



COMPLIANCE COMMITTEE

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**Report of the centralized in-depth review of the fourth national
communication of Finland**

Note by the secretariat

The report of the centralized in-depth review of the fourth national communication of Finland is being forwarded to the Compliance Committee in accordance with section VI, paragraph 3, of the annex to decision 27/CMP.1.



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**Report of the centralized in-depth review of
the fourth national communication of Finland**

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I. Introduction and summary

A. Introduction

1. Finland has been a Party to the UNFCCC since 1994 and to the Kyoto Protocol since 2002. Within the “burden-sharing” agreement of the European Union (EU) for the Kyoto Protocol, Finland committed itself to keeping its greenhouse gas (GHG) emissions at the base year (1990) level during the first commitment period from 2008 to 2012.
2. This report covers the centralized in-depth review (IDR) of the fourth national communication (NC4) of Finland, coordinated by the secretariat of the UNFCCC, in accordance with decision 7/CP.11. The review took place from 5 to 10 June 2006 in Bonn, Germany, and was conducted by the following team of nominated experts from the UNFCCC roster of experts: Mr. Didier Goetghebuer (Belgium), Mr. David Lesolle (Botswana), Ms. Thelma Krug (Brazil), Mr. Ismael Concha¹ (Colombia), Mr. Naoki Matsuo (Japan) and Ms. Natalya Parasyuk (Ukraine). Ms. Krug and Mr. Matsuo were the lead reviewers. The review was coordinated by Mr. Sergey Kononov (UNFCCC secretariat).
3. During the IDR, the expert review team (ERT) examined each part of the NC4. The ERT also evaluated the information contained in Finland’s report demonstrating progress (RDP) in achieving its commitments under the Kyoto Protocol, and the supplementary information provided by Finland under Article 7, paragraph 2, of the Kyoto Protocol.
4. In accordance with the guidelines for review under Article 8 of the Kyoto Protocol (decision 22/CMP.1), a draft version of this report was communicated to the Government of Finland, which provided comments that were considered and incorporated, as appropriate, in this final version of the report.

B. Summary

5. The ERT found that Finland’s NC4 was prepared in accordance with the UNFCCC reporting guidelines.² As required by decision 22/CP.8, the RDP provides information on the progress made by Finland in achieving its commitments under the Kyoto Protocol. Supplementary information under Article 7, paragraph 2, of the Kyoto Protocol³ is provided in both the NC4 and the RDP. The ERT acknowledged a high degree of coherency and consistency in Finland’s reporting.

1. Completeness

6. The ERT noted that the NC4 covers all the sections required by the reporting guidelines and the RDP contains all parts stipulated by decisions 22/CP.7 and 25/CP.8. Furthermore, the ERT noted that the supplementary information provided by Finland under Article 7, paragraph 2, of the Kyoto Protocol was complete, except for two reporting elements (see section III.B).

2. Timeliness

7. The NC4 was submitted on 10 February 2006, and the RDP was submitted on 14 February 2006. Decision 4/CP.8 requested the submission of the NC4 by 1 January 2006. Decision 22/CP.7 set the same date for Parties to submit their RDPs.

¹ Mr. Concha was not able to take part in the review visit to Bonn but supported the review from his office.

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.” Document FCCC/CP/1999/7, pages 80–100.

³ Decision 15/CMP.1, annex, chapter II (FCCC/KP/CMP/2005/8/Add.2).

3. Transparency

8. The ERT acknowledged that Finland's NC4 is well structured, transparent and concise. In the course of the review, the ERT formulated a number of recommendations aimed to further increase the transparency of the reporting, such as a recommendation to provide more estimates for the quantitative effects of policies and measures and to better explain the cases where such estimates could not be provided. The ERT noted that the information contained in the NC4 and the RDP was generally consistent, despite a slight difference between GHG projections in the NC4 and in the RDP, and the fact that the NC4 includes GHG data for the period 1990–2003 whereas the RDP also contains preliminary GHG data for 2004.

II. Technical assessment of the reviewed elements

A. National circumstances relevant to greenhouse gas emissions and removals

9. In its NC4, Finland has provided a comprehensive description of its national circumstances affecting GHG emissions and removals. This description covers geographic profile, climate profile, population profile, government structure, education and research, building stock and urban structure, economic profile, industry, energy, transport, agriculture, forests and waste. Table 1 illustrates the national circumstances of the country by providing some indicators relevant to GHG emissions and removals.

Table 1. Indicators relevant to greenhouse gas emissions and removals for Finland

	1990	1995	2000	2003	Change 1990–2000 (%)	Change 2000–2003 (%)	Change 1990–2003 (%)
Population (million)	4.99	5.11	5.18	5.21	3.8	0.7	4.6
GDP (billion USD 2000 PPP)	110	106	133	140	20.4	5.5	27.0
TPES (Mtoe)	29.2	29.6	33.0	37.6	13.1	13.8	28.7
GDP per capita (thousand USD 2000 PPP)	22.1	20.7	25.7	26.9	16.0	4.7	21.5
TPES per capita (toe)	5.9	5.8	6.4	7.2	9.0	13.0	23.1
GHG emissions without LULUCF (Tg CO ₂ eq)	71.1	71.5	70.0	85.7	-1.6	22.4	20.5
GHG emissions with LULUCF (Tg CO ₂ eq)	49.7	56.1	53.7	67.8	8.0	26.3	36.4
CO ₂ emissions per capita (Mg)	11.4	11.4	11.0	14.0	-3.0	27.1	23.2
CO ₂ emissions per GDP unit (kg per USD 2000 PPP)	0.51	0.55	0.43	0.52	-16.4	21.4	1.4
GHG emissions per capita (Mg CO ₂ eq)	14.3	14.0	13.5	16.4	-5.2	21.6	15.2
GHG emissions per GDP unit (kg CO ₂ eq per USD 2000 PPP)	0.64	0.68	0.53	0.61	-18.3	16.1	-5.1

Sources: GHG emissions data are from the 2006 inventory submission of Finland; population, GDP and TPES data are from the IEA.

Note 1: The ratios per capita and per GDP unit are calculated relative to GHG emissions without LULUCF; the ratios are calculated using the exact (not rounded) values and they may therefore differ from a ratio calculated with the rounded numbers provided in the table.

Note 2: For the abbreviations used, see annex II.

10. The NC4 contains summary information on GHG emission trends for the period 1990–2003.⁴ This information is consistent with the 2005 submission of the national GHG inventory. Summary tables, including trend tables for emissions in CO₂ equivalent (given in the common reporting format (CRF)), are provided in an annex to the NC4.

11. From 1990 to 2003, GHG emissions (excluding emissions/removals of GHG from land use, land-use change and forestry (LULUCF)) increased by 20.5 per cent (by 36.4 per cent for GHG emissions with LULUCF; see table 1). However, the emissions noticeably decreased between 2003 and 2004 (see table 2) and total GHG emissions (without LULUCF) in 2004 were 14.5 per cent greater than

⁴ In its RDP, Finland provided information on GHG trends based on the preliminary data from the 2006 inventory submission. Therefore, table 1 and generally this report use GHG data from the 2006 submission, which includes 2004 emissions. However, table 1 still shows data until 2003 because at the time of the preparation of this report the corresponding macroeconomic data from the International Energy Agency (IEA) were available until 2003 only.

in 1990 (26.6 per cent for GHG emissions with LULUCF). This growth in total emissions is mainly attributed to CO₂ emissions, which increased by 21.8 per cent during the period 1990–2004. Emissions of CH₄ decreased by 25.9 per cent from 1990 to 2004, while emissions of N₂O decreased by 13.2 per cent. Emissions of fluorinated gases, or F-gases (HFCs, PFCs and SF₆ taken together), increased almost sevenfold during this period (by 673.2 per cent) although they accounted for only about 0.9 per cent of total GHG emissions in 2004 (0.1 per cent in 1990). Table 2 provides an overview of GHG emissions by sector for the period 1990–2004.

Table 2. Greenhouse gas emissions by sector for Finland, 1990–2004

	GHG emissions (Tg CO ₂ equivalent)					Change (%)		Shares ^a (%)	
	1990	1995	2000	2003	2004	1990–2004	2003–2004	1990	2004
1. Energy	54.3	56.1	54.7	70.7	66.6	22.6	-5.9	76.4	81.8
A1. Energy industries	19.5	24.2	22.0	36.8	33.1	70.3	-10.0	27.4	40.7
A2. Manufacturing industries and construction	13.2	12.1	12.0	11.8	11.4	-13.9	-4.0	18.6	14.0
A3. Transport	12.8	12.2	13.1	13.7	14.1	9.9	2.9	18.0	17.3
A4–5. Other	8.6	7.4	7.4	8.2	7.8	-8.8	-4.6	12.0	9.6
B. Fugitive emissions	0.24	0.26	0.19	0.18	0.17	-27.7	-6.5	0.3	0.2
2. Industrial processes	5.1	4.6	5.6	6.0	6.2	21.6	3.6	7.1	7.6
3. Solvent and other product use	0.18	0.14	0.13	0.10	0.11	-40.9	1.0	0.2	0.1
4. Agriculture	7.1	6.3	5.9	5.7	5.6	-20.7	-1.9	10.0	6.9
5. LULUCF	-21.4	-15.4	-16.3	-17.9	-18.5	-13.5	3.6	-30.1	-22.7
6. Waste	4.0	3.9	3.3	2.8	2.6	-33.9	-5.1	5.6	3.2
7. Other	0.4	0.4	0.3	0.4	0.3	-31.3	-13.2	0.6	0.4
GHG total with LULUCF	49.7	56.1	53.7	67.8	62.9	26.6	-7.2	-	-
GHG total without LULUCF	71.1	71.5	70.0	85.7	81.4	14.5	-4.9	-	-

^a The shares of sectors are calculated relative to GHG emissions without LULUCF; the negative values for the LULUCF sector indicate the share of GHG emissions which was offset by GHG removals through LULUCF.

Note 1: The changes in emissions and the shares by sector are calculated using the exact (not rounded) values and they may therefore differ from values calculated with the rounded numbers provided in the table.

Note 2: For the abbreviations used, see annex II.

12. GHG emissions in Finland fluctuate considerably year by year and depend to a great extent on annual changes in winter temperatures and in precipitation in the Nordic region. This is because the amount of domestic fossil fuel-based power generation depends on the amount of power (mostly from hydro plants) available on the liberalized Nordic market. For example, the peak of GHG emissions in 2003 occurred due to large quantities of CO₂ being emitted from coal-fired power stations following a period of low rainfall in the Scandinavian region, which led to a shortage of hydropower.

B. Policies and measures

13. In its NC4, Finland has provided comprehensive information on its climate-related policies and measures based on the National Energy and Climate Strategy (NECS) adopted to implement its commitments under the UNFCCC and the Kyoto Protocol, as required by the UNFCCC reporting guidelines. Table 3 summarizes the major policies and measures described in the NC4.

14. The ERT noted that some quantitative estimates of the effects of policies and measures are not available in the NC4 and recommended that the Party, for its future communications, provide an explanation or a reason for using “n.a.” (not applicable) for a measure, because the meaning of “n.a.” may be different for different measures. The ERT recognized the difficulties in evaluating the effect of every measure. Some of the measures overlap and some interact with each other. For future estimates, it is recommended that Finland first identify the coverage of each sector and provide a qualitative assessment. The assessment of the effect of a measure should then be integrated with the model used for GHG projections. Sensitivity analysis may provide a quantitative assessment as well as a bottom-up evaluation of each measure, especially for cross-sectoral measures.

Table 3. Summary information on policies and measures

Major policies and measures	Examples / comments
Framework policies and cross-sectoral measures	
Integrated climate programme	National Energy and Climate Strategy (NECS)
Energy/electricity/emissions taxation	Excise duties for energy consumption (coordinated as EU Energy Policy), tax on CO ₂ content
EU climate policy	European Climate Change Programme
Emissions trading	EU ETS (2005–2007; 2008–2012)
Support of research and development	Several R&D programmes under the National Technology Agency
Other	Use of Kyoto Protocol mechanisms (procurement by the Government)
Energy sector	
New nuclear power plant	Construction of new nuclear power plant by 2009
Energy sector liberalization	Electricity Market Act (coordinated under the EU Energy Policy)
Renewable energy sources	Action Plan for Renewable Energy Sources
Transport	
Vehicle and fuel taxes	Differentiation of vehicle taxation (planned); tax incentive for bio-fuels
Agreements/partnerships	Voluntary agreement with industry on fuel efficiency; EU agreements with European, Japanese and Korean car manufacturers
Industry	
Pollution prevention and control	IPPC Directive of the EC
Energy efficiency improvements	Energy Conservation Programme
Process	New directive on F-gases under preparation in the EU
Agriculture	
	Agenda 2000, including agri-environmental measures, a Nitrate Statute, and the Common Agricultural Policy of the EC
Waste management	
	Revised National Waste Plan in accordance with the Waste Directive of the EU; Government decision on landfills, waste minimization measures, the waste tax.
Forestry	
	National Forest Programme (NFP), Finnish Forest Certification System.

Note: For the abbreviations used, see annex II.

1. Policy framework and cross-sectoral measures

15. Finland, as an EU member, has a common/coordinated policy package under the EU climate and energy policies, which is described in a separate section of the NC4 (without specifying the quantitative effects of measures, except for the EU Emissions Trading Scheme (EU ETS)). The EU policy framework will play an even more important role in the near future because approximately half of the emission sources are covered by the EU ETS, and this part is likely to grow in the future.

16. The Ministerial Working Group on Climate Change and Energy, headed by the Ministry of Trade and Industry (MTI), was responsible for coordination of the NECS. The group also prepares Finnish guidelines for international climate negotiations, and ensures planning at the national level and the coherence of Finland's position before matters are discussed in the Cabinet Committee on EU Affairs. The high level working group of government officials, also headed by the MTI, has an essential role in the preparation of national climate policy issues.

17. Finland has placed great emphasis on economic incentives in its energy and climate policies. Incentives (subsidies or tax exemptions) have been provided within the Energy Conservation Programme and Action Plan for Renewable Energy Sources. Disincentives have been introduced in the form of the taxes on energy consumption for electricity, transport and heating fuels (the current energy taxation scheme has been in force since 1997). The energy tax is divided into basic tax (only on petrol and diesel oil for fiscal purposes) and surtax components (proportional to the carbon content; currently EUR 18.05 per tonne of CO₂). Finland envisages shifting to a more environmentally friendly tax system as specified in the Government Programme of 2003.

18. The Kyoto Protocol target for Finland (under the "burden-sharing" agreement of the EU) is to keep its GHG emissions at the base year (1990) level. Finland recognizes that the current policy packages are not sufficient to meet that target and estimates the difference between its likely emissions and the target at about 9.3 Tg CO₂ equivalent annually (carbon sink effects included). Finland will use the EU ETS as a core instrument to close the gap, and this is specified in the Outline of the Energy and Climate Policy for the Near Future National Strategy to Implement the Kyoto Protocol (December 2005). The EU ETS will set a cap on emissions – specified by the national allocation plan (NAP) – for the

sectors covered, which will limit its emissions within the cap (by using the Kyoto Protocol mechanisms if needed⁵). The EU ETS will also be complemented by other policy instruments (taxes, standards, etc.) in order to meet other policy objectives, especially energy security at competitive prices. Renewable energies/bio-fuels and developing a robust structure of electric power are key areas in which the government will invest heavily in the coming years. The recent oil price increases are improving the competitive position of renewable energy sources.

19. The implementation of the EU ETS has been supported by the Emissions Trading Act. The legislation to link project-based mechanisms to emissions trading and the legislation required for the use of Kyoto Protocol mechanisms are in preparation. The Government is expected to give proposals for these laws to the Parliament by the beginning of October 2006. As the NAP must be consistent with Finland's Kyoto Protocol target, the amount allocated is equal to the "Kyoto Protocol target" minus "non-covered sector emissions with additional policy (including a new nuclear plant)" and minus "governmental acquisition of Kyoto Protocol units". In total, the EU ETS should offset 5.9 Tg CO₂ equivalent per year (of the 9.3 Tg needed). It is expected that emissions in the sectors not covered by the EU ETS will be stable, and that the NAP will be sufficient to compensate for the growing emissions from energy and industry.

2. Policies and measures in the energy sector

20. GHG emissions from energy production and consumption amounted to 82 per cent of Finland's total GHG emissions in 2004 (excluding LULUCF) – see table 2. Within the energy sector, most of the growth of emissions is expected in the energy supply (41 per cent of total GHGs) and industry (14 per cent) subsectors, driven by economic growth. Emissions in the transport sector (17 per cent) and the residential/commercial sectors (8 per cent) are projected to remain stable under the current policy scenario. Therefore the key measures are in the energy supply and industry sectors.

21. The measure which will make by far the greatest contribution to reducing GHG emissions is the opening of a new nuclear power plant (in 2009) which is expected to reduce GHG emissions in 2010 by 8 Tg CO₂ per year compared to a scenario without that plant.⁶ It is anticipated that GHG emissions, adjusted for external factors, would increase over time at about 0.8 per cent per year under current policies and measures (under the "with measures" scenario), but the introduction of a new nuclear power plant will compensate for 10 to 15 years of the GHG increases.

22. Another key measure currently being implemented is the Action Plan on Renewable Energy Sources (RES). It aims to increase RES by 30 per cent by 2010, to cover 31.5 per cent of electricity demand in 2010 (approximately 10 per cent was covered by RES in 2001). The corresponding emission reductions are estimated as 4–5 Tg CO₂ per year in 2010. The Energy Conservation Programme (the aim is savings of 3–4 Tg CO₂ per year in 2010) covers 85 per cent of the industrial energy use as well as over 50 per cent of the building stock in the service sector; it utilizes a voluntary agreement scheme on energy efficiency (the voluntary agreement portion is 2 Tg CO₂ per year). The measures to promote the use of renewables and energy conservation are planned to be strengthened to deliver additional reductions of 1–2 Tg CO₂ per year (in 2010), mostly in the sector covered by the EU ETS, with the reductions being

⁵ This means that if, under the EU ETS, emission allowances are purchased or sold and/or CERs/ERUs acquired in a sector as a cost-effective alternative to purchasing allowances, the actual emissions of the sector may be either higher or lower than the emission cap on that sector. The ERT noted that the GHG projections provided in the NC4 do not differentiate between the projected actual emissions and the cap.

⁶ The time when the new nuclear plant starts operation is important for the impact of this measure on GHG emissions. For example, if the new unit starts to operate in 2009, it would decrease GHG emissions by 8 Tg CO₂ in 2010 and by about 7.3 Tg CO₂ per year on average in the period 2008–2012 compared to the scenario without the unit. If the unit were to commence its operation one year later than expected (in 2010 instead of 2009), the emissions would increase by 5.6 Tg CO₂ in 2010 and by 2.3 Tg CO₂ per year on average in the period 2008–2012 compared to the scenario when the new nuclear power unit would start to operate in 2009.

driven by the price of emission allowances. Demand-side measures in the residential/commercial sectors are not expected to contribute comparably.

23. Measures in the transport sector are expected to deliver total reductions of 1 Tg CO₂ per year in 2010. They include the voluntary agreements of the European Community with European, Japanese and Korean car manufacturers as well as the proposed promotion of eco-driving.⁷ However, Finland has encountered several obstacles to strengthening its policy (for example, in the implementation of tax deductions for employer-paid public transport tickets and the differentiation of vehicle taxation based on fuel efficiency, even though such measures were considered to be effective in the 2001 National Climate Strategy). In addition, Finland has had to lower taxes on imported used vehicles following decisions of the European Court of Justice. This has forced Finland to decrease the tax on new vehicles in order to reduce the growing imports of used, energy-inefficient cars from abroad; but the decrease in the tax has had the effect of encouraging purchases of larger cars and, as a result, the NC4 reports that the effect of the voluntary agreements with car manufacturers on emissions has been negative (in 2005, the related emissions increased by 0.1–0.2 Tg CO₂ equivalent). Nevertheless, emission reductions of 0.5 Tg CO₂ per year in 2010 are expected through additional measures in the sector.

24. The ERT pointed out the possibility that emissions in the sectors not covered by the EU ETS may be greater than expected. It is therefore recommended that Finland consider measures to alleviate such risks.

3. Policies and measures in other sectors

25. Between the base year (1990) and 2004, GHG emissions from all non-energy sectors⁸ taken together decreased by 11.6 per cent (by 1.9 Tg CO₂ equivalent), mainly driven by decreases in GHG emissions from the agriculture and waste sectors. GHG emissions from industrial processes increased considerably (by 21.6 per cent, or 1.1 Tg CO₂ equivalent), which was more than compensated for by decreases in the agriculture (by 20.7 per cent or 1.5 Tg CO₂ equivalent) and waste sectors (by 33.9 per cent or 1.4 Tg CO₂ equivalent).

26. **Industrial processes.** GHG emissions from industrial processes increased between 1990 and 2004 due to increases in the production levels of various industrial products. Emissions of HFCs have increased sharply in recent years, and without further measures the share of the fluorinated gases (mainly HFCs) is projected to increase to about 15 per cent of emissions from this sector by 2010. A new directive on such gases is under preparation in the EU. The implementation of this directive (included under the “with additional measures” scenario) is estimated to reduce these emissions by 0.4 Tg CO₂ equivalent annually in the period 2008–2012. The NC4 does not discuss options for reducing N₂O emissions from nitric acid production, which will amount to 2.6 per cent of total GHG emissions in 2020 under the “with additional measures” scenario, because such options are expected to be too expensive over the time horizon considered.

27. **Agriculture.** GHG emissions from agriculture have decreased due to Finland’s agri-environmental programme and to the change in the economic structure (an effect of the European Community’s Common Agricultural Policy), with reduced numbers of farm animals, which has reduced the emissions of methane and nitrogen. During the past decade, Finland has also protected its water resources from the polluting effect of fertilizers. As a result, GHG emissions decreased from 7.1 Tg CO₂ equivalent in 1990 to 5.6 Tg in 2004, even though there was no special GHG mitigation policy.

28. **Forestry.** In 2003, the net sink reported under the LULUCF sector was 17.9 Tg CO₂ equivalent, corresponding to one-fifth of Finland’s total GHG emissions without LULUCF. The forestry sector

⁷ The use of driving techniques to decrease fuel consumption and emissions is often called eco-driving.

⁸ This includes industrial processes (7.6 per cent of total GHG emissions in 2004), agriculture (6.9 per cent), solvent and other product use (0.1 per cent) and waste (3.2 per cent).

contributes about 25 per cent to Finland's export revenues. The National Forestry Programme (NFP) is the core element of the forest policy. More than 95 per cent of all forests in Finland are certified according to the Finnish Forest Certification System which represents a standard for sustainable forest management.

29. Concerning Article 3, paragraph 3, of the Kyoto Protocol, afforestation is expected to create an additional average carbon sink of 0.3–0.6 Tg CO₂ per year in the period 2008–2012 and the clearing of forest land for agricultural purposes is expected to create an additional carbon source of 0.25–0.50 Tg CO₂ per year. The clearance of forests for settlements would give rise to another net source of 0.9 Tg CO₂ per year in the period 2008–2012. Because there are a number of uncertainties and risks, Finland will not apply Article 3, paragraph 4, of the Kyoto Protocol in the first commitment period.

30. **Waste.** GHG emissions from the waste sector decreased (by 34 per cent between 1990 and 2004) due to the implementation of new waste legislation in Finland (reduced amounts of waste disposed of to landfills, combined with minimizing waste generation, composting, and the transformation of waste into energy), which is a notable success story. Nevertheless, a new National Waste Plan is under preparation, with targets for 2015, and it will be integrated with other relevant plans and programmes to fulfil the Waste Directive of the EU.

C. Projections and the total effect of policies and measures

1. Projections

31. In its NC4 and RDP, Finland provides GHG projections for two scenarios, “with measures” and “with additional measures”, which are presented in five-year intervals for the period 2005–2010. The projections are presented relative to actual inventory data for 1990–2003 and are disaggregated by sector (for energy, transport, industry, solvents and other product use, agriculture and waste) and by gas (for CO₂, CH₄, N₂O, PFCs, HFCs and SF₆). They are also presented as GHG totals, using the corresponding global warming potential (GWP) values, for each sector as well as a national total. Emission projections relating to fuel sold for use by ships and aircraft engaged in international transport have not been reported due to non-availability of data. Table 4 and figure 1 present summary information on the GHG projections reported by Finland in its RDP.⁹

Table 4. Summary of greenhouse gas emission projections for Finland

	GHG emissions (Tg CO ₂ equivalent per year)	Change compared to base year level (%)
Inventory data 1990 ^{a, c}	71.1	not applicable
Inventory data 2004 ^a	81.4	14.5
Kyoto Protocol base year ^c	71.5	not applicable
Kyoto Protocol target	71.5	0
Scenario “with measures”, projected average for 2008–2012 ^b	79.9	11.8
Scenario “with additional measures”, projected average for 2008–2012 ^b	73.9	3.4

^a Source: 2006 GHG inventory submission of Finland; the emissions are without LULUCF.

^b Source: RDP of Finland; the projections are for GHG emissions without LULUCF.

^c The inventory data for 1990 (71.1 Tg) differ slightly from the base year (1990) data in projections (71.5 Tg), because the projections used an earlier version of the national GHG inventory.

Note: For the abbreviations used, see annex II.

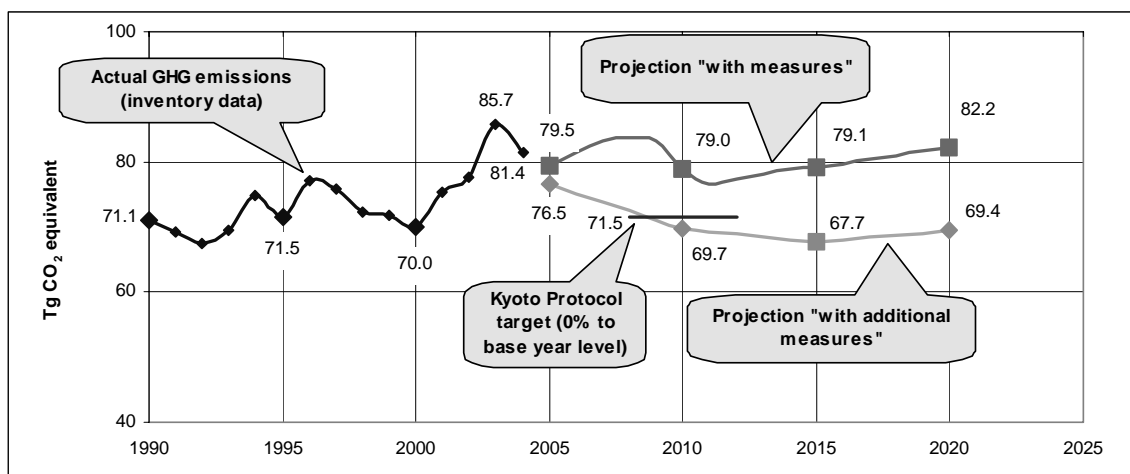
32. The assumptions used in the preparation of the GHG projections are presented clearly and transparently in the NC4. The methodology is briefly described and references to additional methodological information are given. However, while recognizing the robustness of the projections, the

⁹ The GHG projections in the NC4 differ slightly from the GHG projections in the RDP. Table 4 and figure 1 use the projections data from the RDP, which is the more recent document.

ERT noted that the increase in GHG emissions in the period 2000–2003 brought actual emissions to a higher level than even the projected emissions for 2020 (see figure 1). This underlines the need to have policy options in place in order to be able to react if emissions increase faster than expected, possibly driven by abnormal climatic conditions, such as colder winters and low rainfall (which can result in increased operation of coal-fuelled power stations).

33. The ERT recommends that Finland prepare GHG projections relating to fuel sold for use by ships and aircraft engaged in international transport, and include these in its next national communication.

Figure 1. Greenhouse gas emission projections for Finland



Source: the NC4 of Finland; the projections are for GHG emissions without LULUCF.

Note 1: the 2010 emissions under the “with additional measures” scenario are below the Kyoto Protocol target, whereas the average emissions in 2008–2012 are above the target (see table 4).

Note 2: the projected change of the trend in 2009 under the “with measures” scenario is linked to the start of a new nuclear unit; this effect is less visible for the “with additional measures” scenario, because data in five-year steps only are available for that scenario.

2. Total effect of policies and measures

34. The NC4 contains an estimate for the total effect of additional measures, which is calculated as the difference in GHG emissions between the “with measures” and the “with additional measures” scenarios. No estimate of the total effect of policies and measures implemented and adopted has been provided, but the individual effects of such policies and measures have been estimated. Table 5 provides an overview of the total effect of the additional (planned) policies and measures as reported by Finland.

35. Table 5 shows that the main effect of additional measures occurs in the energy sector, followed by transport and industrial processes. In total, the additional measures can lead to a decrease in GHG emissions of about 12 per cent compared with the base year level.

36. The ERT recommends that Finland evaluate, in addition to the individual effects of the policies and measures implemented and adopted, the total effect of such measures, which could differ from the sum of the effects of individual measures. The development of a “without measures” scenario could help in this evaluation.

Table 5. Projected effects of planned policies and measures in 2010

	Absolute value (in Tg CO ₂ equivalent per year)	Relative value (per cent of base year emissions)
Energy (without transport)	7.136	10.1
Transport	0.678	1.0
Industrial processes	0.455	0.6
Agriculture	0.000	0.0
Waste	0.074	0.1
Total	8.343	11.8

Source: NC4 of Finland.

Note: The total effect of planned policies and measures is defined, consistent with the NC4, as the difference between the “with measures” and “with additional measures” scenarios. As the effect is calculated for 2010 only, it differs slightly from the estimate of the difference with the Kyoto Protocol target, which is calculated based on the average 2008–2012 emissions.

D. Vulnerability assessment, climate change impacts and adaptation measures

37. Finland anticipates that its climate will become warmer by 2–5° C by the 2050s. In the NC4, Finland provides the required information on the expected impacts of climate change in Finland and on the adaptation action based on its National Strategy for Adaptation to Climate Change published in January 2005. The strategy describes the impacts of climate change in a number of sectors and corresponding adaptation actions. Table 6 summarizes the information on vulnerability and adaptation to climate change presented in the NC4.

Table 6. Summary information on vulnerability and adaptation to climate change

Vulnerable area	Examples / comments / adaptation measures reported
Agriculture and food production	Vulnerability: shifts in cropping zones; increase in wheat/potato yields; shift in pest distribution and increased number of reproductive cycles; increase in extreme weather events: floods and heavy rains, droughts, frosts, storms Adaptation: integrating climate change in plant protection; plant breeding; changes in crop varieties and cultivation practices; flexible land use; strategies to cope with extreme weather events; strengthening research and development
Forestry	Vulnerability: displacement of boreal forests and change of broadleaved forest into boreal forest; extreme weather events: floods and heavy rains, droughts, frosts, storms Adaptation: change in forestry management practices; inclusion of climate change aspects in the National Forest Programme; protection of gene pools of forest trees; forest management adapting to climate change and mitigating it
Water resources	Vulnerability: increased run-off in winter; reduced run-off in spring/summer; reduced flood risk due to snowmelt; increased precipitation Adaptation: water management, raising of flood banks and taking rain-induced floods into account in planning
Industry	Vulnerability: changes in the supply of timber in terms of both quantity and quality; extreme weather events: floods and heavy rains, droughts, frosts, storms Adaptation: inclusion of adaptation in the long-term planning and strategies for different energy branches
Energy	Vulnerability: decrease in heating-degree days; air conditioning; bio-energy: increased production potential; potential benefits for hydropower in winter Adaptation: long-term planning and strategies for changes in hydropower production and regulation practices; planning for decreased energy consumption
Health	Vulnerability: lengthened transmission period for tick-borne diseases; increase in risks of exposure to harmful ultraviolet radiation; increase in extreme weather events: floods and heavy rains, droughts, frosts, storms Adaptation: public awareness; improvement in monitoring and surveillance systems; reduction of vector populations; improvement in housing design
Tourism and recreation	Vulnerability: reduced reliability of winter snow cover; Baltic coast may attract more summer beach tourists Adaptation: use of artificial snow; investment in alternatives to ski tourism

38. In addition to the vulnerable areas shown in table 6, Finland also provides in the NC4 a comprehensive description of the vulnerability and adaptation issues for fisheries, reindeer and game, biological diversity, transport, land-use communities, buildings and insurance relating to climate change.¹⁰

¹⁰ Of the sectors covered, no adaptation measures have been presented for fisheries, reindeer or game husbandry.

39. Finland is addressing a number of issues raised during previous reviews. For example, the NC4 presents specific results from the Finnish Global Change Research Programme (FIGARE) of the University of Finland and its FINSKEN¹¹ Project. Such studies and programmes contribute to a better understanding of vulnerability and adaptation to climate change.

E. Financial resources and transfer of technologies

1. Financial resources

40. In its NC4, Finland describes measures taken to adhere to its commitments under Article 4, paragraphs 3, 4 and 5, of the UNFCCC, as required by the UNFCCC reporting guidelines. In particular, Finland indicates what “new and additional” financial resources it has provided and clarifies that these are the funds contributed to the Global Environment Facility (GEF). Finland has also provided information on the assistance provided to developing country Parties that are particularly vulnerable to the adverse effects of climate change in meeting the costs of adaptation to those adverse effects. Furthermore, Finland has provided other financial resources related to the implementation of the Convention through bilateral, regional and other multilateral channels. Table 7 summarizes information on the financial resources provided.

41. The main targets of Finnish development cooperation are poverty reduction, with the emphasis on least developed countries, and the mitigation of environmental threats by preventing environmental degradation and by giving assistance for the sustainable use of natural resources. During recent years Finland has shifted the focus of its financial contributions away from project-based funding towards more programme-based funding under both bilateral and multilateral cooperation.

42. The NC4 is not fully consistent when showing the correlation between regional contributions (given for the period 2001–2003, table 7–3) and the structure of Finnish climate-related bilateral aid (given for the period 2001–2005, figure 7–1). The ERT encourages Finland to provide more detailed information on the assistance provided through bilateral and other multilateral channels and to complete table 5 from the UNFCCC reporting guidelines for the preparation of national communications.¹²

Table 7. Summary information on financial resources

Official development assistance (ODA)	EUR 160.6 million in 2003 (0.35 per cent of gross national income)
Climate-related aid in bilateral ODA	EUR 4.77 million or 2.97 per cent (estimate for 2003)
Climate-related support programmes	A programme for the control and management of forest and bush fires; international programme for arid land crops; a partnership initiative in energy and environmental cooperation with Central American countries
Contributions to GEF (EUR million)	2004, 8.0; 2003, 7.4; 2002, 3.4
Pledge for third GEF replenishment	USD 26.55 million
Activities implemented jointly (AIJ)	Jl/CDM pilot programme was launched in 1999; the pilot programme has received over 130 projects
Jl and CDM under the Kyoto Protocol	Investments in the Prototype Carbon Fund (PCF); Baltic Sea Region Energy Cooperation Testing Ground Facility; EBRD; Nordic Investment Bank; Nordic Environmental Financing Corporation, Northern Dimension Environmental Partnership Support Fund; bilateral memorandums with neighbouring countries (EUR 35 million from 2001 to 2004)
Other (bilateral/multilateral)	Support to Trust Fund For Environmentally and Socially Sustainable Development. 13 projects for developing countries directly relating to climate change (2001–2003)

Note: For the abbreviations used, see annex II.

2. Transfer of technology

43. In its NC4, Finland has provided six success stories of bilateral projects and programmes that relate to the transfer of technology to developing countries. Five of these stories deal with financing

¹¹ FINSKEN is the abbreviation for Developing Consistent Climate Scenarios for Finland.

¹² Document FCCC/CP/1999/7.

access to “soft” environmentally sound technologies, for example, through improving meteorological services, decentralization of environmental administration, curbing industrial pollution, and support of a national forestry programme. The sixth, which is the Energy and Environment Partnership with Central America programme, is a good example of the transfer of “hard” environmentally sound technologies. The purpose of the programme is to promote renewable energy sources, through the installation of solar power systems, photovoltaic systems and the use of biomass and small-scale hydropower.

44. The ERT noted that Finland does not provide a clear distinction between activities in technology transfer undertaken by the public sector and those undertaken by the private sector, and does not give a comprehensive overview of its activities for financing access by developing countries to “hard” or “soft” environmentally sound technologies. The ERT encourages Finland to address these issues in more detail in its next national communication.

F. Research and systematic observation

45. Finland has provided the required information on its actions relating to research and systematic observation and addressed both domestic and international activities, including the World Climate Programme (WCP), the International Geosphere–Biosphere Programme (IGBP), the Global Climate Observing System (GCOS), and the Intergovernmental Panel on Climate Change (IPCC).

46. An interdisciplinary Finnish Research Programme on Climate Change (SILMU) is included in international research programmes such as the World Climate Research Programme (WCRP) and the IGBP. Under the GCOS, three stations from Finland are included in the global surface network and the global upper-air network of stations. Finland is still preparing the national report on the GCOS, which will be available in 2006.

47. The NC4 also reflects the action taken by Finland to support capacity-building in developing countries. Through its Finnish Meteorological Institute, Finland continues to provide support and assistance to Mozambique, China, India, and some countries in South America and the Caribbean region. Such support has an in-built capacity-building component.

48. There are a number of institutes and research organizations in Finland that take part in climate change research and systematic observation. Key research activities are on climate processes and climate system studies; climate modelling and prediction; impacts of climate change; socio-economic analysis; and adaptation and mitigation. Systematic observation activities focus on atmospheric climate observing systems; ocean climate observing systems; terrestrial climate observing systems; and support for developing countries.

G. Education, training and public awareness

49. Finland has provided information on its actions relating to education, training and public awareness, as required by the UNFCCC reporting guidelines.

50. Climate change is one of the environmental issues covered in primary, secondary and higher education in Finland. Climate change education is enhanced by local, national and global projects in schools. One hundred and twenty-five schools participate in the international GLOBE Programme. Students participate in the Environmental and School Initiative of the Organisation for Economic Co-operation and Development (OECD), in the UNESCO Baltic Sea project, and in the Baltic 21 E Programme. At universities, teaching on impacts and climate modelling is closely linked to research.

51. At the governmental level, a broad-based Climate Forum, led by the Ministry of the Environment, promotes awareness of climate change issues. The Forum has some 60 representatives from different ministries, industries, non-governmental organizations (NGOs) and research institutes. In 2002, a special Climate Change Communication Programme was designed to increase awareness of

climate change in various groups, such as energy companies, waste management firms, local authorities and teachers. The Finnish media pay a great deal of attention to the problem of climate change.

III. Evaluation of information contained in the report demonstrating progress and of supplementary information under Article 7, paragraph 2, of the Kyoto Protocol

A. Information contained in the report demonstrating progress

52. Finland's RDP includes five chapters which contain the information required by decisions 22/CP.7 and 25/CP.8. The ERT noted that the information contained in the NC4 and the RDP is generally consistent, despite a slight difference in GHG projections and the fact that the NC4 includes GHG data for 1990–2003 whereas the RDP also contains preliminary GHG data for 2004.

53. Despite the existing emission reduction programmes, Finnish GHG emissions have grown since 1990, reaching a peak in 2003 of about 21 per cent above the 1990 level. From 2003 to 2004, the emissions decreased by about 5 per cent; however, in 2004 they were still about 15 per cent (10.3 Tg CO₂ equivalent) above the 1990 level. The increases are driven mainly by the energy sector, which accounted for about 80 per cent of total GHG emissions in 2004. Energy-related emissions vary according to economic trends, relative contribution of various fuels to energy supply, and climate conditions. The increase in GHG emissions in 2004 from energy use resulted mainly from a long period of drought, which impacted on hydroelectric production and energy import prices.

54. Between the base year (1990) and 2004, GHG emissions from non-energy sectors taken together decreased by about 12 per cent (1.9 Tg CO₂ equivalent), driven mainly by the decreases in GHG emissions from agriculture and waste.

55. Finland expects a considerable decrease in GHG emissions from the energy sector in the first commitment period, to a large extent due to the entry into operation of its fifth nuclear power unit, anticipated to be completed by 2009. Among the additional (planned) measures, establishing an emissions cap under the EU ETS will play a key role during the period 2008–2012.

56. The LULUCF sector as a whole is a net sink in Finland. The reported net sink from LULUCF has been between 15.4 Tg CO₂ equivalent and 36.1 Tg CO₂ equivalent per year over the period 1990–2004, which is equivalent to 20–50 per cent of base year emissions. The mean annual result of the application of Article 3, paragraph 3, of the Kyoto Protocol during the first commitment period is estimated as net emissions of approximately 0.9 Tg CO₂ equivalent per year, mostly because of the conversion of forest land to other uses and the low rate of carbon accumulation in reforested lands since 1990. Finland has chosen not to report under Article 3, paragraph 4, of the Kyoto Protocol (forest management, cropland management, grazing land management and revegetation) during the first commitment period, because of the high uncertainties associated with CO₂ emissions and removals from soils, and with non-CO₂ emissions. The Finnish National Forest Programme supports the promotion of sustainable forest management and other measures (bio-fuels production; wood as an environmentally friendly product) which are expected to provide considerable removals of carbon from the atmosphere in the future. However, the net effect of such measures has not yet been quantified.

57. In its RDP, Finland indicates that the average annual emissions during the first commitment period (2008–2012) are expected to exceed the Kyoto Protocol target by 9.3 Tg CO₂ equivalent (including the projected emissions of 0.9 Tg CO₂ equivalent per year from LULUCF). Participation in the EU ETS and strengthened domestic measures are expected to account for 6.9 Tg CO₂ equivalent per year (5.9 and 1.0, respectively) (see table 8). The flexibility mechanisms of the Kyoto Protocol, including the acquisition of emission reductions by the Finnish Government, will be used to compensate for the remaining deficit (expected to be about 2.4 Tg CO₂ annually), recognizing that the marginal cost

of domestic emission reductions in Finland is one of the highest in the EU. Finland is prepared to finance the acquisition of about 10 Tg CO₂ equivalent of Kyoto units through the flexibility mechanisms during the first commitment period.¹³ The Ministry of the Environment is responsible for joint implementation (JI) projects, the Ministry of Foreign Affairs for the clean development mechanism (CDM) projects and the Ministry of Trade and Industry for coordination. The administrative and financing plans and decisions related to the CDM/JI projects will be included in the plant-specific NAP proposal.

Table 8. Measures to meet the Kyoto Protocol target

Measures	Expected effects (Tg CO ₂ equivalent per year)
Allocation of emission allowances under EU ETS	5.9
Measures in the transport sector	0.5
Implementation of regulation of fluorinated gases (F-gases)	0.3
Measures in waste and other sectors	0.2
Use of Kyoto Protocol mechanisms	2.4 (0.4 by CDM/JI pilot programme)
Total	9.3

Note: For the abbreviations used, see annex II.

B. Supplementary information under Article 7, paragraph 2, of the Kyoto Protocol

58. Finland has provided most of the supplementary information required under Article 7, paragraph 2, of the Kyoto Protocol in its NC4 and RDP. This information reflects the steps taken by Finland to implement the relevant provisions of the Kyoto Protocol. The supplementary information is placed in different sections of the NC4 and RDP. Table 9 provides references to the RDP and NC4 chapters in which this supplementary information is provided.

Table 9. Overview on supplementary information under Article 7, paragraph 2, of the Kyoto Protocol

Supplementary Information	Reference
National systems in accordance with Article 5, paragraph 1	NC4, pp. 71–73; RDP, pp. 46–47
Supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17	NC4, pp. 193; RDP p. 41
Policies and measures in accordance with Article 2	RDP, pp. 13–20
Domestic and regional programmes and/or legislative arrangements and enforcement and administrative procedures	RDP, pp. 37–41; p. 13
Information under Article 10	NC4, pp. 181–229; pp. 147–177; RDP, pp. 46–53
Financial resources	NC4, pp. 181; RDP, pp. 196

Note: For the abbreviations used, see annex II.

59. Finland has not reported the following elements of the additional information under Article 7, paragraph 2, of the Kyoto Protocol: (a) a description of the national registry; and (b) information on what efforts Finland is making to implement policies and measures to minimize adverse effects, including effects of climate change, effects on international trade, and social, environmental and economic impacts on other Parties, particularly those identified in Article 4, paragraphs 8 and 9, of the Convention. The ERT recommends that Finland include these reporting elements in its next national communication. During the review, Finland clarified that it did not include the description of its registry because national registries under the Kyoto Protocol and the international transaction log are generally not operational yet. Finland has already prepared a preliminary report on its national registry, which is consistent with the

¹³ The NAP of the EU ETS for the period 2008–2012 should mention the emission reductions each member country of the EU will acquire for that period. The government money will not be spent for the private sector CDM/JI projects through the NAP of the EU ETS. However, the Finnish Government can allocate more allowances to the companies if it obtains more certified emission reduction units/emission reduction units.

UNFCCC guidelines and is available on the GHG web page of Statistics Finland at <http://www.stat.fi/tk/yr/khkaasut_raportit_en.html>.

IV. Conclusions and recommendations

60. GHG emissions in Finland depend to a great extent on annual changes in precipitation in the Nordic region and on winter temperatures, in particular because the amount of domestic fossil fuel-based power generation depends on the amount of power (mostly from hydro plants) available on the Nordic power market. GHG emissions from the energy sector contribute more than 80 per cent to total national GHG emissions (without LULUCF). Key policies and measures therefore focus on energy-related emissions, utilizing economic incentives such as the EU ETS and a CO₂ tax. For the near future, the opening of a new nuclear power plant in 2009 will make the largest contribution to reductions in GHG emissions.

61. Under the “with measures” scenario, the total GHG emissions of Finland are expected to be about 12 per cent above the Kyoto Protocol target. Finland plans to meet the target by introducing additional measures, among which the allocation of emission allowances under the EU ETS plays a prominent role. The Finnish Government will also utilize the flexibility mechanisms under the Kyoto Protocol, in addition to strengthening domestic GHG mitigation measures, taking into account the high marginal cost of domestic emission reductions.

62. During the course of the IDR, the ERT formulated a number of recommendations, relating to the completeness and transparency of Finland’s reporting under the UNFCCC and the Kyoto Protocol. The key recommendations¹⁴ are that Finland:

- Provide, for the future communications, an explanation or a reason for using “n.a.” (not applicable) when a quantitative estimate of the effect has not been provided for a policy measure, because the meaning of “n.a.” may be different for different measures.
- Evaluate, in addition to the individual effects of implemented and adopted policies and measures, the total effect of such measures, which could differ from the sum of the effects of individual measures; the development of a “without measures” scenario could help in this evaluation.
- Prepare GHG projections relating to fuel sold for use by ships and aircraft engaged in international transport, and report them separately from the national totals in its next national communication.
- Provide, in its next national communication, a clearer explanation of the roles of the private and government sectors in financial and technological transfers.
- Include the following reporting elements of the additional information under Article 7, paragraph 2, of the Kyoto Protocol in its next national communication: (a) a description of the national registry; and (b) information on the efforts Finland is making to implement policies and measures to minimize adverse effects, including the effects of climate change, effects on international trade, and social, environmental and economic impacts on other Parties, particularly those identified in Article 4, paragraphs 8 and 9, of the Convention.

63. The ERT recognizes that utilizing the EU policy package on climate and energy, including the EU ETS, will play a key role if Finland is to meet its Kyoto commitments. However, information as to how EU-wide measures interact with the existing or planned Finnish measures is not well elaborated in the NC4 or in the RDP. The ERT considers that the quantitative assessment of such interactions may provide a deeper understanding that could be beneficial for designing the package of measures.

¹⁴ For a complete list of recommendations, the relevant sections of this report should be consulted.

64. The ERT also felt that the emissions in the sectors not covered under the EU ETS may be greater than expected, and that measures to alleviate such risks should be considered. Regular review of climate policy with, if necessary, revisions in projections could also be useful as a means of evaluating, in a timely fashion, the need to cover possible excess emissions by purchasing emission reductions through the flexibility mechanisms of the Kyoto Protocol.

Annex I**Documents and information used during the review****A. Reference documents**

- UNFCCC. 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>>.
- UNFCCC. Guidelines for the preparation of the information required under Article 7 of the Kyoto Protocol, decision 15/CMP.1. (FCCC/KP/CMP/2005/8/Add.2). Available at <<http://unfccc.int/resource/docs/2005/cmp1/eng/08a02.pdf#page=54>>.
- UNFCCC. Guidelines for review under Article 8 of the Kyoto Protocol, decision 22/CMP.1. (FCCC/KP/CMP/2005/8/Add.3). Available at <<http://unfccc.int/resource/docs/2005/cmp1/eng/08a03.pdf#page=51>>.
- UNFCCC. Report on the in-depth review of the third national communication of Finland. (FCCC/IDR.3/FIN). Available at <<http://unfccc.int/resource/docs/idr/fin03.pdf>>.
- UNFCCC. Synthesis of reports demonstrating progress in accordance with Article 3, paragraph 2, of the Kyoto Protocol. (FCCC/SBI/2006/INF.2). Available at <<http://unfccc.int/resource/docs/2006/sbi/eng/inf02.pdf>>.
- UNFCCC. Report of the individual review of the greenhouse gas inventory of Finland submitted in 2005. (FCCC/ARR/2005/FIN). Available at <<http://unfccc.int/resource/docs/2006/arr/fin.pdf>>.
- Finland. Fourth National Communication under the United Nations Framework Convention on Climate Change. Available at <<http://unfccc.int/resource/docs/natc/finnc4.pdf>>.
- Ministry of Trade and Industry of Finland. The report on demonstrable progress under the Kyoto Protocol. Available at <<http://unfccc.int/resource/docs/dpr/fin1.pdf>>.
- Finland. Outline of the Energy and Climate Policy for the Near Future – National Strategy to Implement the Kyoto Protocol (Government Report to Parliament, 24 November 2005).

B. Additional information provided by the Party

Responses to questions during the review were received from Mr. Juha Turkki, Ministry of Trade and Industry of Finland.

Annex II**Acronyms and abbreviations**

AIJ	activities implemented jointly	IPPC	integrated pollution prevention and control
CDM	clean development mechanism	kg	kilogram (1 kg = 1 thousand grams)
CH ₄	methane	kgoe	kilograms of oil equivalent
CO ₂ eq	carbon dioxide equivalent	JI	joint implementation
CO ₂	carbon dioxide	LULUCF	land use, land-use change and forestry
CRF	common reporting format	Mg	megagram (1 Mg = 1 tonne)
EBRD	European Bank for Reconstruction and Development	MTI	Ministry of Trade and Industry
EC	European Community	Mtoe	millions of tonnes of oil equivalent
EIT	economy in transition	N ₂ O	nitrous oxide
ERT	expert review team	NAP	national allocation plan
ET	emissions trading	NC4	fourth national communication
ETS	emissions trading scheme	NECS	National Energy and Climate Strategy
EU	European Union	NFP	National Forest Programme
EUR	euro	NGO	non-governmental organization
F-gas	fluorinated gas	ODA	official development assistance
FIGARE	Finnish Global Change Research Programme	OECD	Organisation for Economic Co-operation and Development
FINSKEN	Developing Consistent Climate Scenarios for Finland	PFCs	perfluorocarbons
GCOS	Global Climate Observing System	PPP	purchasing power parities
GDP	gross domestic product	R&D	research and development
GEF	Global Environment Facility	RDP	Report demonstrating progress under the Kyoto Protocol
GHG	greenhouse gas; unless indicated otherwise, GHG emissions are the sum of CO ₂ , CH ₄ , N ₂ O, HFCs, PFCs and SF ₆ without GHG emissions and removals from LULUCF	RES	renewable energy sources
GWP	global warming potential	SF ₆	sulphur hexafluoride
HFCs	hydrofluorocarbons	SILMU	Finnish Research Programme on Climate Change
IDR	in-depth review	Tg	teragram (1 Tg = 1 million tonnes)
IEA	International Energy Agency	toe	tonnes of oil equivalent
IGBP	International Geosphere–Biosphere Programme	TPES	total primary energy supply
IPCC	Intergovernmental Panel on Climate Change	UNFCCC	United Nations Framework Convention on Climate Change
		USD	US dollar
		WCP	World Climate Programme
		WCRP	World Climate Research Programme
