system and institutional arrangements to periodically monitor and assess progress in the implementation of its mitigation actions, their impacts, the extent to which the actions achieve the Party’s mitigation objectives in the given year, and the potential need for additional actions, then reporting on such a system and institutional arrangements would be consistent with the relevant information that Parties are encouraged to report according to paragraph 24 of the UNFCCC reporting guidelines on BRs.

25. The key overarching 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. This 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 (see table 3 below).

26. 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).

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<sup>5</sup> Study conducted by the VTT Technical Research Centre of Finland and the Government Institute for Economic Research (VATT) using the VATTAGE model described in Finland’s BR2 (chapter 5.5).

27. 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, waste and other sectors, together accounting for 55–60 per cent of the GHG emissions of the EU. The ESD aims 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, which are underpinned by the national policies and actions of the member States (see para. 12 above). The ESD sets Finland's emission reduction obligation for the sectors not covered by the EU ETS at 16 per cent below the 2005 emission level. To facilitate the implementation of its ESD obligation, the Finnish Parliament approved the Climate Change Act (609/2015) in March 2015, which entered into force on 1 June 2015. The Act is designed to serve as a tool to enable Finland to reach its emission reduction targets in the most cost-efficient and systematic way. The Act also sets a national emission reduction target of 80 per cent below the 1990 level by 2050. In October 2014, Finland published its Energy and Climate Road Map 2050. The road map serves as a strategic-level guide which discusses alternative economic development pathways for Finland up to 2050.

28. The BR2 highlights the EU-wide mitigation actions that are continuously under development, in particular EU-wide policies on energy-saving measures, such as the EU energy efficiency directive (directive 2012/27/EU), the EU eco-design directive (directive 2009/125/EU) and the EU energy labelling directive (directive 2010/30/EU). Among the mitigation actions that provide a foundation for significant additional actions, the following are critical for Finland to attain the EU-wide 2020 emission reduction target: the extension of Finland's voluntary energy efficiency agreements 2008–2016, which contribute to the implementation of the EU energy efficiency directive; and the goal defined in Finland's National Energy and Climate Strategy (2013) to increase the share of renewable energy in final energy consumption to 38 per cent by 2020 (from 37 per cent in 2013), in line with the obligation set by the EU for Finland.

29. At the national level, Finland introduced policies to achieve its targets under the ESD and domestic emission reduction targets. The key policies reported in the BR2 are: the promotion of the use of wood chips for heating purposes; the voluntary energy efficiency agreements 2008–2016 and their expected extension to 2020 and beyond; the promotion of wind power; the implementation of a bundle of measures directed at improving waste management; the implementation of a bundle of measures regulating F-gases; the improvement of the energy efficiency of products through minimum efficiency requirements; the increase in the annual minimum share of biofuels from 6 per cent in 2011–2014 to 20 per cent in 2020; the introduction of minimum efficiency standards for new buildings; the provision of support for fuel conversion from oil to biomass in farms; the renewal of the vehicle fleet and in particular passenger cars; the provision of subsidies for energy efficiency in detached and terraced houses and residential apartment buildings; and the shift in modes of transport to public or non-motorized transport.

30. The mitigation effect of the promotion of the use of wood chips for heating purposes and for electricity production is expected to be the most significant of all the above-mentioned policies. In 2013, approximately 16 TWh of energy was produced using wood chips, while the target by 2020 is 25 TWh. In order to promote the use of wood chips and other wood fuels, operating aid and feed-in tariff systems were introduced. Wood chip plants can be industrial cogeneration plants, district heating cogeneration plants or condensing power plants. Other policies targeted at significant emission reductions are the voluntary energy efficiency agreements and the promotion of wind power. However, Finland emphasized the overall importance of its policies to improve energy efficiency, as this will result in an absolute reduction in energy demand, which will further enable Finland to fulfil its objective of increasing the share of renewable energy in final energy consumption.

31. The BR2 highlights the domestic mitigation actions that are under development, such as the consideration of liquefied natural gas and other alternative fuels for use in maritime transport; and the improved enforcement of F-gas regulations to enhance cost-effective compliance monitoring and further enhance the training of inspectors of installations using F-gases.

32. Table 3 below provides a concise summary of the key mitigation actions and estimates of their mitigation effects reported by Finland to achieve its target. The agriculture sector has not been included in the table because Finland stated that the potential emission reductions therefrom, if any, are minimal.

**Table 3**  
**Summary of information on mitigation actions and their impacts reported by Finland**

<i>Sector affected</i>	<i>List of key mitigation actions</i>	<i>Estimate of mitigation impact in 2015 (kt CO<sub>2</sub> eq)</i>	<i>Estimate of mitigation impact in 2020 (kt CO<sub>2</sub> eq)</i>
Policy framework and cross-sectoral measures	EU ETS	NA	NA
Energy, including:			
Transport	Renewal of the vehicle fleet	310	617
	Greater use of public or non-motorized transport	NA	300
Renewable energy	Promotion of wood chips	NA	9 675
	Promotion of wind power	NA	3 600
Energy efficiency	Energy efficiency agreements 2008–2016 and their expected extension	7 184	9 127
	Minimum standards for new buildings	955.9	1 466.9
IPPU	Regulation of F-gases	1 379	1 839
Waste	Measures directed to improve waste management	2 384	2 870

*Note:* The estimates of mitigation impact are estimates of emissions of carbon dioxide or carbon dioxide equivalent avoided in a given year as a result of the implementation of mitigation actions.

*Abbreviations:* EU ETS = European Union Emissions Trading System, F-gases = fluorinated gases, IPPU = industrial processes and product use, NA = not applicable.

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

33. Finland reported in its BR2 and in CTF table 4 its total emissions excluding LULUCF. This information was provided for the base year (1990) and for the years 2010–2014. No data were provided on the contribution from LULUCF (the notation key “NA” was used) because the EU and its member States do not include contributions from LULUCF in the joint EU target. Consequently, Finland did not fill in CTF table 4(a)I and did not provide CTF table 4(a)II in its submission. Furthermore, in CTF tables 4 and 4(b), Finland did not provide data on the use of units from market-based mechanisms under the Convention (reporting it as “NA”), explaining transparently that these data were not available for the year 2013 at the time of compiling the report (see para. 35 below).

34. The use of market-based mechanisms is subject to EU-wide rules. The EU climate and energy package allows certified emission reductions (CERs) and emission reduction units (ERUs) to be used for compliance purposes, subject to a number of restrictions in terms of origin and type of project, and up to an established limit. In the sectors not covered by the EU ETS, annual use of CERs and ERUs shall not exceed 3 per cent of each member State's non-ETS GHG emissions in 2005. A limited number of EU member States, including Finland, may use additional units, up to an additional 1 per cent of non-ETS GHG emissions in 2005, from projects in the least developed countries or small island developing States, subject to specific conditions. Finland has not yet decided upon the use of units from market-based mechanisms for meeting its commitments under the joint EU target for the period 2013–2020.

35. The exact number of units that Finland can use during the period 2013–2020 can only be determined following the availability of final data concerning the use of these units during the period 2008–2012 and relevant GHG emission data. Information on the use of flexible mechanisms under the EU ETS and the ESD for 2013 will only become available in the course of 2016. Therefore, Finland was not able to provide quantitative information in the BR2 on the use of market-based mechanisms for 2013. Further information on emissions and removals and the use of units is provided in chapter 4.3 of the BR2. Table 4 below illustrates Finland's total GHG emissions, the contribution of LULUCF and the use of units from market-based mechanisms to achieve its target.

36. For 2013, Finland reported in CTF table 4 annual total GHG emissions excluding LULUCF and including indirect CO<sub>2</sub> emissions of 63,069.30 kt CO<sub>2</sub> eq, or 11.6 per cent below the 1990 base year level. According to table 4.1 of the BR2, emissions from the non-ETS sectors amounted to 31,400 kt CO<sub>2</sub> eq in 2013. To achieve its target, emissions from the non-ETS sectors will need to decrease to 28,359.63 kt CO<sub>2</sub> eq by 2020, equivalent to the 16 per cent reduction to which Finland is committed under the ESD.

Table 4

**Summary of information on the use of units from market-based mechanisms and land use, land-use change and forestry as part of the reporting on the progress made by Finland towards the achievement of its target**

<i>Year</i>	<i>Emissions excluding LULUCF (kt CO<sub>2</sub> eq)<sup>b</sup></i>	<i>Contribution from LULUCF (kt CO<sub>2</sub> eq)<sup>c</sup></i>	<i>Emissions including contribution from LULUCF (kt CO<sub>2</sub> eq)</i>	<i>Use of units from market-based mechanisms (kt CO<sub>2</sub> eq)</i>
1990	71 327.50	NA	NA	NA
Base year <sup>a</sup>				
2010	75 803.23	NA	NA	NA
2011	68 131.57	NA	NA	NA
2012	62 449.07	NA	NA	NA
2013	63 069.30	NA	NA	NA
2014 <sup>d</sup>	60 100.00	NA	NA	NA

*Sources:* Finland's second biennial report and common tabular format (CTF) tables 4, 4(a)I and 4(b).

*Abbreviations:* LULUCF = land use, land-use change and forestry, NA = not applicable.

<sup>a</sup> Emissions and removals are reported for a base year, if a year other than 1990 is used as a base year.

<sup>b</sup> Finland has elected to include indirect CO<sub>2</sub> emissions in the total emissions reported in CTF table 4; consequently, these data are not comparable with the data provided in the context of the projections, which do not include indirect emissions.

<sup>c</sup> The European Union's unconditional commitment to reduce greenhouse gas emissions by 20 per cent below the 1990 level by 2020 does not include emissions and removals from LULUCF.

<sup>d</sup> Emission data for 2014 are based on preliminary data, as reported in CTF table 4.

37. To assess the progress made towards the achievement of the 2020 target, the ERT noted that Finland's emission reduction target from sectors not covered by the EU ETS under the ESD is 16 per cent below the 2005 level (see paras. 15–16 above). In 2013, Finland's emissions from the sectors not covered by the EU ETS (31.4 Mt CO<sub>2</sub> eq) were 13.3 per cent below the 2005 level (36.2 Mt CO<sub>2</sub> eq) and 1.3 per cent below the AEA for 2013 (31,776.52 kt CO<sub>2</sub> eq).

38. Taking into consideration the mitigation actions and projections described in the BR2, the ERT concluded that Finland is on course to reach its target for the non-ETS sectors. The ERT further concluded, taking account of the fact that, by design, the EU ETS sectors are expected to deliver the assigned emission reductions at the EU level, that Finland is making progress in the achievement of its economy-wide emission reduction target under the Convention by 2020.

### 3. Projections

39. Finland reported in its BR2 and CTF table 6(a) updated projections for 2020 and 2030 relative to actual inventory data for 2013 under the 'with measures' (WEM) scenario. Projections are presented as a total and on a sectoral basis, using the same sectoral categories as those used in the chapter on mitigation actions, and on a gas-by-gas basis for the following GHGs: CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, PFCs, HFCs and SF<sub>6</sub> (treating PFCs and HFCs collectively in each case). Projections are also provided in an aggregated format for each sector and the total GHG emissions were prepared using GWP values from the IPCC AR4. Emission projections related to fuel sold to ships and aircraft engaged in international transport were reported in textual format and were not included in the totals.

40. Finland reported on factors and activities influencing emissions for each sector. Although the WEM scenario is based on the baseline scenario contained in Finland's National Energy and Climate Strategy, relevant updates have been made, including updated estimates for economic growth and the implementation of new policies and measures (PaMs). Further information on the projections is provided in chapter 5 of the BR2.

41. In addition to the WEM scenario, Finland reported in chapter 5.3 of the BR2 and in CTF table 6(c) the 'with additional measures' (WAM) scenario. The projections are presented by sector and by gas in the same way and for the same years (2020 and 2030) as for the WEM scenario. Finland did not report a 'without measures' (WOM) scenario. The ERT encourages Finland to report a WOM scenario in its next BR.

42. Finland provided information on the changes since the submission of its NC6/BR1 in the assumptions, methodologies, models and approaches used and on the key variables and assumptions used in the preparation of the projection scenarios using CTF table 5 (see para. 44 below). In chapter 5.6 of the BR2, Finland also provided information on the sensitivity analysis, which explores the effects of changes in growth rates in two industrial sectors.

#### Overview of projection scenarios

43. The WEM scenario reported by Finland includes all PaMs that have been implemented or adopted up to 2013 and are still in place. Finland also reported on a WAM scenario, which includes a limited number of planned PaMs. Finland provided a definition of its scenarios, explaining that its WEM scenario represents a development pathway that is likely to be followed in the light of the current situation and assumptions, whereas its WAM scenario includes additional measures in the agriculture sector and for F-gases. As there are no additional measures envisaged in the energy and transport, industrial processes

and product use (excluding F-gases), LULUCF and waste sectors, the sectoral WAM projections do not differ from the WEM projections. The definitions indicate that the scenarios have been prepared according to the “Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part II: UNFCCC reporting guidelines on national communications”.

#### Methodology and changes since the previous submission

44. The methodologies and models used in the BR2 are identical to those used for the preparation of the BR1. Finland explained the gases and/or sectors for which the models were used and provided information on the type and purpose of the models. In the energy sector, Finland described three bottom-up models in the buildings sector, the model used for calculating the effects of emission reductions in the energy sector, the sectoral energy demand forecast procedures, and three emission calculation models used for the transport sector (for road, rail and waterborne transport, respectively). For the other sectors, the Party described the methodology used for the calculation of emission projections for F-gases, the model used for forecasting agricultural production and the associated emissions, the accounting model used for the calculation of emissions from the waste sector, and the forecasting model used for the forestry sector. These models are complemented by an economic model (the dynamic applied general equilibrium model, developed by the Government Institute of Economic Research (VATT)), which projects sectoral economic development and unemployment as a reaction to climate PaMs.

45. In the BR2, Finland provided information on the models used in an annex. While recognizing this degree of detail, the ERT notes that in some instances the information could be further enhanced by explaining the types of models and by describing their strengths and weaknesses, as well as how overlaps or synergies are accounted for. In the course of the review, Finland provided further information on these aspects of the models. The ERT encourages Finland to include relevant information, in particular on the strengths and weaknesses of the models and on how overlaps are accounted for, in the next BR.

46. To prepare its projections, Finland relied on the following large set of key underlying assumptions: population trends, energy prices, sectoral energy demand, the development of the building stock, several economic indicators for growth rates in key economic and industrial sectors, and a set of indicators describing developments in the agriculture and waste sectors and for F-gases. These indicators are reported in CTF table 5. The economic indicators and the energy prices have been updated on the basis of the most recent economic developments known at the time of the reporting on projections.

47. The population of Finland is projected to increase from the current level of 5.5 million to about 5.9 million by 2035. At the same time, the age structure will change significantly as the share of older age groups increases. The number of households will increase even more than the population, leading to a decreasing average household size. The economy is expected to recover in the coming years after several years of economic recession. Finland has included comprehensive information on expected developments in chapter 5.8 of the BR2. The most prominent change in comparison with the BR1 is a 5 per cent reduction in the projection of GDP for 2020.

#### Results of projections

48. Finland’s total GHG emissions excluding LULUCF in 2020 and 2030 are projected to be 63,786.66 and 49,777.40 kt CO<sub>2</sub> eq, respectively, under the WEM scenario, which represents a decrease of 10.2 and 30.0 per cent, respectively, below the 1990 level. Under the WAM scenario, emissions in 2020 and 2030 are projected to be 63,607.66 and 49,258.44 kt CO<sub>2</sub> eq, respectively, which represents a decrease of 10.5 and 30.7 per cent,

respectively, compared with 1990. The 2020 projections suggest that Finland will continue contributing to the achievement of the EU target under the Convention (see para. 37 above).

49. For Finland, the AEAs reflecting its national emission target for non-ETS sectors, change following a linear path from 31,776.52 kt CO<sub>2</sub> eq in 2013 to 28,359.63 kt CO<sub>2</sub> eq in 2020 (see para. 15 above). Apart from two diagrams, Finland did not include separate numerical information on projections for the ETS and non-ETS sectors in the BR2. In the course of the review, Finland provided numerical data on the projected emissions for the non-ETS sectors for 2020. According to the projections under the WEM scenario, emissions from the non-ETS sectors are projected to reach 28,400 kt CO<sub>2</sub> eq by 2020, corresponding to an estimated 16 per cent reduction below the 2005 level. Under the WAM scenario, Finland's emissions in 2020 are projected to be 28,200 kt CO<sub>2</sub> eq,<sup>6</sup> corresponding to an estimated 16.6 per cent reduction below the 2005 level (see paras. 36 and 37 above for the assessment of progress made towards the achievement of the target).

50. According to the projections reported by sector, the most significant GHG emission reductions under the WEM scenario from 1990 to 2020, in absolute terms, will occur in the waste sector (3,197.43 kt CO<sub>2</sub> eq, or 68.4 per cent), followed by the energy sector (excluding transport) (3,125.91 kt CO<sub>2</sub> eq, or 7.5 per cent) and the agriculture sector (1,106.10 kt CO<sub>2</sub> eq, or 14.8 per cent). Due to the expected recovery of the economy and the associated increase in industrial production, GHG emissions from the industrial processes sector are projected to increase by 506.73 kt CO<sub>2</sub> eq (9.5 per cent) above the 1990 level by 2020. The additional measures under the WAM scenario lead to minor changes and affect the industrial processes and agriculture sectors only: emissions from the industrial processes sector are projected to decrease by 38.44 kt CO<sub>2</sub> eq, or 0.7 per cent, and emissions from the agriculture sector are projected to decrease by an additional 140.55 kt CO<sub>2</sub> eq, or 1.9 per cent. The forestry/LULUCF sector is projected to remain a sink in 2020: although removals in the base year amounted to 15,798.84 kt CO<sub>2</sub> eq, they are projected to amount to 10,100.00 kt CO<sub>2</sub> eq in 2020 (under both the WEM and the WAM scenarios), amounting to a decrease in removals of 5,700 kt CO<sub>2</sub> eq, or 36.1 per cent.

51. The projections provided by Finland for 2030 show a considerable decrease in total emissions from the 1990 level (21,288.52 kt CO<sub>2</sub> eq, excluding LULUCF), attributable to a high degree to the projected emission reductions in the energy sector (15,635.58 kt CO<sub>2</sub> eq, or 37.7 per cent, under both the WEM and the WAM scenarios). Emissions from the waste sector are projected to continue to decrease (3,688.26 kt CO<sub>2</sub> eq, or 78.9 per cent), leading to the largest relative decrease in all sectors. The third largest emission reduction in 2030 is projected to originate from the transport sector, under both the WEM and the WAM scenarios (1,641.76 kt CO<sub>2</sub> eq, or 13.6 per cent). Taking into consideration additional (planned) measures leads to minor changes only, the most important of which is the additional emission reduction in the industrial processes sector (363.58 kt CO<sub>2</sub> eq, or 6.8 per cent). The forestry/LULUCF sector in 2030 is projected to remain a sink, although removals are projected to decrease by about 9,400 kt CO<sub>2</sub> eq, or 59.5 per cent.

52. According to the projections reported by gas under the WEM scenario (excluding LULUCF) for 2020, the reduction in CH<sub>4</sub> emissions will contribute the most to the Party's overall emission reductions (3,778.21 kt CO<sub>2</sub> eq, or 48.8 per cent). This reflects the fact that the waste sector is expected to deliver the largest emission reduction (see para. 50 above). The second largest emission reduction is expected from CO<sub>2</sub> emissions (3,161.88 kt CO<sub>2</sub> eq, or 5.6 per cent). The most significant relative reduction is projected for SF<sub>6</sub> emissions

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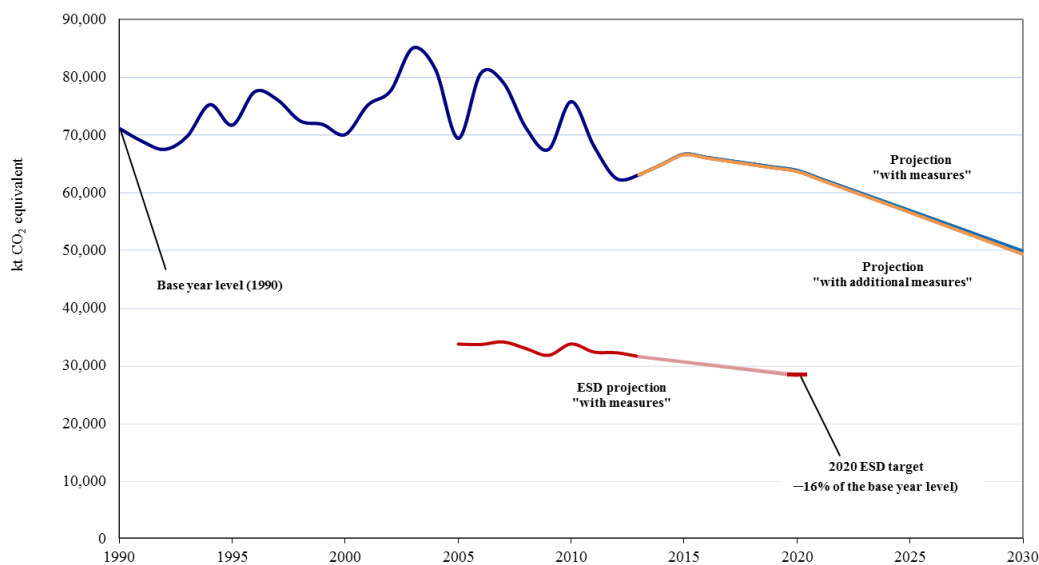
<sup>6</sup> European Environment Agency. 2015. *Trends and Projections in Europe 2015 – Tracking Progress Towards Europe's Climate and Energy Targets*. Available at <<http://www.eea.europa.eu/publications/trends-and-projections-in-europe-2015>>.

(26.84 kt CO<sub>2</sub> eq, or 51.1 per cent), whereas emissions of HFCs and PFCs are projected to increase significantly due to the fact that the associated emissions in the base year were insignificant (an increase from 0.02 kt CO<sub>2</sub> eq in 1990 to 811.13 kt CO<sub>2</sub> eq in 2020 for HFCs (a 40,000-fold increase), and an increase from 0.21 kt CO<sub>2</sub> eq in 1990 to 6.47 kt CO<sub>2</sub> eq in 2020 for PFCs (a 31-fold increase)). The additional measures taken into account under the WAM scenario are projected to lead to slightly lower emissions of CH<sub>4</sub>, N<sub>2</sub>O and HFCs (by 53.24 kt CO<sub>2</sub> eq, 87.32 kt CO<sub>2</sub> eq and 38.44 kt CO<sub>2</sub> eq, respectively).

53. The projections reported by gas for 2030 show a considerable reduction in CO<sub>2</sub> emissions (by 16,558.04 kt CO<sub>2</sub> eq, or 29.1 per cent), followed by CH<sub>4</sub> emissions (by 4,326.14 kt CO<sub>2</sub> eq, or 55.8 per cent), the second largest absolute reduction and the largest in relative terms. This reflects the considerable projected effect from the measures implemented in the energy sector. Emissions of HFCs are projected to continue to decrease slightly (by 92.94 kt CO<sub>2</sub> eq below the 2020 level), whereas emissions of PFCs and SF<sub>6</sub> are projected to remain constant. Similarly to the projections for 2020, the additional measures implemented under the WAM scenario do not significantly alter the projections for 2030: the CO<sub>2</sub> emissions remain the same as under the WEM scenario, while the reductions in CH<sub>4</sub> and N<sub>2</sub>O emissions increase slightly (by 0.7 and 1.2 per cent, respectively).

54. The projected emission levels under the different scenarios and Finland’s ESD target are presented in the figure below.

**Greenhouse gas emission projections by Finland**



Sources: (1) Data for the years 1990–2013: Finland’s 2015 annual inventory submission; total greenhouse gas emissions excluding land use, land-use change and forestry; (2) Data for the years 2015, 2020, 2025 and 2030: Finland’s second biennial report, including data provided during the review; (3) Historical ESD data: total emissions as under (1) after subtraction of the sum of verified emissions and consistent scope correction according to the European Union Emissions Trading System data viewer provided by the European Environment Agency; see <<http://www.eea.europa.eu>>; and (4) Finland’s ESD target, as described in paragraph 15 of this report.

Abbreviation: ESD = European Union effort-sharing decision.



55. Although Finland has supplied ESD projections for both the WEM and the WAM scenarios, the difference between them is so small that it is not discernible in the figure above. Therefore, only the WEM projection is shown in the figure for the projections under the ESD.

#### Assessment of aggregate effects of policies and measures

56. The ERT acknowledged the information submitted by Finland on the estimated and expected total effect of PaMs, including LULUCF, noting that the total effect expected in 2020 (37,000 kt CO<sub>2</sub> eq) is considerably higher (by 17.5 per cent) compared with the information provided in the BR1 (31,500 kt CO<sub>2</sub> eq). In the course of the review, Finland provided further information on this difference, which is largely explained by the inclusion in the BR2 of the expected extension of the voluntary energy efficiency agreements scheme until 2035, as well as further measures which have been included in the projections for the first time.

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

57. In its BR2, Finland reported information on the provision of financial, technological and capacity-building support required under the Convention. The BR2 includes information on the national approach to tracking the provision of support, indicators, delivery mechanisms used and allocation channels tracked. Finland reported a description of the methodology used to report financial support, including underlying assumptions.

58. Finland provided details on what new and additional support it has provided and clarified how this support is new and additional (see para. 63 below). Further information on the Party's provision of support to developing country Parties is provided in chapter 6 of the BR2.

59. The information reported by Finland on the following elements is not fully transparent: the information reported in CTF tables 7(a) and 7(b) on financial support provided through multilateral and bilateral channels; financial support provided, committed and/or pledged to assist Parties not included in Annex I to the Convention (non-Annex I Parties) to adapt to the adverse effects of climate change and any economic and social consequences of response measures (see para. 67 below), and the provision of support for the development and enhancement of the endogenous capacities and technologies of developing countries (see para. 80 below).

60. During the review, Finland provided additional information, elaborating on: how it defines climate support as new and additional; how it differentiates between multilateral and bilateral channels; how it provides support for the development and enhancement of the endogenous capacities and technologies of developing countries; how financial support is provided, committed and/or pledged to assist non-Annex I Parties to adapt to the adverse effects of climate change; and any economic and social consequences of response measures.

61. The ERT recommends that Finland improve the transparency of its reporting by clearly differentiating among the multilateral and bilateral financial support provided; and by elaborating on how the financial support provided, committed and/or pledged by Finland assists non-Annex I Parties to adapt to the adverse effects of climate change, and any economic and social consequences of response measures. The ERT reiterates the recommendation made in the BR1 that Finland provide more detailed information on the support provided for the development and enhancement of the endogenous capacities and technologies of developing countries.

62. The ERT noted that the transparency of the information reported by Finland on success and failure stories of technology transfer could be improved (see para. 81 below). During the review, Finland provided additional information, elaborating on success stories relating to the Energy Environment Partnership project in Africa and the meteorological technology for adaptation and early warning systems in Viet Nam and the Pacific Islands. The ERT encourages Finland to provide more transparent information on success and failure stories relating to technology transfer support in its next BR.

63. Finland explained how it determines how much of its support is new and additional. The definition provided by Finland is the net increase in support directly allocated to the climate activities of developing countries compared with 2009, which is also the base year used for the fast-start finance. The climate change related support provided by Finland comes from the official development assistance (ODA) budget and is disbursed according to the ODA criteria. In the BR2, Finland reported on the amount of climate-related ODA as per the Rio Marker definitions of the Organisation for Economic Co-operation and Development (OECD) Development Assistance Committee (DAC).

64. Finland included in its BR2 information on how it has refined its approach to tracking climate support and methodologies, including through indicators when collecting and reporting information. The Party also provided information on the methodology adopted for tracking finance for adaptation and mitigation using the Rio Markers. The methodology used for preparing information on international climate support is explained in chapter 6.2 of the BR2, and is based on the OECD DAC Creditor Reporting System.

## **1. Finance**

65. In its BR2 and CTF tables 7, 7(a) and 7(b), 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 (see paras. 72–73 below). The summary information was reported for 2013–2014.

66. 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 and contribute to capacity-building and technology transfer related to mitigation and adaptation (see chapters II.D.2 and 3 below). Finland follows the principles of the Paris Declaration on Aid Effectiveness signed by donor and partner developing countries, which stresses ownership and takes into account the priorities of developing countries.

67. The BR2 and CTF tables 7, 7(a) and 7(b) include the information required by the UNFCCC reporting guidelines on BRs. However, the information reported by Finland on the following elements is not fully transparent: the financial support provided through multilateral and bilateral channels (unspecified recipients are referred to in CTF tables 7(a) and 7(b)); how resources provided by Finland assist non-Annex I Parties to adapt to the adverse effects of climate change; and any economic and social consequences of response measures.

68. During the review, Finland provided additional information, elaborating on its approach to reporting financial support through multilateral and bilateral channels. Finland uses the OECD DAC criteria to divide funding between bilateral and multilateral channels. The Party explained that methodological fine-tuning was undertaken according to the OECD DAC criteria when reporting financial support in 2014 compared with that reported in 2013; for example, the support provided to the International Union for Conservation of Nature via a framework agreement is reported in CTF table 7(b) as bilateral support and not in CTF table 7(a) as multilateral support. Similarly, the support provided via the Finnish Fund for Industrial Cooperation Ltd (Finnfund) is classified as “bilateral”; however,

Finnfund also occasionally provides finance for projects which include several recipient countries, which is then classified as “global” or “unspecified”. Finland also referred to its most recent NIR for further information on how it is assisting non-Annex I Parties to adapt to the adverse effects of climate change, and any economic and social consequences of response measures.

69. The ERT recommends that Finland, in its next BR submission, clarify the rationale for reporting “unspecified” financial support in CTF tables 7(a) and 7(b), and provide relevant information, as appropriate, or a reference thereto, including the information provided during the review, and elaborate on how the financial support provided, committed and/or pledged by Finland assists non-Annex I Parties to adapt to the adverse effects of climate change, and any economic and social consequences of response measures.

70. In its BR2, Finland reported that in 2013 a very approximate estimation was made using the analyses by Stadelmann and Michaelowa,<sup>7</sup> based on which Finland could mobilize about USD 0.5–1.8 billion of private climate finance each year for developing countries. Finnfund is a State-owned company that finances private projects in developing countries by providing long-term risk capital for profitable projects focusing on increasing the share of renewable energy efficiency, preventing deforestation and facilitating adaptation. The ERT encourages Finland to continue providing, to the extent possible, further and transparent information on private financial flows leveraged by bilateral climate finance for mitigation and adaptation activities in non-Annex I Parties.

71. 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 the Development Policy Programme (2012)<sup>8</sup> and its principles, such as democratic ownership and 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 based 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 used in 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, as well as by facilitating low-emission development pathways for developing countries.

72. Finland reported on its climate-specific public financial support provided in 2013 and 2014, totalling USD 123.94 million in 2013 and USD 154.13 million in 2014. It has increased its contributions by 23.7 per cent since its NC6/BR1. With regard to the future financial pledges aimed at enhancing the implementation of the Convention by developing countries, Finland announced its aim to provide a total of EUR 80 million to support the Green Climate Fund (GCF) in the period 2015–2018, and pledged EUR 34.7 million to the GCF for 2015. During the reporting period, Finland placed a particular focus on building carbon market capacity in Chile, China, Colombia, Costa Rica, Indonesia, Mexico, Morocco, Thailand, Turkey and Viet Nam, for which it allocated a total of USD 35 million.

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<sup>7</sup> Stadelmann M, Roberts JT and Michaelowa A. 2011. *Accounting of Private Climate Finance. Types of Finance, Data Gaps and the 100 Billion Dollar Question*. Working paper. Climate Strategies: Cambridge.

<sup>8</sup> Ministry of Foreign Affairs. 16 February 2012. Development Policy Programme, Government decision-in-principle.

73. The BR2 includes detailed information on the financial support provided through multilateral channels, and bilateral and regional channels in 2013 and 2014. More specifically, Finland contributed through multilateral channels, as reported in its BR2 and in CTF table 7(a), USD 81.79 million and USD 95.19 million for 2013 and 2014, respectively. These contributions were made to specialized multilateral climate change funds, such as the Global Environment Facility, the Least Developed Countries Fund, the Special Climate Change Fund, the Adaptation Fund and the Trust Fund for Supplementary Activities. The BR2 and CTF table 7(b) also include detailed information on the total financial support provided through bilateral, regional and other channels, which amounted to USD 42.15 million and USD 58.94 million in 2013 and 2014, respectively. Table 5 includes some of the information reported by Finland on its provision of financial support.

Table 5

**Summary of information on provision of financial support in 2013–2014 by Finland**  
(Millions of United States dollars)

<i>Allocation channel of public financial support</i>	<i>Years of disbursement</i>	
	<i>2013</i>	<i>2014</i>
Official development assistance <sup>a</sup>	2 233.13	1 612.05
Climate-specific contributions through multilateral channels, including:		
Global Environment Facility	5.9	8.2
Least Developed Countries Fund	7.5	9.6
Special Climate Change Fund	2.5	3.8
Adaptation Fund	0.0	5.0
Trust Fund for Supplementary Activities	0.0	0.1
Financial institutions, including regional development banks	52.1	40.5
United Nations bodies	13.8	27.9
Climate-specific contributions through bilateral, regional and other channels	42.1	58.9

<sup>a</sup> Source: Query Wizard for International Development Statistics, available at <http://stats.oecd.org/qwids/>.

74. The BR2 provides information on the types of support provided. In terms of the focus of public financial support, as reported in CTF table 7 for 2013, the shares of total public financial support allocated for mitigation, adaptation and cross-cutting projects through multilateral channels were 7.8, 12.6 and 79.7 per cent, respectively, while the shares allocated through bilateral (regional and other) channels were 24.5, 10.7 and 64.9 per cent, respectively. In 2014, the shares of total public financial support allocated for mitigation, adaptation and cross-cutting projects through multilateral channels were 9.5, 19.5 and 71.0 per cent, respectively, while the shares allocated through bilateral (regional and other) channels were 54.1, 23.1 and 22.8 per cent, respectively. For 2013 and 2014, 63.6 per cent of the total public financial support was allocated through multilateral channels and 36.4 per cent of it was allocated through bilateral, regional and other channels.

75. The ERT noted that, in 2013, 79.7 per cent of financial contributions made through multilateral channels were allocated to activities that are cross-cutting across mitigation and adaptation, followed by 12.5 per cent to mitigation and 7.8 per cent to adaptation, as reported in CTF table 7(a). The corresponding figures for 2014 were 70.9 per cent for cross-cutting activities, followed by 9.5 per cent for mitigation and 19.5 per cent for

adaptation. The ERT noted that, in 2013, 51.2 per cent of financial contributions made through bilateral channels were allocated to the agriculture, energy, forestry, and water and sanitation sectors, with shares of 3.2, 26.4, 18.7 and 2.9 per cent, respectively, and the remaining 48.9 per cent was allocated to activities that are cross-cutting across mitigation and adaptation, as reported in CTF table 7(b). The corresponding figures for 2014 were 5.6, 24.5, 11.9 and 4.3 per cent for the agriculture, energy, forestry, and water and sanitation sectors, respectively, and the remaining 53.7 per cent was allocated to cross-cutting activities. Hence, most of the multilateral and bilateral funding is allocated to cross-cutting activities.

76. 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 the share of the grants provided in 2013 and 2014 was approximately 92.3 and 78.8 per cent of the total public financial support, respectively.

77. In its BR2, Finland clarified that private finance is mainly provided for renewable energy projects, as well as projects seeking to prevent deforestation, support energy efficiency and adapt to climate change. It 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.

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

## **2. Technology development and transfer**

79. In its BR2 and CTF table 8, Finland provided information on 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 (see para. 80 below).

80. The ERT noted that the information reported by Finland on measures taken to support the deployment and enhancement of the endogenous capacities and technologies of non-Annex I Parties has improved since the BR1; however, it was not fully transparent. During the review, Finland provided additional relevant information, indicating that in its bilateral cooperation, country programming and planning of projects is conducted through consultative processes that take into account the enhancement of endogenous capacities and technologies, as considered appropriate by the recipient country. The ERT recommends that Finland further improve the transparency of its reporting by including, in the next BR, more transparent information (such as that provided during the review) on the support provided for the development and enhancement of the endogenous capacities and technologies of developing countries, and complement this information, as appropriate, and to the extent possible, with examples to demonstrate its approach to and the effectiveness of its support.

81. The ERT noted that Finland's reporting on success and failure stories in relation to technology transfer support provided to non-Annex I Parties could benefit from the inclusion of more specific information. During the review, Finland provided additional

information on success stories<sup>9</sup> related to the Energy Environment Partnership project in Africa and the transfer of meteorological technology for adaptation and early warning systems in Viet Nam and the Pacific Islands. The ERT encourages Finland to provide information on success and failure stories related to technology transfer support provided to non-Annex I Parties in the next BR.

82. The ERT noted that, in its BR2, including CTF table 8, Finland reported on its PaMs and, in particular, on measures taken to promote, facilitate and finance the transfer and deployment of climate-friendly technologies. 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.

83. With regard to the provision of technology transfer support, Finland prioritized, inter alia, capacity-building and business development of adaptation activities, investment preparation in relation to renewable energy and energy efficiency, hydrometeorological services, and designing 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.

### 3. Capacity-building

84. In its BR2 and CTF table 9, Finland supplied information on how it provided capacity-building support for mitigation, adaptation and technology that responds to the existing and emerging needs identified by non-Annex I Parties.

85. 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. Finland has been very active in the field of meteorological cooperation, supporting capacity-building programmes for hydrometeorological services, especially in the Pacific region.

86. Since 2006, Finland has been funding an educational course on multilateral environmental agreements in cooperation with the United Nations Environment Programme and partners in developing countries. The course encourages the sharing of experiences in the field of international environmental law and negotiations for multilateral environmental agreements, including in relation to the UNFCCC. 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.

## III. Conclusions

87. The ERT conducted a technical review of the information reported in the BR2 and CTF tables of Finland in accordance with the UNFCCC reporting guidelines on BRs. The ERT concludes that the reported information is mostly in adherence with the UNFCCC reporting guidelines on BRs and provides an overview on: 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 Finland's provision of support to developing country Parties.

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<sup>9</sup> Available at <<http://eepafrica.org/about-us/success-stories/>>, <[http://ilmatieteenlaitos.fi/documents/30106/42393/FMI+Brochure+PROMOSERV\\_english.pdf/a6d300b5-a2d8-4b50-8f4e-a8d52293e809](http://ilmatieteenlaitos.fi/documents/30106/42393/FMI+Brochure+PROMOSERV_english.pdf/a6d300b5-a2d8-4b50-8f4e-a8d52293e809)> and <<https://www.sprep.org/finpac/>>.

88. Finland's total GHG emissions excluding LULUCF decreased by 11.6 per cent between 1990 and 2013, whereas total GHG emissions including LULUCF decreased by 23.1 per cent over the same period. The economy, in which energy-intensive industries play a major role, is one of the key drivers of Finland's emission trends. The considerable share of energy consumption for heating purposes owing to the climate conditions in Finland leads to fluctuations in total emissions, depending on the severity of winters. Additional important drivers of the decreasing GHG emission trend are the decreasing number of animals in husbandry and the continuation of improved waste management practices.

89. Under the Convention, Finland is committed to contributing to the achievement of the joint EU quantified economy-wide target of a 20 per cent reduction in emissions below the 1990 level by 2020. The target covers all sectors and the gases CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, HFCs, PFCs and SF<sub>6</sub>, expressed using GWP values from the AR4. Emissions and removals from the LULUCF sector are not included in the quantified economy-wide emission reduction target under the Convention. The EU target allows the use of market-based mechanisms for compliance purposes, subject to a number of restrictions and conditions. Finland has not yet decided upon the use of units from market-based mechanisms for meeting its commitments under the joint EU target for the period 2013–2020.

90. Finland's contribution under the ESD is an emission reduction of 16 per cent below the 2005 level by 2020. For Finland, the AEAs reflecting its national emission target for non-ETS sectors change following a linear path from 31,776.52 kt CO<sub>2</sub> eq in 2013 to 28,359.63 kt CO<sub>2</sub> eq in 2020.

91. Finland's main policy framework relating to energy and climate change is, at the EU level, the EU ETS and the ESD and, at the national level, the National Energy and Climate Road Map 2050. Key domestic legislation supporting Finland's climate change goals includes the Finnish Emissions Trading Act (108/2007) and the Climate Change Act (609/2015). The mitigation actions with the most significant impact are the promotion of wood chips for heating and wind power for energy, the implementation of voluntary energy efficiency agreements, the implementation of new efficiency standards for buildings, the introduction of measures directed at improving waste management, and the regulation of F-gases.

92. For 2013, Finland reported in CTF table 4 total GHG emissions excluding LULUCF of 63,069.30 kt CO<sub>2</sub> eq, or 11.6 per cent below the 1990 level. The Party reported on its use of units from the market-based mechanisms and the contribution of LULUCF to achieve its target as "NA", owing to EU-wide regulations.

93. The GHG emission projections provided by Finland in its BR2 include projections for 2020 and 2030 relative to actual inventory data for 2013 under the WEM and WAM scenarios. Under the WEM scenario, Finland's total GHG emissions excluding LULUCF are projected to be 63,786.66 kt CO<sub>2</sub> eq in 2020, which represents a decrease of 10.2 per cent compared with the 1990 level. Under the WAM scenario, total GHG emissions are projected to be 63,607.66 kt CO<sub>2</sub> eq in 2020, which represents a decrease of 10.5 per cent compared with the 1990 level. The comparatively small difference between the WEM and the WAM scenarios is due to the fact that the additional measures included in the WAM scenario are confined to the agriculture sector and F-gases, two areas with relatively minor emissions.

94. Finland continues to allocate climate financing in line with the climate finance programmes such as the Energy and Environment Partnership Programme and the Partnership for Market Readiness, in order to assist developing country Parties to implement the Convention. It has increased its contributions by 23.7 per cent since its NC6/BR1, and its public financial support in 2013 and 2014 totalled USD 123.9 and 154.1 million per year, respectively. For those years, Finland's support provided for mitigation

action was higher than support provided for adaptation. The highest level of financial support went to cross-cutting projects, followed by projects in the energy sector. Finland continues to support developing countries in relation to technology development and transfer, covering both ‘soft’ and ‘hard’ technologies in countries around the world, including Honduras, Kenya and Viet Nam. In addition, Finland continues to provide capacity-building support to developing countries, for example through programmes to build the capacity of hydrometeorological services.

95. In the course of the review, the ERT formulated the following recommendations for Finland to improve its adherence to the UNFCCC reporting guidelines on BRs in its next BR:<sup>10</sup>

- (a) Improve the transparency of its reporting by:
  - (i) Clarifying the meaning of the notation keys used in CTF table 3 and the reasons for not reporting the estimated effects of individual mitigation actions (see para. 21 above);
  - (ii) Clearly differentiating among the multilateral and bilateral financial support provided (see para. 69 above);
  - (iii) Providing relevant information, as appropriate, or a reference thereto, on financial support provided, committed and/or pledged to assist non-Annex I Parties to adapt to the adverse effects of climate change, and any economic and social consequences of response measures, through both multilateral and bilateral (regional and other) channels (see paras. 69 above);
  - (iv) Including information on the support provided for the development and enhancement of the endogenous capacities and technologies of non-Annex I Parties (see para. 80 above).

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<sup>10</sup> The recommendations and encouragements are given in full in the relevant chapters of this report.



## Annex

### Documents and information used during the review

#### A. Reference documents

“UNFCCC biennial reporting guidelines for developed country Parties”. Annex to decision 2/CP.17. Available at

<<http://unfccc.int/resource/docs/2011/cop17/eng/09a01.pdf#page=4>>.

“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#page=2>>.

“Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part II: UNFCCC reporting guidelines on national communications”.

FCCC/CP/1999/7. Available at <<http://unfccc.int/resource/docs/cop5/07.pdf>>. “Guidelines for the 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>>.

FCCC/ARR/2014/FIN. Report on the individual review of the annual submission of Finland submitted in 2014. Available at <<http://unfccc.int/resource/docs/2015/arr/fin.pdf>>.

FCCC/IDR.6/FIN. Report of the technical review of the sixth national communication of Finland. Available at <<http://unfccc.int/resource/docs/2014/idr/fin06.pdf>>.

FCCC/TRR.1/FIN. Report of the technical review of the first biennial report of Finland. Available at <<http://unfccc.int/resource/docs/2014/trr/fin01.pdf>>.

2015 greenhouse gas inventory submission of Finland. Available at <[http://unfccc.int/national\\_reports/annex\\_i\\_ghg\\_inventories/national\\_inventories\\_submissions/items/8812.php](http://unfccc.int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items/8812.php)>.

Sixth national communication of Finland. Available at <[http://unfccc.int/files/national\\_reports/annex\\_i\\_natcom/submitted\\_natcom/application/pdf/fi\\_nc6\[1\].pdf](http://unfccc.int/files/national_reports/annex_i_natcom/submitted_natcom/application/pdf/fi_nc6[1].pdf)>.

First biennial report of Finland. Available at <[http://unfccc.int/files/national\\_reports/biennial\\_reports\\_and\\_iar/submitted\\_biennial\\_reports/application/pdf/fi\\_br1.pdf](http://unfccc.int/files/national_reports/biennial_reports_and_iar/submitted_biennial_reports/application/pdf/fi_br1.pdf)>.

Common tabular format tables of the first biennial report of Finland. Available at <[http://unfccc.int/files/national\\_reports/biennial\\_reports\\_and\\_iar/submitted\\_biennial\\_reports/application/pdf/fin\\_2014\\_v1.0.pdf](http://unfccc.int/files/national_reports/biennial_reports_and_iar/submitted_biennial_reports/application/pdf/fin_2014_v1.0.pdf)>.

Second biennial report of Finland. Available at <[http://unfccc.int/files/national\\_reports/biennial\\_reports\\_and\\_iar/submitted\\_biennial\\_reports/application/pdf/fi\\_br2\\_tk\\_20151217\\_final.pdf](http://unfccc.int/files/national_reports/biennial_reports_and_iar/submitted_biennial_reports/application/pdf/fi_br2_tk_20151217_final.pdf)>.

Common tabular format tables of the second biennial report of Finland. Available at <[http://unfccc.int/files/national\\_reports/biennial\\_reports\\_and\\_iar/submitted\\_biennial\\_reports/application/pdf/fin\\_2016\\_v2\\_0\\_corr1\\_formatted.pdf](http://unfccc.int/files/national_reports/biennial_reports_and_iar/submitted_biennial_reports/application/pdf/fin_2016_v2_0_corr1_formatted.pdf)>.

## **B. Additional information used during the review**

Responses to questions during the review were received from Ms. Paula Perälä (Ministry of the Environment) and Ms. Riitta Pipatti and Ms. Pia Forsell (Statistics Finland), including additional material and the following documents<sup>1</sup> provided by Finland:

European Environmental Agency, 2015. *Trends and Projections in Europe 2015. Tracking Progress Towards Europe's Climate and Energy Target*. Luxembourg: Publications Office of the European Union. Available at <<http://www.eea.europa.eu/publications/trends-and-projections-in-europe-2015>>.

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